FIRSTCARBONSOLUTIONS™

DRAFT
Environmental Impact Report No. 534
San Gorgonio Crossing
Riverside County, California

State Clearinghouse Number: 2014011009

APPENDICES

Prepared for:

County of Riverside
Planning Department
4080 Lemon Street, 12th Floor
PO Box 1409
Riverside, CA 92502-1409
951.955.6097

Contact: Steve Weiss, Planning Director

Project Applicant:

TSG-Cherry Valley L.P.
2 Park Plaza, Suite 700
Irvine, CA 92614
949.417.1396

Contact: Brian Rupp, Director Asset Management

Prepared by:

FirstCarbon Solutions
650 Hospitality Lane, Suite 125
San Bernardino, CA 92408
909.884.2255

Contact: Frank Coyle, Director

Date: August 3, 2016

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Appendix A: Notice of Preparation (NOP) and Scoping Meeting Documents

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A.1 - Notice of Preparation (NOP) April 2013

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RIVERSIDE COUNTY
PLANNING DEPARTMENT

Carolyn Syms Luna
Director

Agency Notice of Preparation of an Draft Environmental Impact Report

DATE: April 24, 2013

TO: Responsible Agencies
Organizations
Interested Parties

PROJECT CASE NO./TITLE: Project Title: I-10 Gateway Center Project

Case Numbers:
- General Plan Amendment No. 1079
- Change of Zone No. 7799
- Parcel Map No. 36564
- Plot Plan No. 25337
- Environmental Impact Report No. 534

A descrption of each application is listed below
General Plan Amendment (GPA1079) – proposes to change the current General Plan Land Use designation from Community Development: Very Low Density Residential and Rural: Rural Mountainous to Community Development: Light Industrial and Rural: Rural Mountainous

Change of Zone (CZ7799) – proposes to change the existing zoning from Controlled Development Areas to Industrial Park and Controlled Development Areas

Parcel Map (PM36564) – proposes to subdivide 228 gross acres into five industrial parcels.

Plot Plan (PP25337) – proposes to construct an industrial distribution facility consisting of two industrial buildings totaling 2,560,000 square feet, with 428 bay doors, located on 230 gross acres, of which approximately 144 acres would be developed as part of the project.

Environmental Impact Report No. 534 – provides an environmental analysis of the potential impacts of the proposed project. The Environmental Issues section below provides additional detail regarding enviornmental issues that will be addressed in the Draft Environmental Impact Report.

PROJECT LOCATION:
The proposed I-10 Gateway Center Project (Project) is located in Township 2 south, Range 1 west, Section 30, along the north side of Cherry Valley Boulevard and east of the Interstate 10 Freeway (I-10), between the Cities of Calimesa and Beaumont, in the unincorporated area of Riverside County, California (See Exhibit 1, Regional Location Map and Exhibit 2, Local Vicinity Map). The Project site has

regional access via Cherry Valley Boulevard to the I-10 Freeway, and local access via Cherry Valley Boulevard, Brookside Avenue, and Oak Valley Parkway.

The Project site, which comprises approximately 230 acres, is vacant and is located within the unincorporated community of Cherry Valley. The City of Beaumont is located south of the Project site, the City of Calimesa is located directly west and northwest of the site and the City of Yucaipa is located approximately two miles north of the site. Access to the site is off Cherry Valley Boulevard. The Assessor Parcel Numbers for the Project site are 407-220-004, 407-220-007, 407-220-008, 407-220-009, 407-220-014, 407-220-016, and 407-220-017. APNs 413-270-012 and 413-270-13 are off-site improvement areas where grading will occur, therefore this area is being analyzed in the environmental review of the proposed project.

PROJECT DESCRIPTION:
The I-10 Gateway Center Project site totals approximately 230 gross acres, of which approximately 144 acres would be included within the developed portion of the Project. The remaining 86 acres would remain as natural open space (approximately 37 percent of the Project site). The Project consists of two (2) industrial buildings will have sizes of approximately 960,000 square feet and 1,600,000 square feet for a total of approximately 2,560,000 square feet of floor area.

The Project site plan is depicted on Exhibit 3. Both buildings are intended to house a variety of industrial uses including some that would be considered “high cube” type wholesale distribution users. The buildings are speculative in that there are not assoicated tenatnts at this time. Both buildings would be approximately 39 feet in height. Three access points are proposed off Cherry Valley Blvd. The primary access point will be located in the mid-portion of the Project site between the two buildings and is proposed as a signalized intersection.

Project mass grading activities would involve onsite cut of 6 million cubic yards and fill of approximately 6 million cubic yards. However the site will balance and no import or export of soils will be needed. Additional off-site grading on the west side of the site, within the City of Calimesa, will be also be needed to implement the Project. Water and sewer service for the Project will be provided by the Yucaipa Valley Water District (YVWD). In order to provide service to the Project site the construction of off-site water and sewer lines in Cherry Valley Boulevard and Calimesa Boulevard, as well as the construction of an off-site water reservoir will also be needed, although it is expected that the reservoir, which has already been designed and funded by YVWD, will be constructed and in place prior to completion of this Project.

There are three ephemeral drainages that traverse the Project site from east to west and northeast to southwest. Although all on-site drainages are ephemeral and do not support wetland vegetation, there are some limited areas of the Project site that contain Waters of the U.S. and Waters of the State. Therefore implementation of the Project may require securing a Federal Section 404 permit and a State Section 1602 Streambed Alteration Agreement.

Land use approvals needed to implement the Project are a Plot Plan Approval and a Tentative Parcel Map. A General Plan Amendment and Zone Change would also be needed. According to the County of Riverside General Plan, the Project site is currently designated as Rural Mountainous (RM) and Very Low Density Residential (VLDR) and is located within the Cherry Valley Gateway Policy Area. The RM designation is located along the northerly portion of the Project site with the majority of the site designated as VLDR. Thus, a General Plan Amendment application to change the Land Use designation from VLDR to Light Industrial (LI) is proposed as part of the Project entitlements. The applicant is requesting to remove the project from the Cherry Valley Gateway Policy Area, in addition to the changes in land use designation. The Project also includes a Change of Zone from Controlled Development (W-2) to Industrial Park (I-P) to be consistent with the General Plan Amendment. The

northern portion of the Project site designated as RM will remain designated as RM, and will not be developed as part of this Project.

Environmental Issues: CEQA Guidelines section 15063 provides that if a Lead Agency determines that an EIR will clearly be required for a project, an Initial Study is not required. The EIR that will be prepared for the proposed Project is a full scope EIR including all of the CEQA Guidelines Appendix G topical issue areas. Potential impacts associated with environmental resource areas that will be analyzed in the EIR include those listed below. A full scope EIR is proposed, so there are no environmental topcis that have been screened out or that are potentilaly less than significant.

- Aesthetics
- Agriculture and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology/Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology/Water Quality
- Land Use/Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation/Traffic
- Utilities/Service Systems

The EIR will address the short-term and long-term effects of the Project on the environment. The EIR will also evaluate the potential for the Project to cause direct and indirect growth-inducing impacts, as well as cumulative impacts. Alternatives to the proposed Project that may reduce impacts determined to be significant in the EIR will be evaluated. Mitigation measures will be proposed for those impacts that are determined to be significant. A mitigation monitoring program will also be developed as required by Section 15097 of the California Environmental Quality Act (CEQA) Guidelines.

The environmental determination in this Notice of Preparation is subject to a 30-day public review period pursuant to California Public Resources Code Section 21080.4 and CEQA Guidelines Section 15082. Public agencies, interested organizations, and individuals have the opportunity to comment on the environmental issues that have the potential to be affected by the Project and, therefore, should be addressed in the EIR.

LEAD AGENCY:
Riverside County Planning Department
4080 Lemon Street, 12th Floor
P.O. Box 1409
Riverside, CA 92502-1409

Attn: Paul Rull, Project Planner

PROJECT SPONSOR:
Applicant: TSG-Cherry Valley L.P. care of Shopoff Group, L.P.
Contact: Brian Rupp

Address: 2 Park Plaza, Suite 700
Irvine, CA 92614

RIVERSIDE COUNTY
PLANNING DEPARTMENT

Carolyn Syms Luna
Director

Pursuant to Riverside County Rules to Implement the California Environmental Quality Act, notice is given to responsible and interested agencies, that the Riverside County Planning Department plans to oversee the preparation on an Environmental Impact Report for the above-described project. The purpose of this notice is to solicit guidance from your agency as to the scope and content of the environmental information to be included in the EIR. Information in that regard should be submitted to this office as soon as possible, but **not later than thirty (30) days** after receiving this notice.

Attached is a copy of the issues to be included in the draft EIR. If you have any questions please contact Paul Rull, Project Planner at 951-955-0972

Sincerely,

RIVERSIDE COUNTY PLANNING DEPARTMENT
Carolyn Syms Luna, Director

_____
Pau Rull, Project Planner

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Riverside Office · 4080 Lemon Street, 12th Floor
P.O. Box 1409, Riverside, California 92502-1409
(951) 955-3200 · Fax (951) 955-1811

Desert Office · 38686 El Cerrito Road
Palm Desert, California 92211
(760) 863-8277 · Fax (760) 863-7555

A.2 - Scoping Comments April 2013

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RIVERSIDE COUNTY
PLANNING DEPARTMENT

Memorandum

DATE: April 22, 2013

TO: EIR Consultant: MBA

FROM: Paul Rull, Project Manager

RE: **April 22, 2013 Director Hearing meeting for Agenda Item 3.1: Scoping Session for Environmental Impact report No. 534**

The following public comments were raised during the scoping session meeting that was held on April 22, 2013:

Name	Contact	Position	Comment
Susan Pratt	10711 Fabian Lane, Cherry Valley CA 92223	Opposed	Project not consistent with rural community. Concerns with traffic, noise, air quality, land use compatibility, hazardous materials, water quality. Referenced nearby residential planned community that incorporated rural elements into the project design.
Jerry Guarracino	City of Calimesa	Neutral	Job creation is a benefit. Concerned with traffic to Cherry Valley Blvd and Singleton Road. Would like to know more information on timing of improvements. The EIR should identify the project's impact on maintenance and cost of services i.e. police, fire, road maintenance. Protection of dark skies and rural area. Two residential projects (Osborne+Holbert) west of the I-10 Gateway center; concerned about how those projects take access through the I-10 Gateway project. EIR should identify environmental justice with jobs created from the project going to the surrounding local residents.

In addition, several comments were received by the Planning Department during the noticing of the project's scoping session and they are as follows:

From: composerx [composerx@verizon.net] Sent: Mon 4/22/2013 6:59 AM
To: Rull, Paul
Cc:
Subject: cherry valley

There is absolutely NO resident living in cherry valley that will put up with this gateway project .. This is a rural , horse riding , quiet area that will not tolerate any giant industrial complex placed here . Put this project in an area that is defined for industrial buildings. This is not the proper place for this and residents will fight this as they have fought to keep this area rural for 40 yrs.
Hundreds of trucks coming in and out of cherry valley blvd. is absolutely absurd . There is a future housing development that will be going in across the street from this . They will not put up with this being across the street . Nobody will buy a house having to look at this monster . There is also no water for any project of this size .

From: goebelsusa@earthlink.net Sent: Mon 4/22/2013 3:06 PM
To: Rull, Paul
Cc:
Subject: Gateway Center

The proposed Gateway Center development is not compatible with the residential/rural community of Cherry Valley.

2.5 million square feet = **57 acres under roof !** A development of this size will adversely impact the traffic, pollute the air, create an eyesore and, last but not least, will crush property values.

Philipp Goebels
Cherry Valley

From: Adam Sampson [adamtsampson@gmail.com] Sent: Mon 4/22/2013 8:11 PM
To: Rull, Paul
Cc:
Subject: ATTN Paul Rull

Hello,

My name is Adam Sampson. I am a retired US Army veteran who is moving into the Cherry Valley area in June of this year. I just read about the 2.5 million sq ft industrial building that is being considered about 2 miles away from my home that I am the owner of. I must first say I believe this will make the area look horrible. My family and I want to make our home in a clean and waste free area and Cherry Valley/Beaumont is where we believed to be the place we could raise our 6, 4, 2 year old children for years to come. I must say that something of this size right next to a freeway would take away from the rural environment that I want as a homeowner.

I understand that the city and county would like to make money to help the city thrive but this looks like a really dumb idea and I couldn't see any high paying jobs coming from it. Most likely a bunch of 10-12 dollar an hour jobs to help keep the community in borderline poverty. I want more from the elected officials in Riverside county and the city of Beaumont. I have not read good things about the way they act in the community towards other elected officials, such as the pissing contest they all got into during the November 2012 elections.

I, for one, will most likely sell my home before I can live 5 years in it if this thing is erected so close to the freeway which is going to lead to larger amounts of traffic and pollution from big rigs and whatever that industrial plant might actually be for and who will own and operate it. I will be looking closely into the development of this project, and I will be looking into other areas that are near Newport Beach and cities that already have the pollution problems and traffic problems that are not rural areas because what you're going to be doing is opening up a floodgate to other developers to fill up the rural areas because everything west is already filled up.

Good luck keeping residents and building more homes in this area. I am sure I am not alone. I do hope my comments can be given during your meetings as I encourage you to do so.

Thank you for your time.
--
Adam Sampson
(303) 946-7910
adamtsampson@gmail.com

From: typltd1@aol.com Sent: Mon 4/22/2013 7:52 PM
To: Rull, Paul
Cc:
Subject: Cherry Valley

Dear Mr Rull,
We live in a peaceful rural area by choice. The reason we live here is because we do not want to live in a busy city or housing development. We garden and eat off our lands, use our area as a park and choose to live a simple country life. By allowing this industrial park in our area you will greatly affect our quality of life. We abide by the 1acre rule with our houses and expect everyone else in Cherry Valley to abide by the rule as well. We are an area with lots of wildlife that will be endangered by this project. We had to have a study for kangaroo rats before we built our home on the land my husband was raised on. We have fought for years to not be annexed by any of the cities around us. In their growth they have hurt our home values, created too much traffic, ruined our schools with gangs, crime has gone up and pollution and trash have come our way.
Surely you can find another area that will welcome the tax revenue. Please kindly forget about our quaint little are as there are not many left in Southern California.

Respectively, Dusty and Melissa Hanvey
Cherry Valley
Sent from my iPad

From: Jeff E. [jpekls@aol.com] Sent: Mon 4/22/2013 4:06 PM
To: Rull, Paul
Cc:
Subject: I-10 Gateway Center

Hello Mr. Paul Rull,

I could not make it to the mid-day meeting but I would like to express my concerns regarding the I-10 Gateway Center.

Presently, the I-10 Freeway exchange at Cherry Valley Blvd. is not able to handle the proposed heavy truck traffic. I am also concerned that the heavy truck traffic will adversly efffect our air quality.

Would the center be connected to a sewer system or use septic tanks? There is justifiable concern in Cherry Valley about high nitrates in our ground water.

Aside from obvious benefit of new jobs, I don't see how the Gateway Center would be beneficial to a residential community like Cherry Valley. Residents here, like myself, want to maintain the ruralness and open spaces. The idea of building a massive industrial complex on 230 acres next to the entrance to this beautiful open space community would be a bad idea and could adversely affect our property values.

Respectfully,

Jeff Elser
Cherry Valley, CA

From: Seleste Sabatino-King [pixie671@gmail.com] Sent: Mon 4/22/2013 10:10 PM
To: Rull, Paul
Cc:
Subject: Cherry Valley

Seriously... You really need to stay out of Cherry Valley with your Industrial development. It is disgusting that you have to cover every piece of open land you can find with more buildings and houses and ruin everything. Enough is enough and I can guarantee that all of us in Cherry Valley are going to fight it tooth and nail.
My family and I have been here since the early 1940's and I have already seen enough damage to this whole area. I'll be damned if I sit back and watch you and the planning dept come in and trash it more.

Sincerely,

Seleste Dunn(Sabatino)
Cherry Valley Lifer

From: LadySJ10@aol.com Sent: Mon 4/22/2013 4:53 PM
To: Rull, Paul
Cc:
Subject: Cherry Valley warehouse project

Mr. Rull,

My family is against this proposed warehouse project 100%. Cherry Valley Blvd is the main road in and out of our area, and this kind of building would have destructive impacts on our traffic and environment. It would be akin to causing all residents of Ontario to have to drive through one of their industrial complexes every single time they needed to go out on the freeway. The open space and rolling hills of the Blvd that one is treated to once off the freeway is unique, and is the reason many people chose this area to live in. Building giant warehouses in that area will change our entire way of life, ruining the unspoiled view that makes this our home.

The California Employment Development Department reports that these warehouse complexes bring no real benefit for a community; on the contrary, the jobs they offer are mostly low paying and without benefits. This is a rural area with orchards and horse property, with older citizens and established families. The type of job opportunities these warehouses offer will hold no attraction to the local population. The judgement to then build them here rather than in an area where there is a populace that would embrace the level of employment they offer is deeply flawed. We will only end up with the traffic, air, and sight pollution from this project, which will lower our property values, driving out existing homeowners and attracting a poorer subset of residents.

This is not what I expect from Riverside County Supervisors. They have lost the capacity to see that they are now willing to destroy their constituents' quality of life in exchange for a substandard money making opportunity, which will do more long term damage to the area they represent than the economy ever could. If this project passes, I will not have to worry very long about voting Mr. Ashley out of office; only for as long as it takes to sell my home. That is, IF anyone will want to buy it knowing that these warehouses are going to be built nearby. Please record my family's very vocal NO into your collection of resident feedback on this project.

Shirleyjean Heyne
Keith Heyne
Sara M. Williams

9634 Oak Glen Road
Cherry Valley, CA

From: Steve Mehlman [smehl1506@aol.com] Sent: Mon 4/22/2013 8:35 AM
To: Rull, Paul
Cc:
Subject: I10 Gateway Center

Dear Mr. Rull:

Learned about this project from the Beaumont/Banning Patch.

My major concern would be with the traffic at the Cherry Valley Boulevard/I-10 interchange. What is being proposed to upgrade that interchange to handle the increased big rig traffic?

Thanks.

Steve Mehlman
Beaumont

From: patsy [patsydol@verizon.net] Sent: Thu 4/18/2013 1:37 PM
To: Rull, Paul
Cc:
Subject: Report No. 534 - Gateway center

Mr. Rull:
My name is Patsy Reeley. I am President of Cherry Valley Acres & Neighbors (CVAN), an organization that represents over 300 families in Cherry Valley that are concerned with keeping the area rural.
The proposed Gateway Center is NOT something that would be fitting for the ?gateway? to the Community of Cherry Valley for the following reasons:
? The freeway interchange is not adequate for the amount of truck traffic this project will produce ? The emissions from the trucks will greatly effect the quality of our air ? Over 2 million sq.ft. of box buildings do not belong in a residential area!
? The Project is in a flood zone
? The Project does not benefit the residents of Calimasa or Cherry Valley ? This Project would decrease the value of surrounding residential homes The City of Beaumont welcomes this type venture and there is land available off the 60 Highway for projects such as this.

You replied on 4/23/2013 7:22 AM.
From: RSO1268@aol.com Sent: Tue 4/23/2013 7:22 AM
To: Rull, Paul
Cc:
Subject: Cherry Valley Industrial Center Project Comment

Dear Mr. Rull -

According to the PE Article, this is simply in the exploratory phase, but not too early to emphasize that any development of the land east of the I-10 Freeway on Cherry Valley Blvd will, and foremost, require a complete redesign and overall of the I-10/Cherry Valley Blvd freeway overpass (on ramps/off-ramps) to handle any resulting increase in traffic (especially truck traffic as the location of stop signs/lack of signal controls, length of off-ramps, width of Cherry Valley Blvd. is not conducive with slow moving, lane-hogging trucks).

Your challenge will be made difficult by much of this area being City of Calimesa, with influence on the City of Beaumont, and CalTrans. This overpass has been a death trap ever since they allowed for the Fairway Canyon development west of the I-10 Freeway without requiring an upgrade to this freeway overpass. Its an absolute mess with Calimesa Blvd intersecting Cherry Valley Blvd just east of the Freeway, and Roberts Rd., intersecting Cherry Valley Blvd just west of the Freeway, with no signal controls so trying to exit either direction off of the I-10 Freeway or cross the overpass at peak traffic hours is like trying to play the game "Frogger." You take your life into your hands. My daughter was broad-sided and injured by a driver exiting the freeway who did not understand that cross traffic did not have to stop a second time at the freeway on/off ramp (after stopping at Roberts Rd) and was nearly broad-sided again last week. East bound traffic over the overpass traveling at speed makes it nearly impossible to look left, look right, look left and then turn left without getting hit as you try to turn left from the northbound exit of the I-10 Freeway at Cherry Valley Blvd. That is because in the time it takes to look all directions traffic that is not initially visible, appear at the crest of the overpass traveling at speed, and drivers exiting have a fraction of a second to stop before pulling out from a dead stop. I have had numerous near misses and there have been countless accidents.

In short, we're in need of an overhaul of this overpass now! There is no way that this consideration could not be number one priority if evaluating any development of the land east of the freeway that would bring any additional traffic to the area. Unfortunately all parties involved (Calimesa, Caltrans and Beaumont) have all waited for a development to come along to pay for it while local residents who are some of the highest taxed in the county (2.2%) are made to suffer.

Thanks for listening...

Regards,

Ross K

CITY OF BEAUMONT

April 11, 2013

County of Riverside
Planning Department
Attn: Paul Rull, Project Planner
P.O. Box 1409
Riverside, CA 92502-1409

Re: Comments – I-10 Gateway Job Center (Warehouse/Distribution Complex)– Case #PP25337 - General Plan Amend. No. 1079, Change of Zone No. 7799, Parcel Map No. 36564, Plot Plan No. 25337

Dear Paul Rull:

The City of Beaumont has reviewed the site plan exhibit for the **I-10 Gateway Job Center – Case #PP25337**, and the City supports projects that generate economic activity, such as this proposal; however, the City is concerned that the proposed two-building distribution/warehouse complex would not be a compatible use for this area.

To the south of the proposal, currently there is the approved Sunny-Cal Specific Plan, which would be directly across the street from this proposal. The Sunny-Cal Specific Plan was approved for 560 Single-Family Homes, with a minimum of 20,000 Square Foot Lots, on the lots that are adjacent to Cherry Valley Blvd, across from this project. Conceivable incompatibilities could include issues relating to noise, traffic, air quality, road circulation, etc.

Additionally, the character of Cherry Valley is rural residential in nature and this proposal would be an isolated industrial park, with no similar projects adjacent too, or within the vicinity of this proposal. It seems that this use could be classified as "Spot Zoning", which is generally not a recommended land use practice.

Lastly, there was no discussion, within the transmittal, of what type of Environmental Analysis has been completed so far, if at all, in relation to the proposal. The City of Beaumont would like to review this document when available.

Thank you for the opportunity to comment on this proposed project. If you have any further questions regarding the above mention item, please feel free to contact us here at the Planning Department at (951) 769-8518.

Sincerely,

Chris Tracy, AICP
Associate Planner

550 E. 6th Street • Beaumont • CA • 92223 • Phone: (951) 769-8520 • Fax: (951) 769-8526
www.ci.beaumont.ca.us

April 30, 2013

Attn: Paul Rull, Project Planner
Riverside County Planning Department
P.O. Box1409
Riverside, CA 92502-1409

SOBOBA BAND OF LUISEÑO INDIANS
EST. JUNE 19, 1883

Re: I-10 Gateway Center, EIR 534

The Soboba Band of Luiseño Indians appreciates your observance of Tribal Cultural Resources and their preservation in your project. The information provided to us on said project has been assessed through our Cultural Resource Department, where it was concluded that although it is outside the existing reservation, the project area does fall within the bounds of our Luiseño Tribal Traditional Use Areas.

Soboba Band of Luiseño Indians is requesting the following:

1. To initiate a consultation with the Project Developer and Land owner.

2. The transfer of information to the Soboba Band of Luiseno Indians regarding the progress of this project should be done as soon as new developments occur.

3. Soboba Band of Luiseño Indians continues to act as a consulting tribal entity for this project.

4. Working in and around traditional use areas intensifies the possibility of encountering cultural resources during the construction/excavation phase. For this reason the Soboba Band of Luiseño Indians requests that Native American Monitor(s) from the Soboba Band of Luiseño Indians Cultural Resource Department to be present during any ground disturbing proceedings. Including surveys and archaeological testing.

5. Request that proper procedures be taken and requests of the tribe be honored (Please see the attachment)

Sincerely,

Joseph Ontiveros
Director of Cultural Resources
Soboba Band of Luiseño Indians
P.O. Box 487
San Jacinto, CA 92581
Phone (951) 654-5544 ext. 4137
Cell (951) 663-5279
jontiveros@soboba-nsn.gov

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MAY 06 2013
COUNTY OF RIVERSIDE

Cultural Items (Artifacts). Ceremonial items and items of cultural patrimony reflect traditional religious beliefs and practices of the Soboba Band. The Developer should agree to return all Native American ceremonial items and items of cultural patrimony that may be found on the project site to the Soboba Band for appropriate treatment. In addition, the Soboba Band requests the return of all other cultural items (artifacts) that are recovered during the course of archaeological investigations. Where appropriate and agreed upon in advance, Developer's archeologist may conduct analyses of certain artifact classes if required by CEQA, Section 106 of NHPA, the mitigation measures or conditions of approval for the Project. This may include but is not limited or restricted to include shell, bone, ceramic, stone or other artifacts.

The Developer should waive any and all claims to ownership of Native American ceremonial and cultural artifacts that may be found on the Project site. Upon completion of authorized and mandatory archeological analysis, the Developer should return said artifacts to the Soboba Band within a reasonable time period agreed to by the Parties and not to exceed (30) days from the initial recovery of the items.

Treatment and Disposition of Remains.

A. The Soboba Band shall be allowed, under California Public Resources Code § 5097.98 (a), to (1) inspect the site of the discovery and (2) make determinations as to how the human remains and grave goods shall be treated and disposed of with appropriate dignity.

B. The Soboba Band, as MLD, shall complete its inspection within twenty-four (24) hours of receiving notification from either the Developer or the NAHC, as required by California Public Resources Code § 5097.98 (a). The Parties agree to discuss in good faith what constitutes "appropriate dignity" as that term is used in the applicable statutes.

C. Reburial of human remains shall be accomplished in compliance with the California Public Resources Code § 5097.98 (a) and (b). The Soboba Band, as the MLD in consultation with the Developer, shall make the final discretionary determination regarding the appropriate disposition and treatment of human remains.

D. All parties are aware that the Soboba Band may wish to rebury the human remains and associated ceremonial and cultural items (artifacts) on or near, the site of their discovery, in an area that shall not be subject to future subsurface disturbances. The Developer should accommodate on-site reburial in a location mutually agreed upon by the Parties.

E. The term "human remains" encompasses more than human bones because the Soboba Band's traditions periodically necessitated the ceremonial burning of human remains. Grave goods are those artifacts associated with any human remains. These items, and other funerary remnants and their ashes are to be treated in the same manner as human bone fragments or bones that remain intact

Coordination with County Coroner's Office. The Lead Agencies and the Developer should immediately contact both the Coroner and the Soboba Band in the event that any human remains are discovered during implementation of the Project. If the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, the Coroner shall ensure that notification is provided to the NAHC within twenty-four (24) hours of the determination, as required by California Health and Safety Code § 7050.5 (c).

Non-Disclosure of Location Reburials. It is understood by all parties that unless otherwise required by law, the site of any reburial of Native American human remains or cultural artifacts shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, parties, and Lead Agencies, will be asked to withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code § 6254 (r).

Ceremonial items and items of cultural patrimony reflect traditional religious beliefs and practices of the Soboba Band. The Developer agrees to return all Native American ceremonial items and items of cultural patrimony that may be found on the project site to the Soboba Band for appropriate treatment. In addition, the Soboba Band requests the return of all other cultural items (artifacts) that are recovered during the course of archaeological investigations. Where appropriate and agreed upon in advance, Developer's archeologist may conduct analyses of certain artifact classes if required by CEQA, Section 106 of NHPA, the mitigation measures or conditions of approval for the Project. This may include but is not limited or restricted to include shell, bone, ceramic, stone or other artifacts.

A.3 - Notice of Preparation (NOP) January 2014

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RIVERSIDE COUNTY
PLANNING DEPARTMENT

Carolyn Syms Luna
Director

Agency Notice of Preparation of a Draft Environmental Impact Report

DATE: January 6, 2013

TO: Responsible Agencies
Organizations
Interested Parties

PROJECT CASE NO./TITLE: Project Title: I-10 Gateway Center Project

Case Numbers:
- General Plan Amendment No. 1079
- Change of Zone No. 7799
- Parcel Map No. 36564
- Plot Plan No. 25337
- Environmental Impact Report No. 534

A description of each application is listed below:

General Plan Amendment (GPA1079) – proposes to change the current General Plan Land Use designation from Community Development: Very Low Density Residential (CD: VLDR) and Rural: Rural Mountainous (R: RM) to Community Development: Light Industrial (CD: LI) and Rural: Rural Mountainous (R: RM). In addition, the proposed project would require this General Plan amendment to adjust the boundary of the Cherry Valley Gateway Policy Area because the applicant is requesting to remove the project from the Cherry Valley Gateway Policy Area.

Change of Zone (CZ7799) – proposes to change the existing zoning from Controlled Development Areas (W-2) to Industrial Park (I-P).

Parcel Map (PM36564) – proposes to create three industrial parcels.

Plot Plan (PP25337) – proposes to construct an industrial distribution facility consisting of two industrial buildings totaling 2,560,000 square feet, with 428 bay doors.

Environmental Impact Report No. 534 – provides an environmental analysis of the potential impacts of the proposed project. The Environmental Issues section below provides additional detail regarding enviornmental issues that will be addressed in the Draft Environmental Impact Report.

PROJECT LOCATION:
The proposed I-10 Gateway Center project (project) is located in Township 2 south, Range 1 west, Section 30, along the north side of Cherry Valley Boulevard and east of the Interstate 10 Freeway (I-10), between the Cities of Calimesa and Beaumont, in the unincorporated area of Riverside County, California (see Exhibit 1 and Exhibit 2). The project has regional access via Cherry Valley Boulevard to the I-10 Freeway, and local access via Cherry Valley Boulevard, Brookside Avenue, and Oak Valley Parkway.

The project, which comprises approximately 246.5 acres, is vacant and is generally located within the Riverside County unincorporated community of Cherry Valley. Approximately 16.5 acres of the western portion of the project is located within the City of Calimesa, although no buildiings would be constructed in this area. As depicted on Exhibit 2, the City of Beaumont is located south of the project, the City of Calimesa is located directly west and northwest of the site. The City of Yucaipa is located approximately two miles north of the site. Access to the site is off Cherry Valley Boulevard. The Assessor Parcel Numbers for the project are 407-220-004, 407-220-007, 407-220-008, 407-220-009, 407-220-014, 407-220-016, 413-270-012, 413-270-013, and 407-220-017.

PROJECT DESCRIPTION:
Approximately 171.1 acres of the 246.5 acre project would be included within the developed portion of the project. The remaining 74.8 acres would remain as open space (approximately 30.3 percent of the project). The project consists of two (2) industrial buildings that will have sizes of approximately 960,000 square feet and 1,600,000 square feet for a total of approximately 2,560,000 square feet of floor area.

The project plan is depicted on Exhibit 3. Both buildings are planned as “high-cube” logistics uses for the distribution of goods. Both buildings would be up to approximately 47 feet in height. Three access points are proposed off Cherry Valley Boulevard. The primary access point is proposed as a signalized intersection, and will be located in the mid-portion of the project between Building 1 and Building 2.

Water quality basins and improved drainage channels will be constructed to the west of Building 1. A concrete drainage channel will be located north of Buildings 1 and 2. Additionally, a grouted riprap berm and a water quality infiltration trench will be located north of Building 2. Riprap berms will be located east of Building 2 and two water quality basins are planned south of Buildings 1 and 2, paralleling Cherry Valley Boulevard. Additionally, a concrete drainage channel will be located south of the water quality basins and north of Cherry Valley Boulevard.

Existing drainage flows from offsite areas to the north and east of the project, as well as runoff from the undeveloped portions of the site, would be conveyed through the site in concrete drainage channels and conveyed offsite on the west side of the property. Onsite runoff will be treated in the water quality infiltration trench located north of Building 2 and in two water quality basins located on the south side of the project.

Water and sewer service for the project will be provided by the Yucaipa Valley Water District (YVWD). In order to provide service to the project, the construction of off-site water and sewer lines in Cherry Valley Boulevard and Calimesa Boulevard will be needed. The project is currently outside the boundaries of the YVWD; therefore, an application for annexation into the YVWD will be filed with the San Bernardino County Local Agency Formation Commission (LAFCO). Two water storage reservoirs, each with a one million gallon capacity, are proposed as part of the project on the northeastern portion of the project. One of the reservoirs will be used for reclaimed water storage and one reservoir will be used for potable water storage.

Project grading activities would involve onsite cut of approximately 6 million cubic yards (cy) and fill of approximately 6 million cy. The site is designed for an earthwork balance and no import or export of soils

will be needed. Limited off-site improvements will be needed along the east boundary of the project for grading and drainage improvements, as well as access right-of-way.

There are three ephemeral drainages that traverse the project from east to west and northeast to southwest. Ephemeral drainages are drainages with water flows that generally occur for only a short period after a rain event. Although all on-site drainages are ephemeral and do not support wetland vegetation, there are some limited areas of the project that contain Waters of the U.S. and Waters of the State. Therefore implementation of the project would require securing a Federal Section 404 permit and a State Section 1602 Streambed Alteration Agreement.

Land use approvals needed to implement the project include: a Plot Plan; a Tentative Parcel Map; a zone change; and two General Plan Amendments. According to the County of Riverside General Plan, the project is currently designated as Very Low Density Residential (VLDR), and Rural Mountainous (RM) along the northern, steeper portion of the site. A General Plan Amendment is proposed to change the Land Use designation from VLDR to Light Industrial (LI) for approximately 155.2 acres. The General Plan land use designation for the 16.5 acres located within the City of Calimesa, which is Rural Living (RL), would not be changed, nor would the VLDR & RM designations for the 74.8 acres that would remain as open space. The applicant is also requesting a General Plan Amendment to remove the project from the Cherry Valley Gateway Policy Area.

The project also includes a Change of Zone from Controlled Development (W-2) to Industrial Park (I-P) to be consistent with the General Plan Amendment for the 155.2 acre to be designated LI. The northern portion of the project that would remain as open space would remain zoned W-2, and the current zoning for that portion of the project within theh City of Calimesa would remain RL.

ENVIRONMENTAL ISSUES:
CEQA Guidelines section 15063 provides that if a Lead Agency determines that an EIR will clearly be required for a project, an Initial Study is not required. The EIR that will be prepared for the proposed project is a full scope EIR including all of the CEQA Guidelines Appendix G topical issue areas. Potential impacts associated with environmental resource areas that will be analyzed in the EIR include those listed below. A full scope EIR is proposed, so there are no environmental topics that have been screened out from reivew in the Draft EIR.

- Aesthetics
- Agriculture and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology/Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology/Water Quality
- Land Use/Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation/Traffic
- Utilities/Service Systems

The EIR will address the short-term and long-term effects of the project on the environment. The EIR will also evaluate the potential for the project to cause direct and indirect growth-inducing impacts, as well as cumulative impacts. Alternatives to the proposed project that may reduce impacts determined to be significant in the EIR will be evaluated. Mitigation measures will be proposed for those impacts that are determined to be significant. A mitigation monitoring program will also be developed as required by Section 15097 of the California Environmental Quality Act (CEQA) Guidelines.

The environmental determination in this Notice of Preparation is subject to a 30-day public review period pursuant to California Public Resources Code Section 21080.4 and CEQA Guidelines Section 15082. Public agencies, interested organizations, and individuals have the opportunity to comment on the environmental issues that have the potential to be affected by the project and, therefore, should be addressed in the EIR.

LEAD AGENCY:
Riverside County Planning Department
4080 Lemon Street, 12th Floor
P.O. Box 1409
Riverside, CA 92502-1409

Attn: Paul Rull, Project Planner

PROJECT SPONSOR:
Applicant: TSG-Cherry Valley L.P. care of Shopoff Group, L.P.
Contact: Brian Rupp

Address: 2 Park Plaza, Suite 700
Irvine, CA 92614

Pursuant to Riverside County Rules to Implement the California Environmental Quality Act, notice is given to responsible and interested agencies that the Riverside County Planning Department plans to oversee the preparation on an Environmental Impact Report for the above-described project. The purpose of this notice is to solicit guidance from your agency as to the scope and content of the environmental information to be included in the EIR. Information in that regard should be submitted to this office as soon as possible, but **not later than thirty (30) days** after receiving this notice.

If you have any questions, please contact Paul Rull, Project Planner, at 951-955-0972.

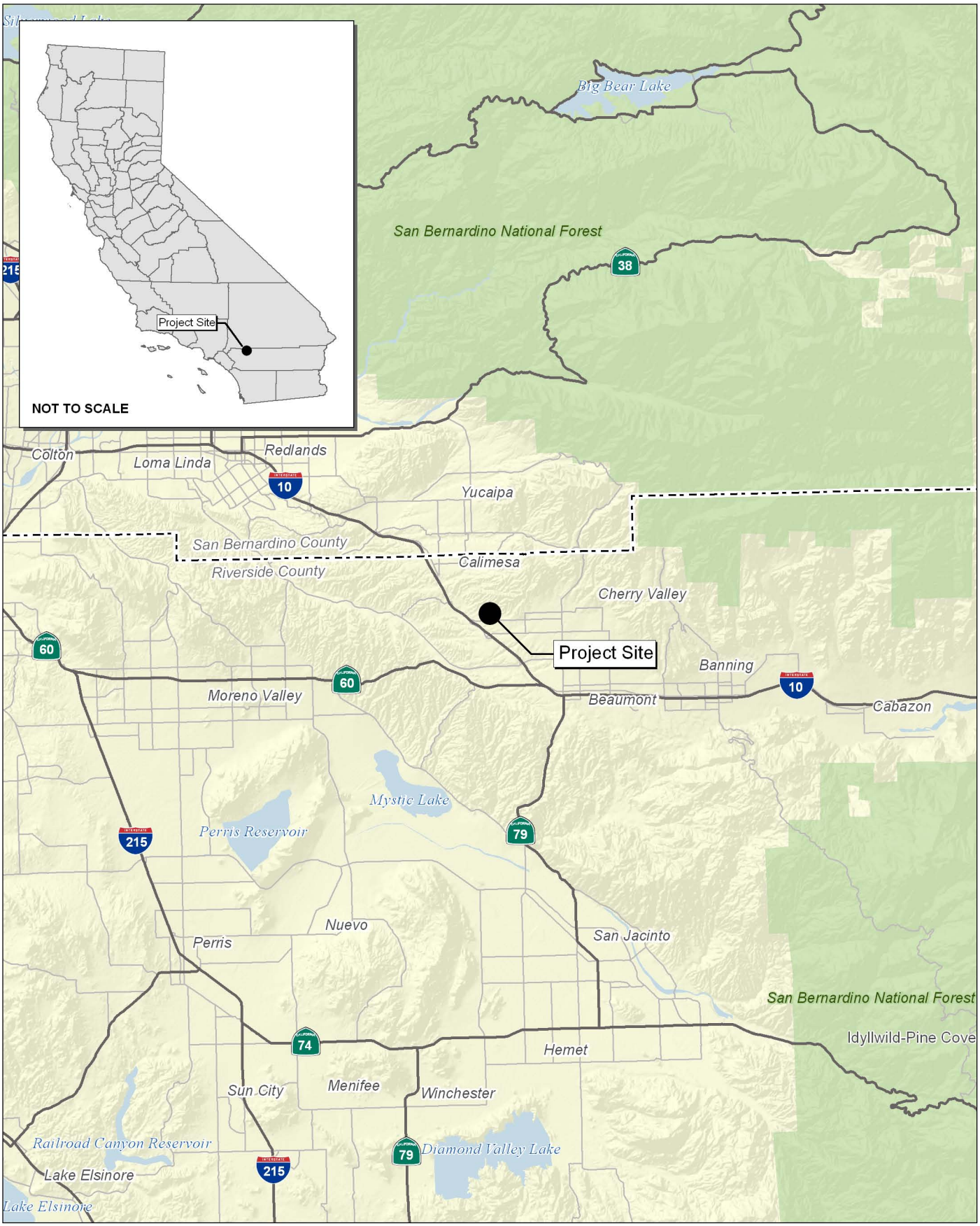
Sincerely,

RIVERSIDE COUNTY PLANNING DEPARTMENT
Carolyn Syms Luna, Director



Paul Rull, Project Planner

S:\34260005 - I-10 Gateway Center\NOP\9-18-13 Draft NOP deliverable to client\4260005 Gateway DRAFT NOP 9.18.13.doc



Source: Census 2000 Data, The CaSIL, MBA GIS 2013.

NORTH

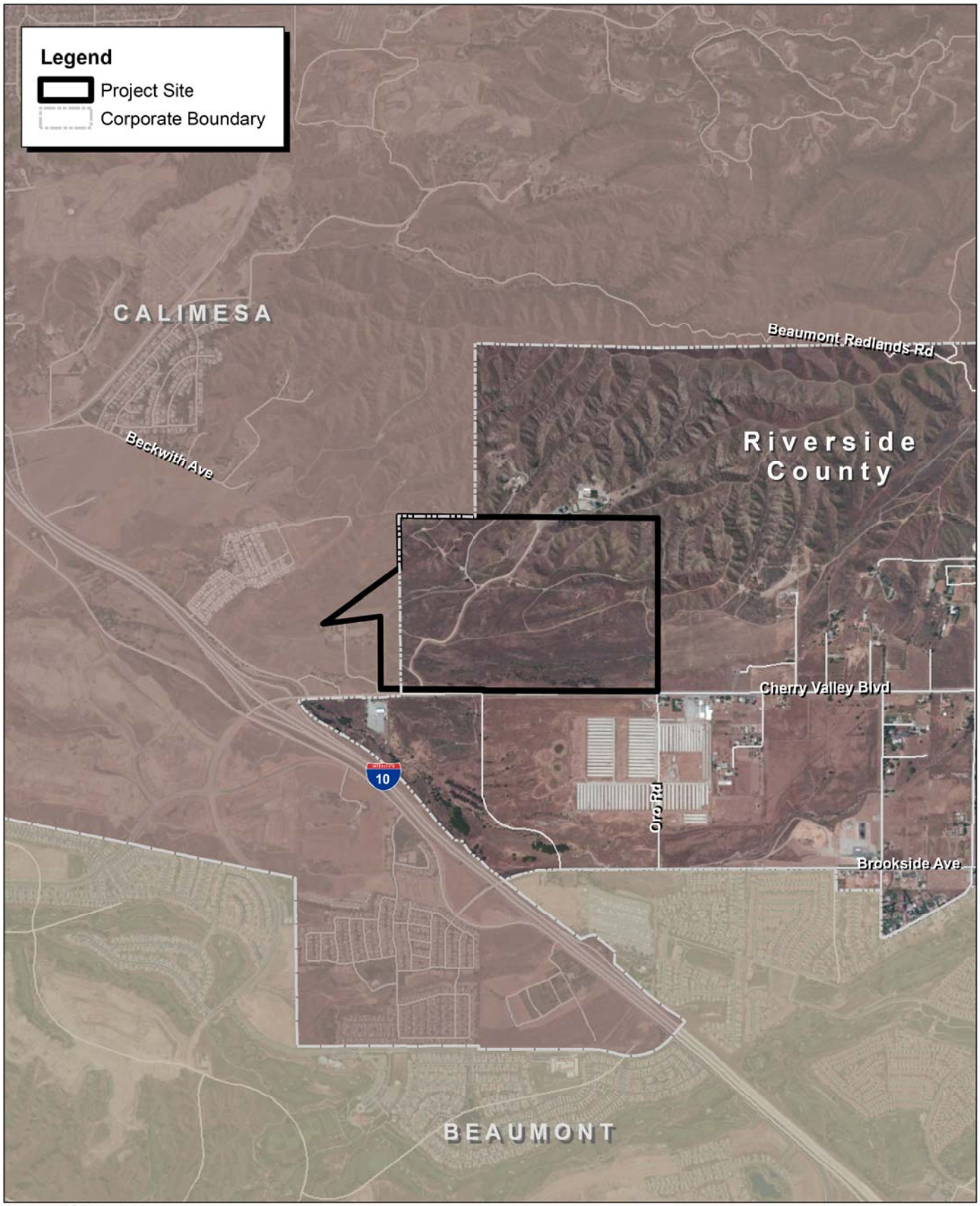
5 2.5 0 5 Miles

Michael Brandman Associates

Exhibit 1
Regional Location Map

34260005 • 04/2013 | 1_regional.mxd

TSG CHERRY VALLEY LP • I-10 GATEWAY CENTER
NOTICE OF PREPARATION FOR EIR NO. 534
CVAR_08312



Source: ESRI Aerial Imagery.

NORTH

2,000 1,000 0 2,000

Feet

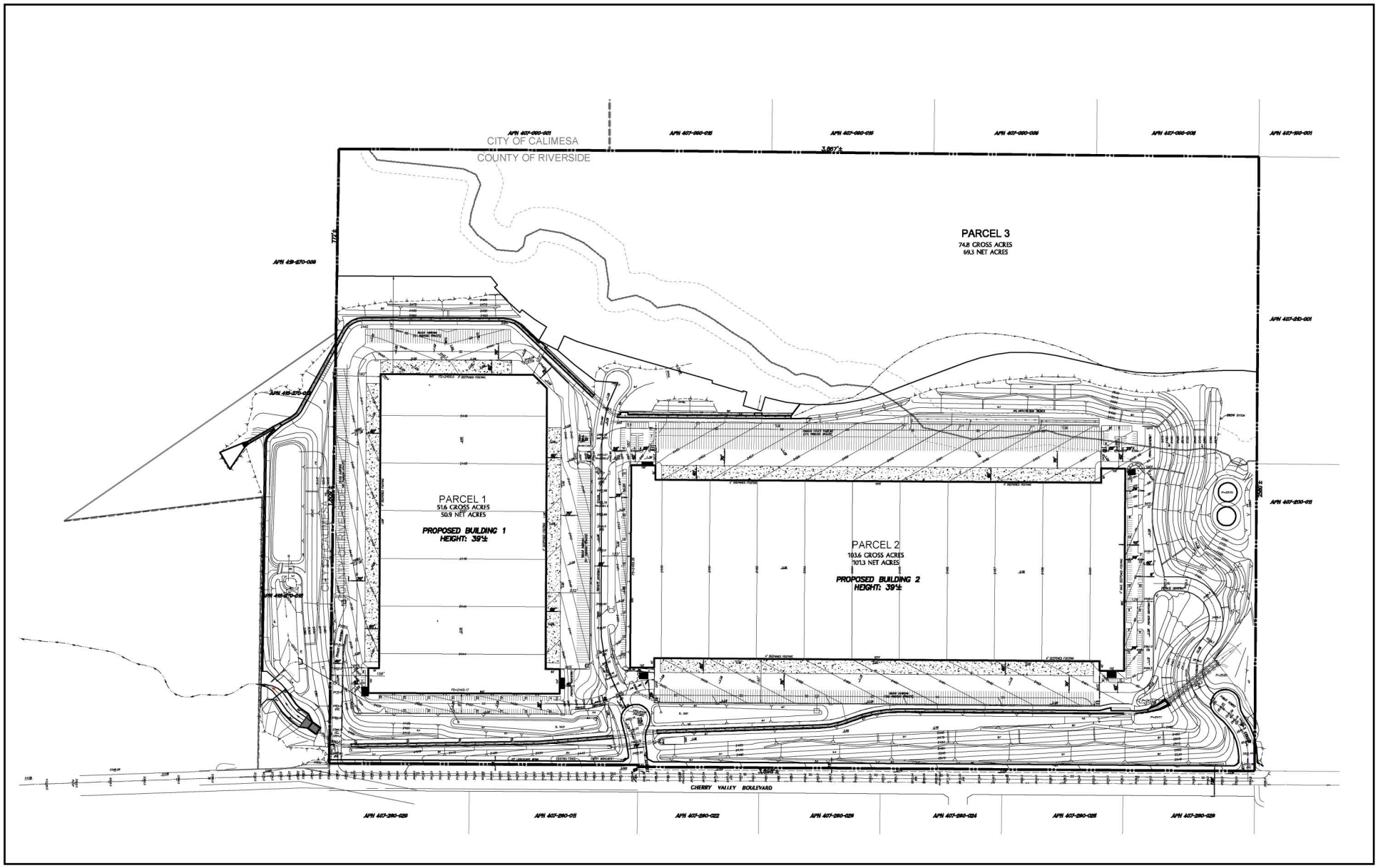
Michael Brandman Associates

Exhibit 2
Local Vicinity Map
Aerial Base

34260005 • 07/2013 | 2_local_aerial.mxd

TSG CHERRY VALLEY LP • I-10 GATEWAY CENTER
NOTICE OF PREPARATION FOR EIR NO. 534

CVAR_08313



Source: Hunsaker & Associates Inc., 2013.

NORTH

Michael Brandman Associates

34260005 • 09/2013 | 3_site_plan.cdr

Exhibit 3
Site Plan

TSG CHERRY VALLEY LP • I-10 GATEWAY CENTER
NOTICE OF PREPARATION FOR EIR NO. 534

CVAR_08314

NOTICE OF SCOPING SESSION

A SCOPING SESSION has been scheduled before the **RIVERSIDE COUNTY PLANNING DIRECTOR** in order to bring together and resolve the concerns of affected federal, state and local agencies, the proponent of the proposed project, and other interested persons; as well as inform the public of the nature and extent of the proposed project indicated below, and to provide an opportunity to identify the range of actions, alternatives, mitigation measures, and significant effects to be analyzed in depth in the EIR and help eliminate from detailed study issues found not to be important.

The Scoping Session is **not** a public hearing on the merit of the proposed project and **NO DECISION** on the project will be made. **Public testimony is limited to identifying issues regarding the project and potential environmental impacts.** The project proponent will not be required to provide an immediate response to any concerns raised. The project proponent will be requested to address any concerns expressed at the Scoping Session, through revisions to the proposed project and/or completion of a Final Environmental Impact Report, prior to the formal public hearing on the proposed project. Mailed notice of the public hearing will be provided to anyone requesting such notification.

ENVIRONMENTAL IMPACT REPORT NO.: **534** STATE CLEARINGHOUSE NO.: **N/A**

PROJECT CASE NO(S). / TITLE: **I-10 Gateway Center,** Applicant: TSG Cherry Valley, LLP. – Fifth/Fifth Supervisorial District.

PROJECT LOCATION: Northerly Cherry Valley Boulevard, easterly of Interstate-10 and westerly Vineland Street – 230.0 Gross Acres.

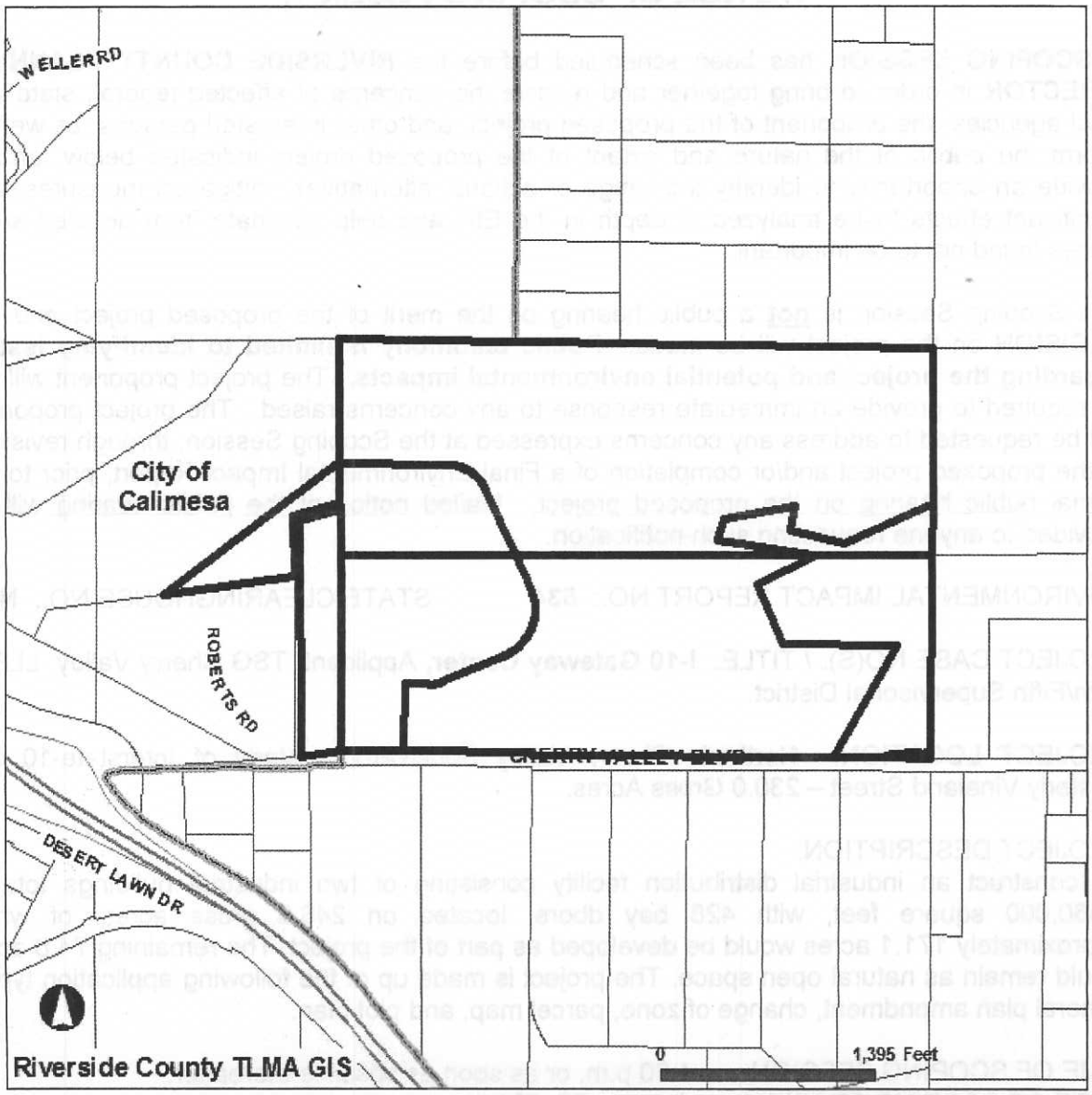
PROJECT DESCRIPTION:
To construct an industrial distribution facility consisting of two industrial buildings totaling 2,560,000 square feet, with 428 bay doors, located on 246.5 gross acres, of which approximately 171.1 acres would be developed as part of the project. The remaining 74.8 acres would remain as natural open space. The project is made up of the following application types: general plan amendment, change of zone, parcel map, and plot plan.

TIME OF SCOPING SESSION:	1:30 p.m. or as soon as possible thereafter.
DATE OF SCOPING SESSION:	January 27, 2014
PLACE OF SCOPING SESSION:	County Administrative Center 1st Floor, Conference Room 2A Riverside, CA 92501

Please send all written correspondence to:
RIVERSIDE COUNTY PLANNING DEPARTMENT
Attn: Paul Rull
P.O. Box 1409, Riverside, CA 92502-1409

For further information regarding this project, please contact project planner, Paul Rull at (951) 955-0972, or e-mail prull@rctlma.org.

RIVERSIDE COUNTY GIS



Selected parcel(s):
407-220-004 407-220-007 407-220-008 407-220-009 407-220-014 407-220-016 407-220-017 413-270-012 413-270-013

IMPORTANT
Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

REPORT PRINTED ON...Wed Dec 18 13:39:58 2013
Version 131127

CVAR_08316

RIVERSIDE COUNTY PLANNING DEPARTMENT
COUNTY ADMINISTRATIVE CENTER
P.O. BOX 1409 • 4080 LEMON STREET • TWELFTH FLOOR
RIVERSIDE, CALIFORNIA 92502-1409

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DEC 2 3 2013

PRESORTED
FIRST CLASS

UNITED STATES POSTAGE
PITNEY BOWES
02 1R $ 00.40[5]
0002004053 DEC 19 2013
MAILED FROM ZIPCODE 92504

PUBLIC HEARING NOTICE – THIS MAY AFFECT YOUR PROPERTY

ATTN: Brian Rupp
The Shopoff Group, L.P
2 Park Plaza, Suite 700
Irvine CA 92614

KV1-LMB 92614

CVAR_08317

A.4 - Scoping Meeting Documents January 2014

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SPEAKER IDENTIFICATION FORM
Riverside County Planning Commission or Director's Hearing

Submit request at Planning Commission to the Hearing Secretary or at Director's Hearing to the Case Planner.

Speakers are permitted to be heard up to three (3) minutes, subject to Public Hearing Rules listed on the reverse side of this form.

Date: 1/27/14 **Agenda #:** 3.1

SPEAKER'S NAME: LLOYD WHITES
(Print Name)

Address: 127 C KATHERINE CT
(Only required if follow-up mail response is requested)

City: BEAUMONT **Zip:** 92223

Phone #: 909-855-3622 **Email:** OURFOCUSOURKIDS@GMAIL.COM

I AM:

- [ ] The Applicant
- [ ] Applicant's Representative
- [x] A Neighbor
- [ ] Other Interested Party
- [ ] The Appellant
- [ ] Respondent

PLEASE STATE YOUR POSITION BELOW:

- [x] **I wish to speak**
- [ ] **I DO NOT wish to speak**

Position on Agenda Item:

- [ ] **In Favor**
- [ ] **Neutral**
- [x] **Opposed**

I give my 3 minutes to: _____

SPEAKER IDENTIFICATION FORM
Riverside County Planning Commission or Director's Hearing

Submit request at Planning Commission to the Hearing Secretary or at Director's Hearing to the Case Planner.

Speakers are permitted to be heard up to three (3) minutes, subject to Public Hearing Rules listed on the reverse side of this form.

Date: _____ **Agenda #:** _____

SPEAKER'S NAME: JOHN CARROLL
(Print Name)

Address: 1165 ~~BEAUMONT~~ LANTANA ~~AVE~~
(Only required if follow-up mail response is requested)

City: BEAUMONT **Zip:** 92229

Phone #: _____ **Email:** JCMENTOR@YAHOO.COM

I AM:

- [ ] The Applicant
- [ ] Applicant's Representative
- [x] A Neighbor
- [ ] Other Interested Party
- [ ] The Appellant
- [ ] Respondent

PLEASE STATE YOUR POSITION BELOW:

- [x] **I wish to speak**
- [ ] **I DO NOT wish to speak**

Position on Agenda Item:

- [ ] **In Favor**
- [ ] **Neutral**
- [x] **Opposed**

give my 3 minutes to: _____

SPEAKER IDENTIFICATION FORM
Riverside County Planning Commission or Director's Hearing

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Speakers are permitted to be heard up to three (3) minutes, subject to Public Hearing Rules listed on the reverse side of this form.

Date: 1/27/14 **Agenda #:** 3.1

SPEAKER'S NAME: Steve Mehlman
(Print Name)

Address: 1736 Desert Almond Way
(Only required if follow-up mail response is requested)

City: Beaumont **Zip:** 92223

Phone #: 951.849.9080 **Email:** smehl1506@aol.

I AM:

- [ ] The Applicant
- [ ] Applicant's Representative
- [x] A Neighbor
- [x] Other Interested Party
- [ ] The Appellant
- [ ] Respondent

PLEASE STATE YOUR POSITION BELOW:

- [x] **I wish to speak**
- [ ] **I DO NOT wish to speak**

Position on Agenda Item:

- [ ] **In Favor**
- [ ] **Neutral**
- [x] **Opposed**

I give my 3 minutes to: _____

SPEAKER IDENTIFICATION FORM
Riverside County Planning Commission or Director's Hearing

Submit request at Planning Commission to the Hearing Secretary or at Director's Hearing to the Case Planner.

Speakers are permitted to be heard up to three (3) minutes, subject to Public Hearing Rules listed on the reverse side of this form.

Date: 1-27-21 **Agenda #:** 3.1

SPEAKER'S NAME: Judith Bingham
(Print Name)

Address: 115 Viele Ave
(Only required if follow-up mail response is requested)

City: Beaumont **Zip:** 92223

Phone #: 909 322-9598 **Email:** judyb115@aol.com

I AM:

- [ ] The Applicant
- [ ] Applicant's Representative
- [x] A Neighbor
- [ ] Other Interested Party
- [ ] The Appellant
- [ ] Respondent

PLEASE STATE YOUR POSITION BELOW:

- [ ] **I wish to speak**
- [ ] **I DO NOT wish to speak**

Position on Agenda Item:

- [ ] **In Favor**
- [ ] **Neutral**
- [x] **Opposed**

I give my 3 minutes to: _____

SPEAKER IDENTIFICATION FORM
Riverside County Planning Commission or Director's Hearing

Submit request at Planning Commission to the Hearing Secretary or at Director's Hearing to the Case Planner.

Speakers are permitted to be heard up to three (3) minutes, subject to Public Hearing Rules listed on the reverse side of this form.

Date: 1-27-14 **Agenda #:** 3.1

SPEAKER'S NAME: LANE BIRKY
(Print Name)

Address: 34378 SHERWOOD DR
(Only required if follow-up mail response is requested)

City: YUCAIPA **Zip:** 92399

Phone #: 951-545-9854 **Email:** _____

I AM:

- [ ] The Applicant
- [ ] Applicant's Representative
- [X] A Neighbor
- [ ] Other Interested Party
- [ ] The Appellant
- [ ] Respondent

PLEASE STATE YOUR POSITION BELOW:

- [X] **I wish to speak**
- [ ] **I DO NOT wish to speak**

Position on Agenda Item:

- [ ] **In Favor**
- [X] **Neutral**
- [ ] **Opposed**

I give my 3 minutes to: _____

SPEAKER IDENTIFICATION FORM
Riverside County Planning Commission or Director's Hearing

Submit request at Planning Commission to the Hearing Secretary or at Director's Hearing to the Case Planner.

Speakers are permitted to be heard up to three (3) minutes, subject to Public Hearing Rules listed on the reverse side of this form.

Date: 1-27-14 **Agenda #:** 3.1

SPEAKER'S NAME: Patsy Reeley
(Print Name)

Address: 10065 Frontier Tr
(Only required if follow-up mail response is requested)

City: Cherry Valley CA **Zip:** 92223

Phone #: 951-845-9833 **Email:** patsy2@verizon.net

I AM:

- ☐ The Applicant
- ☐ Applicant's Representative
- ☒ A Neighbor
- ☐ Other Interested Party
- ☐ The Appellant
- ☐ Respondent

PLEASE STATE YOUR POSITION BELOW:

- ☒ **I wish to speak**
- ☐ **I DO NOT wish to speak**

Position on Agenda Item:

- ☐ **In Favor**
- ☐ **Neutral**
- ☒ **Opposed**

I give my 3 minutes to: _____

SPEAKER IDENTIFICATION FORM
Riverside County Planning Commission or Director's Hearing

Submit request at Planning Commission to the Hearing Secretary or at Director's Hearing to the Case Planner.

Speakers are permitted to be heard up to three (3) minutes, subject to Public Hearing Rules listed on the reverse side of this form.

Date: 1/27/2014 **Agenda #:** 3.1

SPEAKER'S NAME: NANCY CARROLL
(Print Name)

Address: 1165 Lantana
(Only required if follow-up mail response is requested)

City: Beaumont **Zip:** 92223

Phone #: 949 50-3560 **Email:** nancyjeanc@gmail.com

I AM:

- [ ] The Applicant
- [ ] Applicant's Representative
- [x] A Neighbor
- [ ] Other Interested Party
- [ ] The Appellant
- [ ] Respondent

PLEASE STATE YOUR POSITION BELOW:

- [x] **I wish to speak**
- [ ] **I DO NOT wish to speak**

Position on Agenda Item:

- [ ] **In Favor**
- [ ] **Neutral**
- [x] **Opposed**

I give my 3 minutes to: _____

SPEAKER IDENTIFICATION FORM
Riverside County Planning Commission or Director's Hearing

Submit request at Planning Commission to the Hearing Secretary or at Director's Hearing to the Case Planner.

Speakers are permitted to be heard up to three (3) minutes, subject to Public Hearing Rules listed on the reverse side of this form.

Date: JANUARY 27, 2014 **Agenda #:** 3.1

SPEAKER'S NAME: STANLEY ROSS
(Print Name)

Address: 40285 GRAND AVE
(Only required if follow-up mail response is requested)

City: CHERRY VALLEY **Zip:** 92223

Phone #: 760-899-2917 **Email:** ROSSEAST@AOL.COM

I AM:

- [ ] The Applicant
- [ ] Applicant's Representative
- [x] A Neighbor
- [ ] Other Interested Party
- [ ] The Appellant
- [ ] Respondent

PLEASE STATE YOUR POSITION BELOW:

- [x] **I wish to speak**
- [ ] **I DO NOT wish to speak**

Position on Agenda Item:

- [ ] In Favor
- [ ] Neutral
- [x] Opposed

I give my 3 minutes to: SPEAK

SPEAKER IDENTIFICATION FORM
Riverside County Planning Commission or Director's Hearing

Submit request at Planning Commission to the Hearing Secretary or at Director's Hearing to the Case Planner.

Speakers are permitted to be heard up to three (3) minutes, subject to Public Hearing Rules listed on the reverse side of this form.

Date: 1/27/2014 **Agenda #:** 3.1

SPEAKER'S NAME: SHARON HAMILTON
(Print Name)

Address: 39880 GRAND AVE
(Only required if follow-up mail response is requested)

City: CHERRY VALLEY **Zip:** 92223

Phone #: 951-845-1579 **Email:** grandham@verizon.net

I AM:

- ☐ The Applicant
- ☐ Applicant's Representative
- ☑ A Neighbor
- ☐ Other Interested Party
- ☐ The Appellant
- ☐ Respondent

PLEASE STATE YOUR POSITION BELOW:

- ☑ **I wish to speak**
- ☐ **I DO NOT wish to speak**

Position on Agenda Item:

- ☐ **In Favor**
- ☐ **Neutral**
- ☑ **Opposed**

give my 3 minutes to: _____

SPEAKER IDENTIFICATION FORM
Riverside County Planning Commission or Director's Hearing

Submit request at Planning Commission to the Hearing Secretary or at Director's Hearing to the Case Planner.

Speakers are permitted to be heard up to three (3) minutes, subject to Public Hearing Rules listed on the reverse side of this form.

Date: Jan 27, 2014 **Agenda #:** 3.1

SPEAKER'S NAME: Diane Franklin
(Print Name)

Address: 10055 Frontier Trail
(Only required if follow-up mail response is requested)

City: Cherry Valley **Zip:** 92223

Phone #: 951-845-5354 **Email:** jgdif2@sbcglobal.net

I AM:

- [x] The Applicant
- [ ] Applicant's Representative
- [ ] A Neighbor
- [ ] Other Interested Party
- [ ] The Appellant
- [ ] Respondent

PLEASE STATE YOUR POSITION BELOW:

- [x] **I wish to speak**
- [ ] **I DO NOT wish to speak**

Position on Agenda Item:

- [ ] In Favor
- [ ] Neutral
- [x] Opposed

I give my 3 minutes to: _____

SPEAKER IDENTIFICATION FORM
Riverside County Planning Commission or Director's Hearing

Submit request at Planning Commission to the Hearing Secretary or at Director's Hearing to the Case Planner.

Speakers are permitted to be heard up to three (3) minutes, subject to Public Hearing Rules listed on the reverse side of this form.

Date: Jan 27, 2014 **Agenda #:** 3.1

SPEAKER'S NAME: FRAN FLANDERS
(Print Name)

Address: 41045 MOHAWK CIRCLE
(Only required if follow-up mail response is requested)

City: CHERRY VALLEY **Zip:** 92223

Phone #: (951) 845-6689 **Email:** hal_fran@yahoo

I AM:

- ☐ The Applicant
- ☐ Applicant's Representative
- ☒ A Neighbor
- ☐ Other Interested Party
- ☐ The Appellant
- ☐ Respondent

PLEASE STATE YOUR POSITION BELOW:

- ☒ **I wish to speak**
- ☐ **I DO NOT wish to speak**

Position on Agenda Item:

- ☐ **In Favor**
- ☐ **Neutral**
- ☒ **Opposed**

I give my 3 minutes to: _____

SPEAKER IDENTIFICATION FORM
Riverside County Planning Commission or Director's Hearing

Submit request at Planning Commission to the Hearing Secretary or at Director's Hearing to the Case Planner.

Speakers are permitted to be heard up to three (3) minutes, subject to Public Hearing Rules listed on the reverse side of this form.

Date: 1-27-14 **Agenda #:** 3.1

SPEAKER'S NAME: Terry Ihle
(Print Name)

Address: 40200 Brookside Ave
(Only required if follow-up mail response is requested)

City: Cherry Valley **Zip:** 92223

Phone #: _____ **Email:** terry.ihle@gmail.com

I AM:

- [ ] The Applicant
- [ ] Applicant's Representative
- [x] A Neighbor
- [ ] Other Interested Party
- [ ] The Appellant
- [ ] Respondent

PLEASE STATE YOUR POSITION BELOW:

- [x] **I wish to speak**
- [ ] **I DO NOT wish to speak**

Position on Agenda Item:

- [ ] **In Favor**
- [ ] **Neutral**
- [x] **Opposed**

I give my 3 minutes to: _____

SPEAKER IDENTIFICATION FORM
Riverside County Planning Commission or Director's Hearing

Submit request at Planning Commission to the Hearing Secretary or at Director's Hearing to the Case Planner.

Speakers are permitted to be heard up to three (3) minutes, subject to Public Hearing Rules listed on the reverse side of this form.

Date: _____ **Agenda #:** 3.1

SPEAKER'S NAME: VICTOR Dominguez
(Print Name)

Address: _____
(Only required if follow-up mail response is requested)

City: Beaumont **Zip:** _____

Phone #: 951-845-2249 **Email:** _____

I AM:

☐ The Applicant ☐ Applicant's Representative

☐ A Neighbor ☐ Other Interested Party

☐ The Appellant ☐ Respondent

PLEASE STATE YOUR POSITION BELOW:

☒ **I wish to speak** ☐ **I DO NOT wish to speak**

Position on Agenda Item:

☐ **In Favor** ☐ **Neutral** ☒ **Opposed**

I give my 3 minutes to: _____

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A.5 - Scoping Comments February 2014

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BEAUMONT UNIFIED SCHOOL DISTRICT

BOARD OF TRUSTEES

Mrs. Margaret Chatigny-De Longchamp President | *Mr. David Sanchez* Vice President | *Mrs. Janelle Wohlmuth-Poulter* Clerk | *Mrs. Susie Lara* Member | *Mr. Wayne Hackney* Member

ADMINISTRATION

Dr. Maureen E. Latham District Superintendent | *Mr. Terrence Davis* Assistant Superintendent Personnel Services | *Dr. Christina Goennier* Assistant Superintendent Instructional Support Services | *Ms. Carol Severns* Assistant Superintendent Business Services

A Shared Commitment

February 4, 2014

Riverside County Planning Department
Attn: Paul Rull, Project Planner
4080 Lemon Street, 12th Floor
PO Box 1409
Riverside CA 92502-1409

RECEIVED
FEB 05 2014
ADMINISTRATION
RIVERSIDE COUNTY
PLANNING DEPARTMENT

Re: PROJECT TITLE: I-10 Gateway Center Project

Dear Mr. Rull,

The District received your *Agency Notice of Preparation of a Draft* Environmental Impact Report for the I-10 Gateway Center Project, and has the following information to add:

1. The project is within the attendance boundaries of the following schools:

Impacted School Sites			
Name of School	Design Capacity	Current Enrollment	Planned Expansion
Brookside Elementary	930	603	None
Mountain View Middle School	1350	956	None
Beaumont High School	3660	2369	None

2. The District's most recent Commercial/Industrial Development School Fee Justification Study determined that the average student generation impacts per 1,000 square feet for industrial/warehouse/manufacturing at the for elementary, middle, and high schools as follows:

Average Student Generation Impact per 1,000 square feet for industrial/warehouse/manufacturing		
Grade	Per S/F	Project Impact*
Elementary School Impact	.0337/1000	87
Middle School Impacts	.0165/1000	43
High School Impacts	.0209/1000	54
Total Student Generation Impacts	.0711/1000	184

*based on anticipated 2,560,000 square feet total

3. Although there presently is capacity for additional students at the District's school facilities, the District anticipates, based on information provided by the City of Beaumont, County of Riverside, and others, that such capacity will be insufficient to accommodate expected student growth over the next several years. The pace of home construction in Beaumont Unified School District is expected to increase significantly, as there are many projects in the preliminary and active planning stages waiting approval to start building. The District continues to monitor these projects giving ample time to plan.

4. The District's current rate for school facilities fees levied for commercial projects is 0.51¢ per square foot. Please note that this rate is based on the state statutory rates, and is subject to biennial adjustment by the State Allocation Board. All developers should contact the facilities department to request an appointment to pay school facilities fees.

5. All further questions can be directed to Alice Grundman, Substitute Director of Facilities and Planning at (951)797-5373 (email to agrundman@beaumontusd.k12.ca.us) , or in my absence, questions can be directed Lisa Tarrats, Facilities Accounting Technician at (951) 797-5374 (email to ltarrats@beaumontusd.k12.ca.us).

Please do not hesitate to contact either of us should you have any further questions in this regard.

Sincerely,

Alice Grundman

Alice Grundman
Substitute Director of Facilities and Planning

CVAR_08337

DEPARTMENT OF TRANSPORTATION
DISTRICT 8
PLANNING (MS 1221)
464 WEST 4th STREET, 6th Floor
SAN BERNARDINO, CA 92401-1400
PHONE (909) 383-4557
FAX (909) 383-6890
TTY (909) 383-6300
www.dot.ca.gov/dist8

Flex your power!
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JAN 13 2014
RIVERSIDE COUNTY

January 9, 2014

Paul Rull
Project Planner
Riverside County
Planning Department
4080 Lemon Street, 12th Floor
P.O. Box 1409
Riverside, CA 92502-1409

Interstate-10 Gateway Center Project Parcel Map 36564 Plot Plan 25337 (Riv 10 PM R3.08)

Mr. Rull,

We have completed our initial review for the above mentioned proposal (PM36564) to create three industrial parcels-(PP25337) to construct an industrial distribution facility consisting of two industrial buildings totaling 2,560,000 square feet with 428 bay doors. This project comprises approximately 246.5 acres located within the Riverside County unincorporated community of Cherry Valley.

As the owner and operator of the State Highway System (SHS), it is our responsibility to coordinate and consult with local jurisdictions when proposed development may impact our facilities. As the responsible agency under the California Environmental Quality Act (CEQA), it is also our responsibility to make recommendations to offset associated impacts with the proposed project. Although the project is under the jurisdiction of the County of Riverside due to the Project's potential impact to State facilities it is also subject to the policies and regulations that govern the SHS.

We recommend the following to be provided:

Traffic Study

- A Traffic Impact Study (TIS) is necessary to determine this proposed project's near-term and long-term impacts to the State facilities and to propose appropriate mitigation measures. The study should be based on Caltrans' *Guide for the Preparation of Traffic Impact Studies (TIS)* which is located at the following website:

http://www.dot.ca.gov/hq/tpp/offices/ocp/igr_ceqa_files/tisguide.pdf

Minimum contents of the traffic impact study are listed in Appendix "A" of the TIS guide.

- The data used in the TIS should not be more than 2 years old.

- The geographic area examined in the traffic study should include as a minimum all regionally significant arterial system segments and intersections, including State highway facilities where the project will add over 100 peak hour trips. State highway facilities that are experiencing noticeable delays should be analyzed in the scope of the traffic study for projects that add 50 to 100 peak hour trips.

- Traffic Analysis Scenarios should clearly be exhibited as exiting, existing + project, existing + project + cumulative, and existing + project + cumulative + ambient growth.

- Caltrans endeavors that any direct and cumulative impacts to the State highway system be eliminated or reduced to a level of insignificance pursuant to the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) standards.

  - The LOS for operating State highway facilities is based upon Measures of Effectiveness (MOE) identified in the Highway Capacity Manual (HCM). Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities; however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If an existing State highway facility is operating at less than this target LOS, the existing MOE should be maintained. In general, the region-wide goal for an acceptable LOS on all freeways, roadway segments, and intersections is "D". For undeveloped or not densely developed locations, the goal may be to achieve LOS "C".

- Clearly indicate LOS with and without improvements.

  - It is recommended that the Synchro Analysis includes all intersections from the Project site to the proposed study areas. A PHF of 0.92 in urban areas is recommended to be used in the Synchro Analysis.

  - All freeway entrance and exit ramps where a proposed project will add a significant number of peak-hour trips that may cause any traffic queues to exceed storage capacities should be analyzed. If ramp metering is to occur, a ramp queue analysis for all nearby Caltrans metered on-ramps is required to identify the delay to motorists using the on-ramps and the storage necessary to accommodate the queuing. The effects of ramp metering should be analyzed in the traffic study. For metered freeway ramps, LOS does not apply. However, ramp meter delays above 15 minutes are considered excessive.

- Proposed improvements should be exhibited in preliminary drawings that indicate the LOS with improvements.

- **Submit a hard copy of all Traffic Impact Analysis documents and an electronic Synchro Analysis file.**

We appreciate the opportunity to offer comments concerning this project. If you have any questions regarding this letter, please contact Talvin Dennis at (909) 806-3957 or myself at (909) 383-4557 for assistance.

Sincerely,

DANIEL KOPULSKY
Office Chief
Community and Regional Planning

CVAR_08340

State of California - Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Inland Deserts Region
3602 Inland Empire Blvd., Suite C-220
Ontario, CA 91764
(909) 484-0459
www.wildlife.ca.gov

EDMUND G. BROWN, Jr., Governor
CHARLTON H. BONHAM, Director

February 4, 2014

RECEIVED
FEB 10 2014
ADMINISTRATIVE
RIVERSIDE CO
PLANNING

Mr. Paul Rudd
Riverside County
4080 Lemon Street, 12th Floor
P.O. Box 1409
Riverside, CA 92502-1409

Subject: Notice of Preparation for the I-10 Gateway Center Project
Draft Environmental Impact Report
State Clearinghouse No. 2014011009

Dear Mr. Rudd:

The Department of Fish and Wildlife (Department) appreciates the opportunity to comment on the Notice of Preparation (NOP) for the I-10 Gateway Center Project (Project) [State Clearinghouse No. 2014011009]. The Department is responding to the NOP as a Trustee Agency for fish and wildlife resources (California Fish and Game Code Sections 711.7 and 1802, and the California Environmental Quality Act [CEQA] Guidelines Section 15386), and as a Responsible Agency regarding any discretionary actions (CEQA Guidelines Section 15381), such as the issuance of a Lake or Streambed Alteration Agreement (California Fish and Game Code Sections 1600 *et seq.*) and/or a California Endangered Species Act (CESA) Permit for Incidental Take of Endangered, Threatened, and/or Candidate species (California Fish and Game Code Sections 2080 and 2080.1).

Project Description

The Project area encompasses 246.5 acres north of Cherry Boulevard, east of I-10 Freeway, and west of Vineland Street in unincorporated Riverside County. The proposed Project includes the development of 171.1 acres with two industrial buildings, totaling 2,560,000 square feet, and 74.8 acres of open space.

Biological Resources and Impacts

The CEQA document should contain sufficient, specific, and current biological information on the existing habitat and species at the Project site; measures to minimize and avoid sensitive biological resources; and mitigation measures to offset the loss of native flora and fauna and State waters. The CEQA document should not defer impact

analysis and mitigation measures to future regulatory discretionary actions, such as a Lake or Streambed Alteration Agreement.

If state or federal endangered or threatened species have the potential to occur on the Project site, species specific surveys should be conducted using methods approved by the Department or assume the presence of the species throughout the project site. The CEQA document should include recent survey data (CEQA Guidelines Section 15125(a)). The CEQA document should also address species of special concern and federal critical habitat. To assist with review, an accompanying map showing the areas of impact should be included in the subsequent CEQA document. Additional maps detailing the location of endangered, threatened, or special of special concern should also be included in the subsequent CEQA document.

Natural Community Conservation Program (NCCP) and California Endangered Species Act (CESA)

The Department is responsible for ensuring appropriate conservation of fish and wildlife resources including threatened, endangered, and/or candidate plant and animal species, pursuant to the CESA, and administers the Natural Community Conservation Plan Program (NCCP Program). Within the Inland Deserts Region, the Department issued Natural Community Conservation Plan Approval and Take Authorization for the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) per Section 2800, *et seq.*, of the California Fish and Game Code on June 22, 2004. The MSHCP establishes a multiple species conservation program to minimize and mitigate habitat loss and provides for the incidental take of covered species in association with activities covered under the permit.

Compliance with approved habitat plans, such as the MSHCP, is discussed in CEQA. Specifically, Section 15125(d) of the CEQA Guidelines requires that the CEQA document discuss any inconsistencies between a proposed Project and applicable general plans and regional plans, including habitat conservation plans and natural community conservation plans. An assessment of the impacts to the MSHCP as a result of this Project is necessary to address CEQA requirements. To obtain additional information regarding the MSHCP please go to: http://www.rctlma.org/mshcp/.

The proposed Project occurs within the MSHCP area and is subject to the provisions and policies of the MSHCP. In order to be considered a covered activity, Permittees must demonstrate that proposed actions are consistent with the MSHCP and its associated Implementing Agreement. The County of Riverside is the Lead Agency and is signatory to the Implementing Agreement of the MSHCP.

Lake and Streambed Alteration Program

Although the proposed Project is within the MSHCP, a Notification of Lake or Streambed Alteration is still required by the Department, should the site contain jurisdictional waters. Additionally, the Department's criteria for determining the presence of jurisdictional waters are more comprehensive than the MSHCP criteria in Section

6.1.2 (Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools). The Department is responsible for assessing and evaluating impacts to jurisdictional waters; typically accomplished through reviewing jurisdictional delineation (JD) reports, supporting information, and conducting site visits. Following review of a JD, the Department may request changes to the JD. The Department may also recommend that additional project avoidance and/or minimization measures be incorporated, or request additional mitigation for project-related impacts to jurisdictional areas.

The Department recommends submitting a notification early in the project planning process, since modification of the proposed project may be required to avoid or reduce impacts to fish and wildlife resources. To obtain a Lake or Streambed Alteration notification package, please go to http://www.dfg.ca.gov/habcon/1600/forms.html.

The Department opposes the elimination of ephemeral, intermittent, and perennial streams, channels, lakes, and their associated habitats. The Department recommends avoiding stream and riparian habitat to the greatest extent possible. The CEQA document should include measures to avoid or minimize project impacts. Where adverse impacts cannot be avoided or minimized, the CEQA document should describe compensatory mitigation, for example, the creation and/or restoration of in-kind habitat either on- or off-site. Additional mitigation requirements through the Department's Lake and Streambed Alteration Agreement process may be required, depending on the quality of habitat impacted, proposed compensatory mitigation, project design, and other factors.

The following information will be required for the processing of a Notification of Lake or Streambed Alteration and the Department recommends incorporating this information into the CEQA document to avoid subsequent documentation and project delays:

1) Delineation of lakes, streams, and associated habitat that will be temporarily and/or permanently impacted by the proposed project (include an estimate of impact to each habitat type);
2) Discussion of avoidance and minimization measures to reduce project impacts; and,
3) Discussion of potential mitigation measures required to reduce the project impacts to a level of insignificance. Please refer to section 15370 of the CEQA Guidelines for the definition of mitigation.

In the absence of specific mitigation measures in the CEQA document, the Department believes that it cannot fulfill its obligations as a Trustee and Responsible Agency for fish and wildlife resources. Permit negotiations conducted after and outside of the CEQA process are not CEQA-compliant because they deprive the public and agencies of their right to know what project impacts are and how they are being mitigated (CEQA Guidelines Section 15002).

Department Recommendations

The Department has the following concerns about the Project, and requests that these concerns be addressed in the CEQA document:

1. The CEQA document should quantify impacts to habitats and species as per the information requirements of CEQA. A map showing the areas of impact should also be included;

2. The CEQA document should include recent biological surveys for fauna and flora (CEQA Guidelines Section 15125(a)). The Department recommends that the Lead Agency contact the Department's California Natural Diversity Database (CNDDB) in Sacramento, (916) 327-5960, to obtain current information on any previously reported sensitive species and habitat, including Significant Natural Areas identified under Chapter 12 of the California Fish and Game Code. If state or federal threatened or endangered species may occur within the project area, species specific surveys, conducted at the appropriate time of year and time of day, should be included with the CEQA document. Acceptable species specific surveys have been developed by the Department, and by the U.S. Fish and Wildlife Service, and are accessible through each agencies websites. Assessments for rare plants and rare plant natural communities should follow the Department's 2009 Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities. If the Department's 2009 guidelines were not used, surveys conducted after the issuance of the 2009 guidance should be updated following the 2009 guidelines. The guidance document is available here: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/protocols_for_surveying_and_evaluating_impacts.pdf

3. The CEQA document should provide an analysis of habitat management conservation plans and natural community conservation plans, including the MSHCP. The CEQA document should include a discussion of how the project will affect reserve assembly; how the Project will affect the goals and objectives of the NCCP; the applicable policies and procedures that pertain to the Project; a discussion of survey requirements; and a list of proposed mitigation measures required by the NCCP. A copy of any documents required by the NCCP (e.g., Determination of Biologically Equivalent or Superior Preservation) should be included with the CEQA document.

4. The analysis in the CEQA document should satisfy the requirements of the Department's Lake and Streambed Alteration Program and CESA (if deemed necessary).

5. The CEQA document should provide a thorough analysis of direct, indirect, and cumulative impacts and identify specific measures to offset such impacts.

6. The CEQA document should analyze a range of fully considered and evaluated alternatives to the Project (CEQA Guidelines Section 15126.6).

7. The CEQA document should discuss the purpose of the proposed 74.8 acres of open space. Please elaborate on whether the open space will be conserved habitat or whether the area will be used as recreational open space.

In summary, the Department requests that the CEQA document include current information regarding biological resources, provide a delineation of State waters and associated habitat, and a proposal for mitigation for project-related impacts to State waters. If you should have any questions pertaining to these comments, please contact Robin Maloney-Rames, Environmental Scientist, at (909) 980-3818.

Sincerely,

Daniel Cox
for

Jeff Brandt
Senior Environmental Scientist

cc: State Clearinghouse, Sacramento

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

Louis B. Davis
Region Manager
Local Public Affairs

February 5, 2014

RECEIVED
FEB 06 2014
ADMINISTRATION
RIVERSIDE COUNTY
PLANNING DEPARTMENT

Paul Rull, Project Planner
Riverside County Planning Department
4080 Lemon Street, 12th Floor
P.O. Box 1409
Riverside, CA 92502-1409

Re: I-10 Gateway Center Project

Dear Mr. Rull:

Southern California Edison (SCE) appreciates the opportunity to provide comment on the Notice of Preparation of a Draft Environmental Impact Report for the I-10 Gateway Center Project. The proposed project consists of two "high-cube" industrial buildings (approximately 960,000 square feet and 1,600,000 square feet of floor area) for the distribution of goods. The project is located along the north side of Cherry Valley Blvd and east of Interstate 10 freeway, between the Cities of Calimesa and Beaumont in unincorporated Riverside County.

SCE maintains electrical transmission and distribution facilities, as well as substations and supporting appurtenances within Riverside County; therefore, SCE would be the electrical service provider for this project. We appreciate the development plan notification, which will assist us in planning for future electrical needs for the area. Currently, the project is within SCE's projected load growth for this area. However, the project developer will be responsible for the costs of any new distribution and/or line extension work, and any relocation of facilities required to accommodate the distribution line and/or service extensions required by SCE to serve the project.

If development plans result in the need to build new or relocate existing SCE electrical facilities that operate at or above 50 kV, please address the impacts related to the construction, operation, and maintenance of these facilities within the Draft EIR. New or relocated SCE electrical facilities that result in significant environmental impacts are subject to CEQA review per the California Public Utilities Commission's (CPUC) General Order 131-D, which could delay approval of SCE's portion of the project for two years or longer.

If you have any questions regarding this letter, do not hesitate to contact me at Louis.Davis@sce.com or (951) 249-8468.

Regards,

Louis Davis
Local Public Affairs Region Manager
Southern California Edison Company

cc: Linda Ortiz, SCE
Karen Cadavona, SCE

24487 Prielipp Drive
Wildomar, CA 92595
(951) 249-8468 PAX 19468
Fax: (951) 249-8653
Louis.Davis@sce.com

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse and Planning Unit

Edmund G. Brown Jr.
Governor

Ken Alex
Director

Notice of Preparation

January 6, 2014

RECEIVED
JAN 09
ADMINIST
RIVERSID
PLANNING

To: Reviewing Agencies

Re: I-10 Gateway Center Project
SCH# 2014011009

Attached for your review and comment is the Notice of Preparation (NOP) for the I-10 Gateway Center Project draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Paul Rull
Riverside County
4080 Lemon Street, 12th Floor
P.O. Box 1409
Riverside, CA 92502-1409

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Attachments
cc: Lead Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

SCH# 2014011009
Project Title I-10 Gateway Center Project
Lead Agency Riverside County

Type NOP Notice of Preparation

Description Approximately 171.1 acres of the 246.5 acre Project site would be included within the developed portion of the Project. The remaining 74.8 acres would remain as open space (approximately 30.3 percent of the Project site). The Project consists of two (2) industrial buildings that will have sizes of approximately 960,000 sf and 1,600,000 sf for a total of approximately 2,560,000 sf of floor area.

Lead Agency Contact

Name Paul Rull
Agency Riverside County
Phone 951 955 0972 **Fax**
email
Address 4080 Lemon Street, 12th Floor
P.O. Box 1409
City Riverside **State** CA **Zip** 92502-1409

Project Location

County Riverside
City
Region
Cross Streets Northerly of Cherry Valley Blvd, easterly of I-10 freeway, westerly of Vineland Street
Lat / Long 33° 58' 20.30" N / 117° 1' 17.69" W
Parcel No. Various
Township 2S **Range** 1W **Section** 30 **Base** SBB&M

Proximity to:

Highways I-10
Airports
Railways
Waterways
Schools Various
Land Use Vacant/Controlled Development Areas (W-2)/Community Development

Project Issues Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Biological Resources; Drainage/Absorption; Economics/Jobs; Fiscal Impacts; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Minerals; Noise; Population/Housing Balance; Public Services; Recreation/Parks; Schools/Universities; Septic System; Sewer Capacity; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Growth Inducing; Landuse; Cumulative Effects

Reviewing Agencies Resources Agency; Department of Parks and Recreation; Department of Fish and Wildlife, Region 6; Native American Heritage Commission; California Highway Patrol; Caltrans, District 8; Air Resources Board; Regional Water Quality Control Board, Region 8

Date Received 01/06/2014 **Start of Review** 01/06/2014 **End of Review** 02/04/2014

NOP Distribution List SR

County: RIVERSIDE **SCH#** 2014011009

sources Agency

- Resources Agency
  Nadell Gayou
- ☐ Dept. of Boating & Waterways
  Nicole Wong
- ☐ California Coastal Commission
  Elizabeth A. Fuchs
- ☐ Colorado River Board
  Tamya Trujillo
- ☐ Dept. of Conservation
  Elizabeth Carpenter
- ☐ California Energy Commission
  Eric Knight
- ☐ Cal Fire
  Dan Foster
- ☐ Central Valley Flood Protection Board
  James Herota
- ☐ Office of Historic Preservation
  Ron Parsons
- Dept of Parks & Recreation
  Environmental Stewardship Section
- ☐ California Department of Resources, Recycling & Recovery
  Sue O'Leary
- ☐ S.F. Bay Conservation & Dev't. Comm.
  Steve McAdam
- ☐ Dept. of Water Resources Resources Agency
  Nadell Gayou

sh and Game

- ☐ Depart. of Fish & Wildlife
  Scott Flint
  Environmental Services Division
- ☐ Fish & Wildlife Region 1
  Donald Koch
- ☐ Fish & Wildlife Region 1E
  Laurie Harnsberger
- ☐ Fish & Wildlife Region 2
  Jeff Drongesen
- ☐ Fish & Wildlife Region 3
  Charles Armor
- ☐ Fish & Wildlife Region 4
  Julie Vance
- ☐ Fish & Wildlife Region 5
  Leslie Newton-Reed
  Habitat Conservation Program
- ■ Fish & Wildlife Region 6
  Gabrina Gatchel
  Habitat Conservation Program
- ☐ Fish & Wildlife Region 6 I/M
  Heidi Sickler
  Inyo/Mono, Habitat Conservation Program
- ☐ Dept. of Fish & Wildlife M
  George Isaac
  Marine Region

Other Departments

- ☐ Food & Agriculture
  Sandra Schubert
  Dept. of Food and Agriculture
- ☐ Depart. of General Services
  Public School Construction
- ☐ Dept. of General Services
  Anna Garbeff
  Environmental Services Section
- ☐ Dept. of Public Health
  Jeffery Worth
  Dept. of Health/Drinking Water
- ☐ Delta Stewardship Council
  Kevan Samsam

Independent Commissions,Boards

- ☐ Delta Protection Commission
  Michael Machado
- ☐ Cal EMA (Emergency Management Agency)
  Dennis Castrillo
- ■ Native American Heritage Comm.
  Debbie Treadway
- ☐ Public Utilities Commission
  Leo Wong
- ☐ Santa Monica Bay Restoration
  Guangyu Wang
- ☐ State Lands Commission
  Jennifer Deleong
- ☐ Tahoe Regional Planning Agency (TRPA)
  Cherry Jacques

Business, Trans & Housing

- ☐ Caltrans - Division of Aeronautics
  Philip Crimmins
- ☐ Caltrans - Planning
  Terri Pencovic
- ▨ California Highway Patrol
  Suzann Ikeuchi
  Office of Special Projects
- ☐ Housing & Community Development
  CEQA Coordinator
  Housing Policy Division

Dept. of Transportation

- ☐ Caltrans, District 1
  Rex Jackman
- ☐ Caltrans, District 2
  Marcelino Gonzalez
- ☐ Caltrans, District 3
  Gary Arnold
- ☐ Caltrans, District 4
  Erik Alm
- ☐ Caltrans, District 5
  David Murray
- ☐ Caltrans, District 6
  Michael Navarro
- ☐ Caltrans, District 7
  Dianna Watson
- ■ Caltrans, District 8
  Dan Kopulsky
- ☐ Caltrans, District 9
  Gayle Rosander
- ☐ Caltrans, District 10
  Tom Dumas
- ☐ Caltrans, District 11
  Jacob Armstrong
- ☐ Caltrans, District 12
  Maureen El Harake

Cal EPA

Air Resources Board

- ■ All Projects
  CEQA Coordinator
- ☐ Transportation Projects
  Jon Taylor
- ☐ Industrial Projects
  Mike Tollstrup
- ☐ State Water Resources Control Board
  Regional Programs Unit
  Division of Financial Assistance
- ☐ State Water Resources Control Board
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- ☐ State Water Resouces Control Board
  Phil Crader
  Division of Water Rights
- ☐ Dept. of Toxic Substances Control
  CEQA Tracking Center
- ☐ Department of Pesticide Regulation
  CEQA Coordinator

Regional Water Quality Control Board (RWQCB)

- ☐ RWQCB 1
  Cathleen Hudson
  North Coast Region (1)
- ☐ RWQCB 2
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- ☐ RWQCB 3
  Central Coast Region (3)
- ☐ RWQCB 4
  Teresa Rodgers
  Los Angeles Region (4)
- ☐ RWQCB 5S
  Central Valley Region (5)
- ☐ RWQCB 5F
  Central Valley Region (5)
  Fresno Branch Office
- ☐ RWQCB 5R
  Central Valley Region (5)
  Redding Branch Office
- ☐ RWQCB 6
  Lahontan Region (6)
- ☐ RWQCB 6V
  Lahontan Region (6)
  Victorville Branch Office
- ☐ RWQCB 7
  Colorado River Basin Region (7)
- ▨ RWQCB 8
  Santa Ana Region (8)
- ☐ RWQCB 9
  San Diego Region (9)

- ☐ Other _____
- ☐ _____
  Conservancy

Last Updated 9 /24/2013

EVAR 08 349

NOTICE OF COMPLETION & ENVIRONMENTAL TRANSMITTAL FORM

2014011009

SCH#: _____

Project Title: I-10 Gateway Center Project
Lead Agency: County of Riverside Planning Dept. Contact Person: Paul Rull
Mailing Address: 4080 Lemon Street, 12th Floor PO Box 1409 Phone: 951-955-0972
City: Riverside Zip: 92502-1409 County: Riverside

Project Location
County: Riverside City/Community: Cherry Valley
Cross Streets: Northerly of Cherry Valley Blvd, easterly of I-10 freeway, westerly of Vineland Street Zip Code: CA 92223
Assessor's Parcel No(s). 407-220-004, 407-220-007, 407-220-008, 407-220-009, 407-220-014, 407-220-016, 413-270-012, 413-270-013, 407-220-017. Section 30 Twp: 2 south Range: 1 west Base: San Bernardino
Latitude/Longitude: 33° 58'20.30" North/ 117°1'17.69" West Total Acres: 246.5 acres (171.1 developable acres)
Within 2 miles: State Hwy#:Interstate 10 Waterways: _____
Airports: N/A Railways: N/A Schools: Mesa Grande, Beaumont High School, Brookside Elementary School, Tournament Hills Elementary School.

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JAN 06 2014
STATE CLEARING HOUSE

Document Type:
CEQA: ☒ NOP ☐ Draft EIR ☐ Early Cons ☐ Supplemental EIR ☐ Neg Dec ☐ Subsequent EIR ☐ Mit Neg Dec ☐ Other _____
NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI
Other: ☐ Joint Document ☐ Final Document ☐ Other _____

Local Action Type:
☐ General Plan Update ☐ General Plan Amendment ☐ General Plan Element ☐ Community Plan
☐ Specific Plan ☐ Master Plan ☐ Planned Unit Development ☐ Site Plan
☐ Rezone ☐ Prezone ☐ Use Permit ☐ Land Division (Subdivision, etc.)
☐ Annexation ☐ Redevelopment ☐ Coastal Permit ☐ Other _____

Development Type:
☐ Residential: Units _____ Acres _____
☐ Office: Sq.Ft _____ Acres _____ Employees _____
☐ Commercial: Sq.Ft _____ Acres _____ Employees _____
☒ Industrial: Sq.Ft 2.56mil Acres 246 Employees 701
☐ Educational:
☐ Recreational:
☐ Water Facilities: Type _____ MGD _____
☐ Transportation: Type _____
☐ Mining: Mineral _____
☐ Power: Type _____ Watts _____
☐ Waste Management: Type _____
☐ Hazardous Waste: Type _____
☐ Other: _____

Project Issues That May Have A Significant or Potentially Significant Impact
☒ Aesthetic/Visual
☒ Agricultural Land
☒ Air Quality
☒ Archaeology/Historical
☒ Biological Resources
☐ Coastal Zone
☒ Drainage/Absorption
☒ Economic/Jobs
☒ Fiscal
☒ Flood Plain/Flooding
☒ Forest Land/Fire Hazard
☒ Geologic/Seismic
☒ Minerals
☒ Noise
☒ Population/Housing Balance
☒ Public Services/Facilities
☒ Recreation/Parks
☒ Schools/Universities
☒ Septic Systems
☒ Sewer Capacity
☒ Soil Erosion/Compaction/Grading
☒ Solid Waste
☒ Toxic/Hazardous
☒ Traffic/Circulation
☒ Vegetation
☒ Water Quality
☒ Water Supply/Groundwater
☒ Wetland/Riparian
☒ Growth Inducing
☒ Land Use
☒ Cumulative Effects
☐ Other: _____

Present Land Use/Zoning/General Plan Designation: Vacant/Controlled Development Areas (W-2)/Community Development:

CVAR_98350

Project Description *(use separate sheet if necessary)*:
- General Plan Amendment No. 1079
- Change of Zone No. 7799
- Parcel Map No. 36564
- Plot Plan No. 25337
- Environmental Impact Report No. 534

General Plan Amendment (GPA1079) – proposes to change the current General Plan Land Use designation from Community Development: Very Low Density Residential (CD: VLDR) and Rural: Rural Mountainous (R: RM) to Community Development: Light Industrial (CD: LI) and Rural: Rural Mountainous (R: RM). In addition, the proposed project would require this General Plan amendment to adjust the boundary of the Cherry Valley Gateway Policy Area because the applicant is requesting to remove the project site from the Cherry Valley Gateway Policy Area.

Change of Zone (CZ7799) – proposes to change the existing zoning from Controlled Development Areas (W-2) to Industrial Park (I-P).

Parcel Map (PM36564) – proposes to create three industrial parcels.

Plot Plan (PP25337) – proposes to construct an industrial distribution facility consisting of two industrial buildings totaling 2,560,000 square feet, with 428 bay doors.

Environmental Impact Report No. 534 – provides an environmental analysis of the potential impacts of the proposed project.

Approximately 171.1 acres of the 246.5 acre Project site would be included within the developed portion of the Project. The remaining 74.8 acres would remain as open space (approximately 30.3 percent of the Project site). The Project consists of two (2) industrial buildings that will have sizes of approximately 960,000 square feet and 1,600,000 square feet for a total of approximately 2,560,000 square feet of floor area.

The Project site plan is depicted on Exhibit 3. Both buildings are planned as "high-cube" logistics uses for the distribution of goods. Both buildings would be up to approximately 47 feet in height. Three access points are proposed off Cherry Valley Boulevard. The primary access point is proposed as a signalized intersection, and will be located in the mid-portion of the project site between Building 1 and Building 2.

Water quality basins and improved drainage channels will be constructed to the west of Building 1. A concrete drainage channel will be located north of Buildings 1 and 2. Additionally, a grouted riprap berm and a water quality infiltration trench will be located north of Building 2. Riprap berms will be located east of Building 2 and two water quality basins are planned south of Buildings 1 and 2, paralleling Cherry Valley Boulevard. Additionally, a concrete drainage channel will be located south of the water quality basins and north of Cherry Valley Boulevard.

Existing drainage flows from offsite areas to the north and east of the project site, as well as runoff from the undeveloped portions of the site, would be conveyed through the site in concrete drainage channels and conveyed offsite on the west side of the property. Onsite runoff will be treated in the water quality infiltration trench located north of Building 2 and in two water quality basins located on the south side of the project site.

Water and sewer service for the Project will be provided by the Yucaipa Valley Water District (YVWD). In order to provide service to the Project site, the construction of off-site water and sewer lines in Cherry Valley Boulevard and Calimesa Boulevard will be needed. The project site is currently outside the boundaries of the YVWD; therefore, an application for annexation into the YVWD will be filed with the San Bernardino County Local Agency Formation Commission (LAFCO). Two water storage reservoirs, each with a one million gallon capacity, are proposed as part of the project on the northeastern portion of the project site. One of the reservoirs will be used for reclaimed water storage and one reservoir will be used for potable water storage.

Project grading activities would involve onsite cut of approximately 6 million cubic yards (cy) and fill of approximately 6 million cy. The site is designed for an earthwork balance and no import or export of soils will be needed. Limited off-site improvements will be needed along the east boundary of the project site for grading and drainage improvements, as well as access right-of-way.

There are three ephemeral drainages that traverse the Project site from east to west and northeast to southwest. Ephemeral drainages are drainages with water flows that generally occur for only a short period after a rain event. Although all on-site drainages are ephemeral and do not support wetland vegetation, there are some limited areas of the Project site that contain Waters of the U.S. and Waters of the State. Therefore implementation of the Project would require securing a Federal Section 404 permit and a State Section 1602 Streambed Alteration Agreement.

Land use approvals needed to implement the Project include: a Plot Plan; a Tentative Parcel Map; a zone change; and two General Plan Amendments. According to the County of Riverside General Plan, the Project site is currently designated as Very Low Density Residential (VLDR), and Rural Mountainous (RM) along the northern, steeper portion of the site. A General Plan Amendment is proposed to change the Land Use designation from VLDR to Light Industrial (LI) for approximately 155.2 acres. The General Plan land use designation for the 16.5 acres located within the City of Calimesa, which is Rural Living (RL), would not be changed, nor would the VLDR & RM designations for the 74.8 acres that would remain as open space. The applicant is also requesting a General Plan Amendment to remove the project from the Cherry Valley Gateway Policy Area.

The Project also includes a Change of Zone from Controlled Development (W-2) to Industrial Park (I-P) to be consistent with the General Plan Amendment for the 155.2 acre to be designated LI. The northern portion of the Project site that would remain as open space would remain zoned W-2, and the current zoning for that portion of the Project site within theh City of Calimesa would remain RL.

Reviewing Agencies Checklist

(Recommend Clearinghouse distribution by checking appropriate boxes)

- ☒ Air Resources Board
- ☐ Boating/Waterways, Dept. of Calif. Highway Patrol
- ☒ Caltrans District # 8
- ☐ Caltrans Division of Aeronautics
- ☐ Caltrans Planning
- ☐ Coachella Valley Mountains Conservancy
- ☐ Coastal Conservancy
- ☐ Colorado River Board Commission
- ☒ Conservation, Department of
- ☐ Corrections, Department of
- ☐ Delta Protection Commission
- ☐ Education, Dept. of Office of Public School Construction
- ☐ Energy Commission
- ☒ Fish & Game Region #_____
- ☒ Food & Agriculture, Department of
- ☒ Forestry & Fire Protection
- ☐ General Services, Department of
- ☒ Office of Historic Preservation
- ☐ Health Services, Department of
- ☐ Housing and Community Development
- ☐ Integrated Waste Management Board
- ☒ Native American Heritage Commission
- ☐ Office of Emergency Services
- ☐ Office of Historic Preservation
- ☒ Parks & Recreation
- ☐ Pesticide Regulation, Department of
- ☐ Public Utilities Commission
- ☐ Reclamation Board
- ☒ Regional WQCB # 8 (Santa Ana)
- ☐ Resources Agency
- ☐ S.F. Bay Conservation & Development Commission
- ☐ San Gabriel & Lower Los Angeles Rivers & Mountains Conservancy
- ☐ San Joaquin River Conservancy
- ☐ Santa Monica Mountains Conservancy
- ☐ State Lands Commission
- ☐ SWRCB: Clean Water Grants
- ☒ SWRCB: Water Quality
- ☐ SWRCB: Water Rights
- ☐ Tahoe Regional Planning Agency
- ☒ Toxic Substances Control, Department of
- ☐ Water Resources, Department of
- ☐ Other: _____
- ☐ Other: _____

Public Review Period (to be filled in by lead agency)

Starting Date: January 6, 2014 Ending Date: February 19, 2014

Lead Agency: Riverside County Planning Department

Consulting Firm Michael Brandman Associates
Address: 4080 Lemon Street 12th Floor
City/State/Zip: Riverside CA 92501
Contact: Paul Rull
Phone: (951) 955-0972

Applicant TSG Cherry Valley LP
Address: 2 Park Plaza, Suite 700
City/State/Zip: Irvine, CA 92614
Phone: 949-417-1396

Signature of the Lead Agency Representative Paul Rull Paul Rull Date: December 24, 2014

Envelopes to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044
Certified or Fed Ex packages to: State Clearinghouse. 1400 Tenth Street, Suite 222, Sacramento, CA 95814

Y:\Planning Case Files-Riverside office\EIR00534\EIR\NOP\NOP 1-6-14\NOC and Environmental Transmittal Form.docx

CVAR_08353

SOUTHERN CALIFORNIA
ASSOCIATION of GOVERNMENTS

Main Office
818 West Seventh Street
12th Floor
Los Angeles, California
90017-3435

t (213) 236-1800
f (213) 236-1825

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Community, Economic and Human Development
Margaret Finlay, Duarte

Energy & Environment
James Johnson, Long Beach

Transportation
Keith Millhouse, Ventura County Transportation Commission

January 30, 2014

Mr. Paul Rull
Project Planner
Riverside County Planning Department
4080 Lemon Street, 12th Floor
Riverside, CA 92502

RE: SCAG Comments on the Notice of Preparation of an Environmental Impact Report for the I-10 Gateway Center Project [IGR7944]

Dear Mr. Rull:

Thank you for submitting the Notice of Preparation of an Environmental Impact Report for the I-10 Gateway Center Project to the Southern California Association of Governments (SCAG) for review and comment. SCAG is the authorized regional agency for Inter-Governmental Review (IGR) of programs proposed for federal financial assistance and direct development activities, pursuant to Presidential Executive Order 12372. Additionally, SCAG reviews the Environmental Impact Reports of projects of regional significance for consistency with regional plans pursuant to the California Environmental Quality Act (CEQA) and CEQA Guidelines.

SCAG is also the designated Regional Transportation Planning Agency under state law, and is responsible for preparation of the Regional Transportation Plan (RTP) including its Sustainable Communities Strategy (SCS) component pursuant to SB 375. As the clearinghouse for regionally significant projects per Executive Order 12372, SCAG reviews the consistency of local plans, projects, and programs with regional plans.[1] Guidance provided by these reviews is intended to assist local agencies and project sponsors to take actions that contribute to the attainment of the regional goals and policies in the RTP/SCS.

SCAG staff has reviewed the Notice of Preparation of an Environmental Impact Report for the I-10 Gateway Center Project. The proposed project includes two industrial high-cube logistics buildings that will have sizes of approximately 960,000 square feet and 1,600,000 square feet on an approximately 246.5 acre project site located within the Riverside County unincorporated community of Cherry Valley.

When available, please send environmental documentation to SCAG's *office in Los Angeles or by email to leep@scag.ca.gov* providing, at a minimum, the full comment period for review. If you have any questions regarding the attached comments, please contact Pamela Lee at (213) 236-1895 or leep@scag.ca.gov. Thank you.

Sincerely,

Jonathan Nadler,
Manager, Compliance and Performance Assessment

[1] SB 375 amends CEQA to add Chapter 4.2 Implementation of the Sustainable Communities Strategy, which allows for certain CEQA streamlining for projects consistent with the RTP/SCS. Lead agencies (including local jurisdictions) maintain the discretion and will be solely responsible for determining "consistency" of any future project with the SCS. Any "consistency" finding by SCAG pursuant to the IGR process should not be construed as a finding of consistency under SB 375 for purposes of CEQA streamlining.

COMMENTS ON THE NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT FOR THE I-10 GATEWAY CENTER PROJECT [SCAG NO. IGR7944]

CONSISTENCY WITH RTP/SCS

SCAG reviews environmental documents for regionally significant projects for their consistency with the adopted RTP/SCS.

RTP/SCS Goals

The 2012 RTP/SCS links the goal of sustaining mobility with the goals of fostering economic development, enhancing the environment, reducing energy consumption, promoting transportation-friendly development patterns, and encouraging fair and equitable access to residents affected by socio-economic, geographic and commercial limitations (see http://rtpscs.scag.ca.gov). The goals included in the 2012 RTP/SCS may be pertinent to the proposed project. These goals are meant to provide guidance for considering the proposed project within the context of regional goals and policies. Among the relevant goals of the 2012 RTP/SCS are the following:

SCAG 2012 RTP/SCS GOALS	
RTP/SCS G1:	*Align the plan investments and policies with improving regional economic development and competitiveness*
RTP/SCS G2:	*Maximize mobility and accessibility for all people and goods in the region*
RTP/SCS G3:	*Ensure travel safety and reliability for all people and goods in the region*
RTP/SCS G4:	*Preserve and ensure a sustainable regional transportation system*
RTP/SCS G5:	*Maximize the productivity of our transportation system*
RTP/SCS G6:	*Protect the environment and health for our residents by improving air quality and encouraging active transportation (non-motorized transportation, such as bicycling and walking)*
RTP/SCS G7:	*Actively encourage and create incentives for energy efficiency, where possible*
RTP/SCS G8:	*Encourage land use and growth patterns that facilitate transit and non-motorized transportation*
RTP/SCS G9:	*Maximize the security of the regional transportation system through improved system monitoring, rapid recovery planning, and coordination with other security agencies*

For ease of review, we encourage the use of a side-by-side comparison of SCAG goals with discussions of the consistency, non-consistency or non-applicability of the policy and supportive analysis in a table format. Suggested format is as follows:

CVAR_08355

SCAG 2012 RTP/SCS Goals		
Goal		**Analysis**
RTP/SCS G1:	*Align the plan investments and policies with improving regional economic development and competitiveness.*	*Consistent: Statement as to why* *Not-Consistent: Statement as to why* *or* *Not Applicable: Statement as to why* *DEIR page number reference*
RTP/SCS G2:	*Maximize mobility and accessibility for all people and goods in the region.*	*Consistent: Statement as to why* *Not-Consistent: Statement as to why* *or* *Not Applicable: Statement as to why* *DEIR page number reference*
etc.	etc.	etc.

RTP/SCS Strategies

To achieve the goals of the 2012 RTP/SCS, a wide range of strategies are included in SCS Chapter (starting on page 152) of the RTP/SCS focusing on four key areas: 1) Land Use Actions and Strategies; 2) Transportation Network Actions and Strategies; 3) Transportation Demand Management (TDM) Actions and Strategies and; 4) Transportation System Management (TSM) Actions and Strategies. If applicable to the proposed project, please refer to these strategies as guidance for considering the proposed project within the context of regional goals and policies. To access a listing of the strategies, please visit http://rtpscs.scag.ca.gov/Documents/2012/final/f2012RTPSCS.pdf (Tables 4.3 – 4.7, beginning on page 152).

Regional Growth Forecasts

The Draft EIR for the I-10 Gateway Center Project should reflect the most recently adopted SCAG forecasts (see http://scag.ca.gov/Documents/2012AdoptedGrowthForecastPDF.pdf), which consists of the 2012 RTP/SCS population, household and employment forecasts. The forecasts for the region and applicable jurisdictions are below.

	Adopted SCAG Region Wide Forecasts		**Adopted Unincorporated Riverside County Forecasts**	
Forecast	**Year 2020**	**Year 2035**	**Year 2020**	**Year 2035**
Population	19,663,000	22,091,000	43,500	58,100
Households	6,458,000	7,325,000	15,400	20,900
Employment	8,414,000	9,441,000	5,100	6,900

MITIGATION

SCAG staff recommends that you review the SCAG 2012 RTP/SCS Final Program EIR Mitigation Measures for guidance, as appropriate. See Chapter 6 (beginning on page 143) at:
http://rtpscs.scag.ca.gov/Documents/peir/2012/final/Final2012PEIR.pdf

As referenced in Chapter 6, a comprehensive list of example mitigation measures that may be considered as appropriate is included in Appendix G: *Examples of Measures that Could Reduce Impacts from Planning, Development and Transportation Projects.* Appendix G can be accessed at:
http://rtpscs.scag.ca.gov/Documents/peir/2012/final/2012fPEIR_AppendixG_ExampleMeasures.pdf

SATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Boulevard, Suite 100
West Sacramento, CA 95691
(916) 373-3715
Fax (916) 373-5471
Web Site www.nahc.ca.gov
Ds_nahc@pacbell.net
e-mail: ds_nahc@pacbell.net

RECEIVED
JAN 13 2014
RIVERSIDE COUNTY PLANNING DEPARTMENT

January 10, 2014

Mr. Paul Rull, Project Planner
Riverside County Planning Department
4080 Lemon Street, 12th Floor
Riverside, CA 92502-1409

RE: SCH#2014011009; CEQA Notice of Preparation (NOP); draft Environmental Impact Report (DEIR) for the **"I-10 Gateway Center Project;"** located in Community of Cherry Valley; Riverside County, California

Dear Mr. Rull:

The Native American Heritage Commission (NAHC) has reviewed the above-referenced environmental document

The California Environmental Quality Act (CEQA) states that any project which includes archeological resources, is a significant effect requiring the preparation of an EIR (CEQA guidelines 15064.5(b). To adequately comply with this provision and mitigate project-related impacts on archaeological resources, the Commission recommends the following actions be required:

Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, pursuant to California Environmental Quality Act (CEQA) §15064.5(f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities. Also, California Public Resources Code Section 21083.2 require documentation and analysis of archaeological items that meet the standard in Section 15064.5 (a)(b)(f).

We suggest that this (additional archaeological activity) be coordinated with the NAHC, if possible. The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. Any information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for pubic disclosure pursuant to California Government Code Section 6254.10.

Native American Contacts
Riverside County California
January 10, 2014

Ramona Band of Cahuilla Mission Indians
Joseph Hamilton, Chairman
P.O. Box 391670 Cahuilla
Anza , CA 92539
admin@ramonatribe.com
(951) 763-4105
(951) 763-4325 Fax

San Manuel Band of Mission Indians
Daniel McCarthy, M.S.., Director-CRM Dept.
26569 Community Center. Drive Serrano
Highland , CA 92346
(909) 864-8933, Ext 3248
dmccarthy@sanmanuel-nsn.gov
(909) 862-5152 Fax

San Manuel Band of Mission Indians
Carla Rodriguez, Chairwoman
26569 Community Center Drive Serrano
Highland , CA 92346
(909) 864-8933
(909) 864-3724 - FAX
(909) 864-3370 Fax

Morongo Band of Mission Indians
Robert Martin, Chairperson
12700 Pumarra Rroad Cahuilla
Banning , CA 92220 Serrano
(951) 849-8807
(951) 755-5200
(951) 922-8146 Fax

Santa Rosa Band of Mission Indians
John Marcus, Chairman
P.O. Box 391820 Cahuilla
Anza , CA 92539
(951) 659-2700
(951) 659-2228 Fax

Serrano Nation of Mission Indians
Goldie Walker, Chairwoman
P.O. Box 343 Serrano
Patton , CA 92369

(909) 528-9027 or
(909) 528-9032

Morongo Band of Mission Indians
William Madrigal, Jr.,Cultural Resources Manager
12700 Pumarra Road Cahuilla
Banning , CA 92220 Serrano
(951) 201-1866 - cell
wmadrigal@morongo-nsn.gov
(951) 572-6004 Fax

Cahuilla Band of Indians
Luther Salgado, Chairperson
PO Box 391760 Cahuilla
Anza , CA 92539
Chairman@cahuilla.net
760-763-5549
760-763-2631 - Tribal EPA

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

his list s only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH#2014011009; CEQA Notice of Preparation (NOP); draft Environmental Impact Report (DEIR) for the Interstate 10 Gateway Project; located in the Cherry Valley Community, near the City of Beaumont; Riverside County, California.

Native American Contacts
Riverside County California
January 10, 2014

Ernest H. Siva
Morongo Band of Mission Indians Tribal Elder
9570 Mias Canyon Road Serrano
Banning , CA 92220 Cahuilla
siva@dishmail.net
(951) 849-4676

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

his list s only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH#2014011009; CEQA Notice of Preparation (NOP); draft Environmental Impact Report (DEIR) for the Interstate 10 Gateway Project; located in the Cherry Valley Community, near the City of Beaumont; Riverside County, California.

January 8, 2014

JAN 2 [illegible] 2014

Attn: Paul Rull, Project Planner
Riverside County Planning Department
P.O. Box1409
Riverside, CA 92502-1409

SOBOBA BAND OF LUISEÑO INDIANS
EST. JUNE 19, 1883

Re: Notice of Preparation of a Draft EIR for I-10 Gateway Center Project, EIR No. 534, General Plan Amendment No. 1079, CZ No. 7799, Parcel Map No. 36564

The Soboba Band of Luiseño Indians appreciates your observance of Tribal Cultural Resources and their preservation in your project. The information provided to us on said project has been assessed through our Cultural Resource Department, where it was concluded that although it is outside the existing reservation, the project area does fall within the bounds of our Traditional Use Areas.

Soboba Band of Luiseño Indians is requesting the following:

1. To initiate a consultation with the Project Developer and Land owner.
2. The transfer of information to the Soboba Band of Luiseno Indians regarding the progress of this project should be done as soon as new developments occur.
3. Soboba Band of Luiseño Indians continues to act as a consulting tribal entity for this project.
4. Working in and around traditional use areas intensifies the possibility of encountering cultural resources during the construction/excavation phase. For this reason the Soboba Band of Luiseño Indians requests that a Native American monitoring component be included as a mitigation measure in the Environmental Impact Report for all ground-disturbing activities that are expected to go into native soil. The Tribe is requesting that a Treatment and Dispositions Agreement between the developer and The Soboba Band be provided to the County of Riverside prior to the issuance of a grading permit and before conducting any additional archaeological fieldwork.
5. Request that proper procedures be taken and requests of the tribe be honored (Please see the attachment)

The Soboba Band of Luiseno Indians is requesting a face-to-face meeting between the County of Riverside Planning Department and the Soboba Cultural Resource Department. Please contact me at your earliest convenience either by email or phone in order to make arrangements.

Sincerely,

Joseph Ontiveros
Director of Cultural Resources
Soboba Band of Luiseño Indians
P.O. Box 487
San Jacinto, CA 92581
Phone (951) 654-5544 ext. 4137
Cell (951) 663-5279
jontiveros@soboba-nsn.gov

Cultural Items (Artifacts). Ceremonial items and items of cultural patrimony reflect traditional religious beliefs and practices of the Soboba Band. The Developer should agree to return all Native American ceremonial items and items of cultural patrimony that may be found on the project site to the Soboba Band for appropriate treatment. In addition, the Soboba Band requests the return of all other cultural items (artifacts) that are recovered during the course of archaeological investigations. Where appropriate and agreed upon in advance, Developer's archeologist may conduct analyses of certain artifact classes if required by CEQA, Section 106 of NHPA, the mitigation measures or conditions of approval for the Project. This may include but is not limited or restricted to include shell, bone, ceramic, stone or other artifacts.

The Developer should waive any and all claims to ownership of Native American ceremonial and cultural artifacts that may be found on the Project site. Upon completion of authorized and mandatory archeological analysis, the Developer should return said artifacts to the Soboba Band within a reasonable time period agreed to by the Parties and not to exceed (30) days from the initial recovery of the items.

Treatment and Disposition of Remains.

A. The Soboba Band shall be allowed, under California Public Resources Code § 5097.98 (a), to (1) inspect the site of the discovery and (2) make determinations as to how the human remains and grave goods shall be treated and disposed of with appropriate dignity.

B. The Soboba Band, as MLD, shall complete its inspection within twenty-four (24) hours of receiving notification from either the Developer or the NAHC, as required by California Public Resources Code § 5097.98 (a). The Parties agree to discuss in good faith what constitutes "appropriate dignity" as that term is used in the applicable statutes.

C. Reburial of human remains shall be accomplished in compliance with the California Public Resources Code § 5097.98 (a) and (b). The Soboba Band, as the MLD in consultation with the Developer, shall make the final discretionary determination regarding the appropriate disposition and treatment of human remains.

D. All parties are aware that the Soboba Band may wish to rebury the human remains and associated ceremonial and cultural items (artifacts) on or near, the site of their discovery, in an area that shall not be subject to future subsurface disturbances. The Developer should accommodate on-site reburial in a location mutually agreed upon by the Parties.

E. The term "human remains" encompasses more than human bones because the Soboba Band's traditions periodically necessitated the ceremonial burning of human remains. Grave goods are those artifacts associated with any human remains. These items, and other funerary remnants and their ashes are to be treated in the same manner as human bone fragments or bones that remain intact

Coordination with County Coroner's Office. The Lead Agencies and the Developer should immediately contact both the Coroner and the Soboba Band in the event that any human remains are discovered during implementation of the Project. If the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, the Coroner shall ensure that notification is provided to the NAHC within twenty-four (24) hours of the determination, as required by California Health and Safety Code § 7050.5 (c).

Non-Disclosure of Location Reburials. It is understood by all parties that unless otherwise required by law, the site of any reburial of Native American human remains or cultural artifacts shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, parties, and Lead Agencies, will be asked to withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code § 6254 (r).
Ceremonial items and items of cultural patrimony reflect traditional religious beliefs and practices of the Soboba Band. The Developer agrees to return all Native American ceremonial items and items of cultural patrimony that may be found on the project site to the Soboba Band for appropriate treatment. In addition, the Soboba Band requests the return of all other cultural items (artifacts) that are recovered during the course of archaeological investigations. Where appropriate and agreed upon in advance, Developer's archeologist may conduct analyses of certain artifact classes if required by CEQA, Section 106 of NHPA, the mitigation measures or conditions of approval for the Project. This may include but is not limited or restricted to include shell, bone, ceramic, stone or other artifacts.

URS

February 6, 2013

Mr. Paul Rull
Project Planner
County of Riverside
Transportation and Land Management Agency (TLMA)
4080 Lemon Street 12th Floor
P.O. Box 1409
Riverside, California 92501

Subject: Review of Applicable Environmental Impact Report (EIR) Sections, and Supporting Technical Report (Appendix B) — *Air Quality and Greenhouse Gas Analysis Report, I-10 Gateway Center, Riverside County, California (PP25337)*

Dear Mr. Rull:

URS Corporation (URS) has completed a review of the *Air Quality and Greenhouse Gas Analysis Report* for *I-10 Gateway Center, Riverside County, California* (Michael Brandman Associates, July 3, 2013).

The methodology used in the analysis appears sound and the level of detail provided is very good. However, there are questions regarding the data, calculations and text descriptions presented in the report. Detailed comments are presented below.

Technical Report (Appendix B: Air Quality and Greenhouse Gases)

1. The Appendix B cover page (first page of PDF) is labeled with a "draft" watermark. URS would just suggest that the County confirm that the document has not been subject to further revision since its receipt.

2. The Air Quality and GHG Analysis has its own four appendices but it is itself an appendix (Appendix B) of Draft EIR. URS would suggest changing "appendix" to "attachment" or something similar to avoid reader confusion. Since the Draft EIR provided mimics the contents of the Appendix B document very closely, it will be checked for consistency upon receipt of revised Appendix B text (and results, if necessary).

3. The Description provided under Section 1.2-Project Summary does not mention the types and/or number of trucks that may be expected to frequent the facility, nor is there mention of emergency generators or other types of combustion sources (e.g. boilers) that may be situated at the facility. If any of this type of equipment will be included in the school construction/operation, then those emissions should be *at least* discussed and perhaps

URS Corporation
4225 Executive Square, Suite 1600
La Jolla, CA 92037
Tel: 858.812.9292
Fax: 858.812.9293

considered in the discussion of potential health risks and air permitting requirements (esp. those sources which are diesel-fueled).

4. Would this project involve demolition and/or soil hauling (i.e. soil import/export) activities? If demolition and/or soil hauling activities should be included, the project description should be revised to reflect that, and CalEEMod should be re-run and the new results presented. Later learned in sub-section Construction Offsite Trips of Section 5.2.1 that soil import/hauling will occur; please add such information to the project description.

5. Some of the rules detailed in Section 1.3-Standard Conditions may not apply to this type of development. The fireplace prohibition (Rule 445) would seem not to apply and the spray coating rule (Rule 481) does not seem appropriate either. The applicability and appropriateness of the indicated rules show be reviewed and, if necessary, revised.

6. Do not see mention of state Airborne Toxic Control Measure (ATCM) that recommends that trucks limit idling to 5 minutes at any location (http://www.arb.ca.gov/toxics/idling/idling.htm).

7. The lead-in to Section 1.3.2-California mentions the California Green Building Standards after Title 24, but does not provide a discussion of those standards as it does for for Title 24.

8. Item h of MM AQ-5 appears to be a duplicate of MM AQ-2. Not sure what is meant by "Tenants" in these two references. Was this meant to address HHD trucks of contractors delivering equipment and/or supplies?

9. Item c of MM AQ-7 under Operation does not detail the "year 2007 or newer engines" limitation for HHD trucks discussed prior; instead, it just says that all fleet equipment and vehicle engines shall be properly maintained in good condition and according to manufacturers' specifications.

10. Should MM AQ-9 be labeled a GHG measure (e.g. MM GHG-1), as it pertains to solid waste?

11. The report exhibits numerous typographical errors, such as the last sentence in the first paragraph of Section 2.1.2-Local Air Quality, which should read "…within the SoCAB…."

12. Suggest that footnotes b and c of Table 1 detail the approximate distance and direction to the alternate monitoring stations (those other than Banning Airport, which was mentioned in the text).

13. The presentation of excerpted text (indented) on ultrafine particulate beginning on Page 23 of the very lengthy Section 2.1.3-Toxic Air Contaminants is confusing as it is difficult to ascertain where excerpts start/stop. Suggest using italics or quotes, along with indention.

14. The following statement and others among it seeks to discount the prescribed risk assessment methods: "These are incredibly conservative assumptions that are not replicated in reality." CAPCOA's July 2009 *Health Risk Assessments for Proposed Land Use Projects* specifically warns against the use of such wording to discount standardized health risk assessment methodologies.

15. At the end of Section 2.1.3-Toxic Air Contaminants is a sub-section that seems out of place, titled "Local Sources of Air Pollution," that discusses the projects location and proximity with respect to other sources. It seems to imply that the residential neighborhoods are large sources of TACs, along with the freeways in the area.

16. Table 4: Description of Air Pollutants includes a 2009 CARB reference, while the most recent CARB table of California and federal standards is dated June 2013 (http://www.arb.ca.gov/research/aaqs/aaqs2.pdf).

17. Is the statement regarding 1-hour ozone federal standard under *2003 AQMP* sub-section (on Page 33) still appropriate, since this standard is no longer?

18. The 2012 AQMP section appears dated and requires update (e.g. "U.S. EPA has established a due date of December 14, 2012").

19. Please update the discussion in Section 3.3 to include recent international, federal, and state GHG regulatory developments in the report. For instance, international climate change efforts by the UNFCCC and the Kyoto Protocol, federal efforts including President Obama's recent plan to address climate change, and legislation and rule-making at the state-level and county-level.

20. Table 7: Locations of Sensitive Receptors has several typographical errors, the most notable of which is the lack of a distance for the Tournament Hill Elementary School.

21. Does Table 9: SCAQMD Localized Significance Thresholds – Operations only show the higher of state/federal values, where not noted (e.g. annual NO2 of 0.0534 ppm not presented)?

22. For air quality regional impact, the project emissions should be included in a dispersion modeling air quality impact analysis (AQIA) only for those the pollutants that are above the SCAQMD's construction or operational LST thresholds. Please explain why dispersion modeling was used, why for only certain pollutants, and what phases were included in the modeling.

23. Table 10: Will the project also have architectural coating which is typical for the warehouses and is stated in page 71?

24. Since this report was published, newer CalEEMod versions (the latest being 2013.2.2) have been released to correct several emission calculation errors. Recommend that the latest CalEEMod version be used for further analysis or reruns of this project, as it incorporates the emission factors of EMFAC2011 and OFFROAD2011 and allows the reviewer to quickly identify which default values in the model were overwritten. Without the electronic input files that correspond to the provided output, the reviewer is not able to assess the inputs used. URS will leave to the discretion of the County Planner whether or not the new CalEEMod version should be used for this project going forward.

25. The AERMOD version number shows in Appendix, but it should also be provided in Section 5.1.

26. The discussion of, and presentation of, Table 11: Construction Duration suggests that the individual construction phases/durations would not occur concurrently; such an assumption should be distinctly stated in the report. If the detailed construction phases are to overlap, then a description of how those emissions were quantified during the period of the overlap should be provided. A table indicating the expected start date for each respective construction phase duration, as input to CalEEMod, would also be appropriate.

27. Does the statement "Soil stabilizers for unpaved roads" in Table 12: Best Available Control Measures imply something more than water (i.e. dust suppressant additives)? Please make sure that the measures included in Table 12 (e.g. "replace ground cover", "Pre-water to 12% moisture") and CalEEMod are capable of being applied, as they may be included as part of conditions of approval.

28. Several discrepancies appear to exist on Pages 71 and 72, under section labeled "Other Emission Sources," including:

    a. Does the CalEEMod guidance recommend modifying the VOC emission factor for Consumer Products?

    b. The term refrigerated warehouse is included in the Consumer Products section; however, the land use input chosen in CalEEMod was specifically for ***unrefrigerated*** warehouse. Suggest that the appropriate square footages of refrigerated space be accounted for separately.

    c. Landscape Equipment defaults in CalEEMod were used; however, no water consumption was included for landscaping. Since the Vegetation section on Page 73 says there will there be landscaping, please include an estimate of outdoor water demands? One of the dust prevention methods was replacement of landscaping.

d. Use of the more recent version of CalEEMod would likely change many of the defaults discussed on these two pages and improve upon the operational emissions inventory for both criteria pollutants and GHGs.

29. Due to the lot size and amount of soil hauling, please make sure that the fugitive dust and exhaust emissions associated with onsite haul truck travel on unpaved roads is accounted for or addressed.

30. Recommend explaining the receptor spacing used on the facility perimeter and show the facility perimeter and scale in a revised Exhibit 6 (white receptors do not show well on all sides)

31. Also, recommend explaining modeling methodology in greater detail and expanding the information presented in Table 22. For example, presenting an exhibit to show the modeled fenceline, sources locations and parameters, how to process the results, and how to treat the line sources in AERMOD dispersion modeling.

32. Have the emissions associated with transportation refrigeration units (TRUs) been included?

33. Recommend that Table 24: Inhalation Exposure Factor Values for Sensitive Receptors reference the appropriate reference (i.e. SCAQMD handbook) for these values, rather than SCAQMD Rule 1401.

34. Recommend that the step taken to convert the output from AERMOD (in micrograms per cubic meter) to ppm be shown, in the case of CO and NO2 results presented in Table 26: Localized Significance Analysis (Operations). The same table shows no units for Annual NO2 line, and the model output that supports the value shown could not be found in the appendix.

35. Table 26: The NAAQS and CAAQS should also be used and compared in this table. Please explain why background levels are not defined for PM10 and PM2.5 for purposes of significance testing.

36. On Table 24, please define the Business as Usual (BAU) scenario and add baseline GHG emissions and discussion as appropriate. The BAU year should have the same year as project build-out so they can be comparable. URS suggests that the applicant and/or its consultant re-evaluate appropriate and clearly-defined assumptions and reasonable conditions for the BAU scenario. Existing regulations and mandatory requirements in the foreseeable future should be taken into account for BAU. The BAU scenario should use the existing general plan designation and features.

37. Based on the project description, the two warehouse buildings will be LEED certified. Please include this feature in the emissions, mitigations, and analysis.

38. Please explain the message found in all AERMOD runs regarding: "*SOURCE-RECEPTOR COMBINATIONS FOR WHICH CALCULATIONS MAY NOT BE PERFORMED; LESS THAN 1.0 METER* WITHIN OPENPIT; OR BEYOND 80KM FOR FASTAREA/FASTALL." This message appears to have occurred for 365 such combinations in the case of the CO run.

39. On Page 7 of the DPM analysis in Appendix C, the LHDT1-DSL values shown at bottom of page could not be duplicated using the information provided above it. For instance, a value of 4.17E-7 was calculated for "I10 to Driveway 1" (versus the 4.51E-7 shown). Please advise on this discrepancy.

40. Page 8 of the DPM analysis in Appendix C show the estimated 70-year average DPM emission factors (including appropriate portions of EMFAC2011 output); please provide further detail on how these were calculated. Also, please clarify the note on the same page regarding LHDT-DSL.

41. It is difficult to check the large amount of calculations used in estimating the inputs to the AERMOD modeling for all of the individual pollutants without the source spreadsheets. Please provide electronic copies of the source spreadsheets with any future revisions in order that they may be more accurately evaluated.

42. Many warehouses have fuel-combusting forklifts and other off-road equipment to support the operation. Please verify if such off-road equipment will be used during the project operation. If so, please add this equipment and re-run the model.

43. Suggest that all mitigation measures and all changes to model default values be summarized and presented and justified in the text of the report.

44. As a point of information, the SCAQMD has previously recommended that other lead agencies (including those outside the City of Riverside) refer to the "City of Riverside's Good Neighbor Guidelines for Siting New and/or Modified Warehouse Distribution Facilities" for such projects.

45. It is not clear if the proposed project is consistent with the existing General Plan land use designations for the site. We advise that the applicant/consultant confirm this with the County Planning Department. If this is true, the proposed project should answer the question on page 109, "Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?"

The recommendations and suggestions provided in this correspondence should not be construed as definitive requirements and it is understood that the County of Riverside will have discretion regarding implementation. We appreciate this opportunity to assist the County of Riverside TLMA.

If you have questions or would like to discuss this matter, please contact me, at (858) 812-8264 or via e-mail at eric.carlson@urs.com, or Julie Mitchell, at (858) 812-8273 or via e-mail at julie.mitchell@urs.com.

Sincerely,

URS CORPORATION



Eric Carlson
Air Quality Scientist

cc: Ms. Eleonor Legaspi, County Riverside, TLMA

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL® Company

Louis B. Davis
Region Manager
Local Public Affairs

February 5, 2014

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ADMINISTRATION
RIVERSIDE COUNTY
PLANNING DEPARTMENT

Paul Rull, Project Planner
Riverside County Planning Department
4080 Lemon Street, 12th Floor
P.O. Box 1409
Riverside, CA 92502-1409

Re: I-10 Gateway Center Project

Dear Mr. Rull:

Southern California Edison (SCE) appreciates the opportunity to provide comment on the Notice of Preparation of a Draft Environmental Impact Report for the I-10 Gateway Center Project. The proposed project consists of two "high-cube" industrial buildings (approximately 960,000 square feet and 1,600,000 square feet of floor area) for the distribution of goods. The project is located along the north side of Cherry Valley Blvd and east of Interstate 10 freeway, between the Cities of Calimesa and Beaumont in unincorporated Riverside County.

SCE maintains electrical transmission and distribution facilities, as well as substations and supporting appurtenances within Riverside County; therefore, SCE would be the electrical service provider for this project. We appreciate the development plan notification, which will assist us in planning for future electrical needs for the area. Currently, the project is within SCE's projected load growth for this area. However, the project developer will be responsible for the costs of any new distribution and/or line extension work, and any relocation of facilities required to accommodate the distribution line and/or service extensions required by SCE to serve the project.

If development plans result in the need to build new or relocate existing SCE electrical facilities that operate at or above 50 kV, please address the impacts related to the construction, operation, and maintenance of these facilities within the Draft EIR. New or relocated SCE electrical facilities that result in significant environmental impacts are subject to CEQA review per the California Public Utilities Commission's (CPUC) General Order 131-D, which could delay approval of SCE's portion of the project for two years or longer.

If you have any questions regarding this letter, do not hesitate to contact me at Louis.Davis@sce.com or (951) 249-8468.

Regards,

Louis Davis
Local Public Affairs Region Manager
Southern California Edison Company

cc: Linda Ortiz, SCE
Karen Cadavona, SCE

24487 Prielipp Drive
Wildomar, CA 92595
(951) 249-8468 PAX 19468
Fax: (951) 249-8653
Louis.Davis@sce.com

Liz Westmoreland

From: Joe Kuhn [joek57@gmail.com]
Sent: Wednesday, February 12, 2014 10:14 AM
To: Rull, Paul
Subject: We do not want Gateway Warehouse

Dear Sir,
We moved to Cherry Valley 8 Yrs. ago from Long Beach to get away from Traffic and Big Trucks. We enjoy the fresh air and quite times here If we wanted to live near the trucks and traffic and smell of industry we would have moved to Fontana or Ontario. Please do not allow this project to proceed forward at this location. Put it over by the existing Warehouse areas. We have enough traffic and road wear and over used infrastructure. Thank You for your time and consideration in this matter. My Horses and poultry thank you also.

Joseph Kuhn
37735 Brookside Ave.
Cherry Valley CA 92223

From: Lee Shubeck [LShubeck@yahoo.com]
Sent: Monday, January 27, 2014 9:18 PM
To: Rull, Paul
Subject: not in favor
Paul Rull (Project Planner)

I am NOT in favor of a developer wanting to build a 2.5 million foot warehouse next to my mobile home park (Rancho Calimesa MHP). All these trucks will definetly create poor air quality. It will be noisy, Trucks will be tearing up our streets. Property values will be lower. Cherry Valley Blvd. interchange is NOT adequate. A better location would be on Cherry Valley Blvd. where the old chicken coups were...not on property next door to our park.

Respectfully,

Alan Shubeck
Rancho Calimesa Mobile Home Park
10320 Calimesa Blvd., SPC 235
Calimesa, CA 92320

No for truck project

From: Andy Ramirez [armrz@icloud.com]
Sent: Monday, January 27, 2014 6:57 AM
To: Rull, Paul
Subject: No for truck project

Mr. Raul,

My family is NOT in favor for the Cherry Valley truck/warehouse/industrial rezoning location near nor on Cherry Valley Blvd or Brookside. We live in close proximity and this will cause unneeded health hazards (increased smog inhalation, chemical waste exposure, etc.) to my young children and wife. We left the big City to get away from these industrial zoning risks. Do not bring this to our community.

Thanks, Andy Ramirez
1789 Long Dr
Beaumont CA 92223
951.515.0021

Beaumont Wharehouse slated for cherry valley

From: Me [jar22@ymail.com]
Sent: Monday, January 27, 2014 10:06 PM
To: Rull, Paul
Subject: Beaumont Wharehouse slated for cherry valley

I am a proud beaumont home owner/resident. I am extremely concerned about my family's livelihood. I reside in the housing track off of cherry valley just south of the freeway. This warehouse would draw health concerns as well as a traffic nightmare. I strongly appose the construction of the gigantic warehouse. All home owners already suffered a great loss during these trying times and we can't afford to let our homes drop in value any further due to the construction of the warehouse.

From: henrywener@juno.com
Sent: Monday, January 13, 2014 9:43 PM
To: Rull, Paul
Subject: warehouse at I-10 and Cherry Valley Blvd.

We use that intersection 2 to 4 times ady. It is hazardous to use as we have to pull into the Blvd to see oncoming traffic. Trucks using

Barbara & Henry Wener 40901 Cheyenne Trail, Cherry Valley CA 92223

_____
Do THIS before eating carbs (every time)
1 EASY tip to increase fat-burning, lower blood sugar & decrease fat storage http://thirdpartyoffers.juno.com/TGL3131/52d4ce9cd25094e9c3020s

From: Barbara W. Brown [bwtaylorbrown@gmail.com]
Sent: Thursday, January 23, 2014 2:13 PM
To: Rull, Paul
Subject: Gateway Warehouse Project

My husband Bill and I are very much against the warehouse being planned at the 10 freeway and Cherry Vally Blvd. This will not only affect the air quality and the property value it would make getting on th freeway impossible. It could use traffic signals there now.

There was another project planned there years ago that they gave up on because the EBX2 State Water Supply will run through that area.

This a very bad idea for a rural area.

Barbara W. Brown
Cherry Valley, Ca

I-10 Gateway Center Project

From: lazyb1@verizon.net
Sent: Sunday, January 26, 2014 6:29 PM
To: Rull, Paul
Subject: I-10 Gateway Center Project

Mr. Rull,
I am writing in opposition to the proposed Gateway Center Project including any zoning changes. We are a rural community and the proposed zoning change is not in harmony with our community of interest or who be are or what we are about.
We have grave concerns about the significant increase in traffic, noise pollution and safety issues this will create. The added air pollution to the nearby community of senior citizens will be detrimental to their health. This could well affect the health of others in the area especially those who have allergies, asthma and other pulmonary conditions.
The natural habitat will be severely altered with this development as will the surrounding plant life and aesthetics.
Hazardous waste and diesel spills could be a likely event with this development.
This is not a good fit for our community.
Please add my name to your email list for future meetings and literature pertaining to this project.
Thanks,
Dr. Blair Ball

From: Brenda Kreutzer [brendakreutzer@rocketmail.com]
Sent: Friday, January 24, 2014 3:51 PM
To: Rull, Paul
Subject: Objections to Gateway Center Project
Mr. Rull:

As a resident of Cherry Valley for near 45 years, I wish to make you aware of mine and my family's great concern over the proposed Gateway Center project.

This area of Riverside County is NOT the place for such an industrial project. Cherry Valley is a beautiful place and should not be sacrificed for revenue.

Traffic would be horrendous, and pollution is major issue (have you heard about the correlation between autism and pollution?).

I have had visitors from out-of- state visit Cherry Valley and express their surprise that such a lovely rural area could be so near freeways and cities. It is a hidden jewel, and has been the home of 5 generations of our family.

Please, do not allow a project of this nature to even come near Cherry Valley. It is totally incompatible with this area.

Thank you.

Brenda Kreutzer
9923 Avenida San Timoteo
Cherry Valley, CA 92223

From: Cathy [cls01@verizon.net]
Sent: Monday, January 27, 2014 6:21 AM
To: Rull, Paul
Subject: Proposed Cherry Valley Gateway Project

Dear Mr. Rull,

I am writing in regards to the proposed Gateway Project in Cherry Valley. As a Cherry Valley Resident, the scope and location of this proposed warehousing site alarms and concerns me.

It is my understanding that this proposed industrial distribution facility will consist of two industrial buildings totaling 2,560,000 square feet with 428 bay doors on 246.5 gross acres to be built north of Cherry Valley Boulevard and east of Interstate-10.

Cherry Valley and particularly Cherry Valley Boulevard is a very poor location for an industrial complex of this size and scope. The amount of freight traffic this will create will make Cherry Valley Boulevard and the freeway intersection a nightmare. I use Cherry Valley Boulevard to commute to work every day and cannot even imagine an industrial business of this size along the Boulevard.

This will also affect air quality and change the rural atmosphere of Cherry Valley forever. Please do not consider allowing this large industrial complex in this residential / agricultural area of Cherry Valley. It should be located elsewhere in an already developed industrial area.

Sincerely,

Cathy Schaefer
Cherry Valley Resident
(951)218-4757

From: cbrown92407 [cbrown92407@msn.com]
Sent: Sunday, January 26, 2014 10:26 AM
To: Rull, Paul
Subject: Gateway Project

I'm a homeowner in Fairway Canyon and I want to say that I am strongly against the development of the Gateway Project on Cherry Valley. I am sure that you do not care that it is developed in Cherry Valley, because you live nowhere near it, but I have a family that is very concerned about the increased pollution and traffic from large trucks. There is already a great deal amount of traffic entering and exiting the 10 freeway from Cherry Valley, but once Fairway Canyon is fully developed and the Gateway Project is developed, traffic will be unbearable.

I am sure that you have had no tax paying homeowners in this area in favor of this proposed development. My family, and the families of Fairway Canyon, urge you to please look elsewhere for this project.

Thank you for your consideration of this matter.

Sincerely,

Chris Brown
Fairway Canyon Resident

Sent from my Verizon Wireless 4G LTE smartphone

From: Christy Sterling [christysterling671@gmail.com]
Sent: Friday, January 24, 2014 4:24 PM
To: Rull, Paul
Subject: The Gateway Project
Dear Mr. Rull,

My name is Christy Sterling and I am a long time resident and property owner in Cherry Valley. I am writing to you today to voice my concern regarding the Gateway Project. I do not want this project in my community. We already have to much traffic trying to get on the freeway now and when we have had to evacuate due to wildfires it was worse. In our community there is only two ways out of my area of Cherry Valley, Beaumont Ave. and Cherry Valley Blvd. When trying to evacuate the proposed Project would cause extreme problems.

I am also concerned about the air quality. With the proposed project our air quality would be outrageous.

I would like our quality of life here in Cherry Valley to remain rural not large scale commercial.

I ask you to please stop this project from happening. My family and I are against this project, so please help us keep our quality of life that we try hard to keep.

Thank you for your time and consideration,

Christy Sterling

From: Cindy burke [americanidle@verizon.net]
Sent: Wednesday, January 29, 2014 11:06 AM
To: Rull, Paul
Subject: Warehouse!!!!
Mr. Rull,

As a 50 plus year resident of Cherry Valley, I totally object to the building of this monstrosity warehouse that is supposed to be built on Cherry Valley Blvd.
Besides the congestion to the freeways on and off ramps, there will be added pollution in our Valley...Please stop this! I can go on and on why this should be stopped, but I think you get the idea!!!!! Please stop this!!!!!!!

Concerned Citizen,
Cindy Burke

From: composerx [composerx@verizon.net]
Sent: Monday, January 13, 2014 10:20 AM
To: Rull, Paul

I live near what is supposed to be the gateway project in cherry valley .. cherry valley is NOT the place for a monstrosity such as this . This is a quiet community that has NO industrial development of any kind anywhere and the citizens of cherry valley are not going to stand for this put anywhere near them .. You need to put this disgusting building in an industrial area , not in a residental area where we will have to spend every day dealing with hundreds of trucks and pollution in the air 24 hrs. a day . Cherry valley has remained as it is and to the delight of everyone who lives here . This project will not only bring a load of disgust handed to the developer but there are a couple of organizations here who will do more than just say dont put this among us . I have spoken to all of my neighbors and you are not going to get anyone who lives here to agree to have this put in our lap so I think you should tell this developer to go find a much more suitable place where it will be accepted because here you are up against everyone .

disgusted citizen of cv .

From: Cynthia Freeman [adoorablec@yahoo.com]
Sent: Wednesday, January 29, 2014 10:15 AM
To: Rull, Paul
Subject: Proposed Warehouse Project

Hello,

I am totally against the warehouse project. It will serve no benefit to my family or any of the families in the community. It will only add problems such as traffic congestion, poor air quality and lower property values. This will totally disrupt the peace & quiet we all moved into the community for along with the tranquility the area brings.

Respectfully,
Cynthia F. Clay

No Limits, No Boundaries;
I See Increase All Around Me!!

From: Dallin Ball [dallin_ball@yahoo.com]
Sent: Sunday, January 26, 2014 5:11 PM
To: Rull, Paul
Subject: Opposed to the warehouse

I am opposed to the proposed warehouse for Cherry Valley, California. What a disaster this will create. This will cause a huge disruption of air quality for the pass. Our air quality is already bad enough with the way the mountains keep in all the bad air and let the clean air go. This will only add to air pollution we are already trying to deal with.

Have you personally tried to exit the off ramps where this proposed warehouse will be? They are no where near fit for semi trucks to be getting on and off the freeway. I use those on and off ramps every day and even cars have trouble seeing around the blind corner that the bridge causes. This is a recipe for serious traffic congestion.

Why don't you put this warehouse out in the desert somewhere where there aren't any people living, and you could build double the size! Instead of using trucks you can put all the material onto the railroads that are already built and ship them that way. I am strongly opposed to this warehouse, and you will kill Cherry Valley if you proceed any further with your plans.

From: jdjkrose@juno.com
Sent: Sunday, January 26, 2014 4:31 PM
To: Rull, Paul
Subject: Proposed Logistics Site in Cherry Valley
Mr. Rull,

As a resident of Beaumont, I would like to express my opinion against the future building of the proposed warehouse on Cherry Valley Blvd.

We personally are just recovering from the low, low property values in this area. It is a slow grow. Having a 2.5 million square foot warehouse within a few miles of our home would not appreciate the value of our home. It would cause pollution in the air and on the streets. The exit at Cherry Valley is already heavily traveled and difficult to use in it's current state. To add to the congestion with over 400 loading docks just down the street would negatively impact this area.

I strongly urge you to reconsider this project and the deep implications it would have.

Danice Rose

How to Sleep Like a Rock
Obey this one natural trick to fall asleep and stay asleep all night.
peaklife.com

From: David Hoffman [allseasonshay@gmail.com]
Sent: Monday, January 27, 2014 12:20 PM
To: Rull, Paul
Subject: Gateway Project

Mr. Rull,

The new warehouse project on Cherry Valley Blvd. must not be allowed to continue. It will utterly destroy the quality of life for residents in the area that have moved here to avoid traffic and smog. The lifestyle is RURAL and until the metro areas of the county are built out we need to keep this type of development out of our treasured rural communities.

David Hoffman

--

All Seasons Hay Co
38989 Cherry Valley Blvd
Cherry Valley CA 92223
951-845-6079

From: Debbie Whipple [debiwhipple@aol.com]
Sent: Monday, January 27, 2014 12:01 AM
To: Rull, Paul
Subject: Warehouse on Cherry Valley

I am writing to you to request your assistance in stopping the zoning change from residential to commercial on Cherry Valley to allow a warehouse to be built. I purchased a home in this rural area to escape the industrial mess this would create. The freeway access is so far from being adequate for this increase in truck traffic. The wildlife and natural beauty of this area will be destroyed and the safe family community will be changed forever. Please help this community stay as it was intended. The amount of city taxes we pay in this area is so outrageous .....that alone should be a consideration for not changing what we were told would exist in the area when we made the choice of buying here. I would never have purchased here if I would have known my entrance view to this area would be a gigantic warehouse and a zillion trucks. Please help in this matter. Sincerely, Debbie

Sent from my Verizon Wireless 4G LTE smartphone

From: Dennis Tankersley [dennistankersley@gmail.com]
Sent: Sunday, January 26, 2014 4:41 PM
To: Rull, Paul
Subject: 2.5 Million Sq. Foot Warehouse Project Slated for Cherry Valley
Please do not allow a zoning change that would enable commercial building on Cherry Valley. This open countryside is why my family chose to live nearby.

Dennis Tankersley MS, PA-C
EMPA Fellowship Director / Lead PA
Arrowhead Regional Medical Center
909-633-3641
DennisTankersley@gmail.com

Gateway Project

From: Diane FRANKLIN [jgdif2@sbcglobal.net]
Sent: Monday, January 20, 2014 8:06 PM
To: Rull, Paul
Subject: Gateway Project

January 20, 2014
Paul Rull
Project Planner
Riverside County Planning Department
PO BOX 1409
Riverside, CA 92502-1409

Dear Mr. Rull,
I, and I assure you, many others are distressed over the proposal for the Gateway Center Project in Cherry Valley. I moved to Cherry Valley to be in a rural area, I love its beauty, the rolling hills and mountains. By placing this huge Industrial Park, as it is called, right on Cherry Valley Boulevard near the 10 freeway would greatly devalue the land value and homes nearby. It would cause traffic mayhem with huge trucks coming in and out to unload or load from the freeway. There would be noise and air pollution problems, the quiet of the hills would be forever lost, the easy access for us using Cherry Valley Boulevard to the 10 would be greatly compromised. The 47 feet tall buildings would be a blight on the landscape. Nature is still the best designer in my and many others eyes. Right now we have a few farm buildings with rolling hills in a vast landscape, a remarkable feat of nature. I would not like to see that bulldozed and concreted by man. It might profit the builders but not us who live here. Once we go in and build and change the landscape, we never can return it to what it once was, I am for keeping the beauty we have and the rural atmosphere of Cherry Valley. I don’t want the noise, air pollution and traffic problems the Industrial Park will bring.
Sincerely yours,

Diane Franklin

jgdif2@sbcglobal.net

From: Don Belding [belding3@yahoo.com]
Sent: Wednesday, January 29, 2014 11:41 AM
To: Rull, Paul
Cc: ranchocalimesamanager@hotmail.com
Subject: Proposed warehouse project in Cherry Valley

Mr. Rull,

My wife and I are residents/homeowners in the Rancho Calimesa senior mobile home park near the proposed project. We would have no objection to development of the Cherry Valley property for residential or other purposes consistent with the **rural nature** of this region. We do have concerns regarding the noise, dust, exhaust fumes, and traffic resulting from the potential construction and completion of this project. It seems that reconstruction of the Cherry Valley Blvd. freeway exit would be needed to accommodate the added truck traffic, causing further disruption to the lives of our park's and Cherry Valley's residents.

We understand that there are not even any actual tenants for this disruptive project; it would be built on speculation. How many vacant commercial buildings and building sites are there in the Banning-Yucaipa area? Why should not one of these be used?

One of the major attractions of this mobile home park for us was its setting in a rural area. Please do not allow this attraction to be destroyed by placing a large commercial development nearby.

Respectfully yours,
Don and Kamara Belding

In what way have we really "progressed" beyond the basic concepts of the Declaration of Independence? "We hold these truths to be self evident, that all men are created equal, that they are endowed by their Creator with certain unalienable rights, that among these are life, liberty, and the pursuit of happiness. That to secure these rights, governments are instituted among men deriving their just powers from the consent of the governed."

"Of all the dispositions and habits, which lead to political prosperity, Religion and Morality are indispensable supports. In vain would that man claim the tribute of Patriotism, who should labor to subvert these great pillars of human happiness, these firmest props of the duties of Men and Citizens."
----George Washington "Farewell Address"

Cherry Valley Warehouse

From: Don Bohnsak [donmarian2@aol.com]
Sent: Sunday, January 26, 2014 3:33 PM
To: Rull, Paul
Subject: Cherry Valley Warehouse

Sent from my iPad We are totally against this project because of air quality and traffic concerns.

From: Joe Ingalls [fireman21@verizon.net]
Sent: Sunday, January 26, 2014 10:13 AM
To: Rull, Paul
Subject: Gateway Warehouse project

Mr. Rull:

Please do not allow this project to go forward. My husband is a retired Riverside City fire engineer. He has chronic bronchitis and COPD from his days of fighting fire the "old way" not always using a Self Contained Breathing Apparatus. We live in Solera at the edge of Cherry Valley. I just heard about this project this morning on the Solera website. We do not need a project like this in Cherry Valley. The air quality now is not good due to the wind borne particulants. I would attend the meeting, but will be gone next week. I would appreciate any info you can provide, but I want you to know I will be an outspoken anti-warehouse advocate.

Thank you for your consideration in this matter.

Donna Ingalls
989 Ironwood Rd.
Beaumont, CA 92223

From: Dr. Jamie Elam [zigjamie@yahoo.com]
Sent: Tuesday, January 28, 2014 12:34 PM
To: Rull, Paul
Subject: 2.5 million sq. ft. warehouse

Hello there,
PLEASE do NOT allow this 2.5 million sq. ft. warehouse to be built near our mobile home park. Please consider that there are lots and lots of alternative places to build such a structure. Our mobile home park is for seniors and we moved here from the hustle and bustle of the city for peace and quiet. As seniors we are on limited incomes and would not be able to simply relocate. On fixed incomes, we are stuck here as this is for most of us the last home we will ever have. This building would totally ruin our peace and quiet. How would you like this structure built next door to your house? Need I say more? Thank you for your consideration,

Dr. Jamie Elam PhD.
Church and Classical Organist

From: Linda Martinez [linda599@verizon.net]
Sent: Sunday, January 26, 2014 6:12 PM
To: Rull, Paul
Cc: jperez@rctlma.org; cpiantadosi@rctlma.org
Subject: Gateway Project

Dear Mr. Rull

It has come to my attention recently of the proposed Gateway Project to be constructed in Cherry Valley. By this email I am expressing deep concern- not merely a NIMBY (Not in My Backyard).

I have been a homeowner for 20 plus years here and am quite familiar with the terrain, water, and wildlife and traffic pattern of the area

The Gateway project for 2.5 million distribution center is dangerous to environment, citizens both young and old, and our very future.

I am certain the proponents will tout "jobs, no impact, no water use, etc etc".

These are falsehoods- it is apparent the Gateway will have long term adverse consequences to the area- including but not limited to:

Construction in a wildlife corridor
Property devaluation
Traffic- with or without "improvement"
Increased particulates generated by vehicular traffic- not to mention diesel particulates

I am very concerned this project has been-albeit legally thus far- rather clandestine and back doored to the detriment of the population.

I look forward to your response and remain in watchful vigilance

Dr. Linda Martinez
40285 Grand Ave
Cherry Valley CA 951-769-9232

From: Erin [ejbaldwin80@yahoo.com]
Sent: Monday, January 27, 2014 9:28 AM
To: Rull, Paul
Subject: warehouse to be built in Cherry Valley
Dear Paul Rull,

Please do not build an enormous warehouse in Cherry Valley. This will ruin the whole town. Leave this area quiet, natural and untouched by commercial poison. Put the commercial warehouse poison somewhere else and leave the residents of Beaumont, Cherry Valley and Banning at peace. Thank you.

Erin Baldwin
Resident of Beaumont.

From: Fran Flanders [hal_fran@yahoo.com]
Sent: Sunday, January 26, 2014 4:19 PM
To: Rull, Paul
Subject: I OBJECT to theI-10 Gateway Warehouse Project in Cherry Valley

Hi Mr Rull,

My main issues are: Air Quality, Traffic Congestion, Noise and Planning Changes.

Air Quality. Nearly 30 years ago I pulled off the freeway on the Yucaipa hill going to work in Redlands to take a picture. The smog sitting in the San Bernardino Valley was so odious that I felt pretty smart to have moved away. Recently, another warehouse project came to build in our area. A man from AQMD talked about the potential health problems from diesel. That issue remains the same for this project. Would you want your grandchild to live here? Maybe not if this warehouse project goes in.

Traffic at the I-10. Cherry Valley has 3 direct routes to access the freeway. Residents already avoid the Beaumont Avenue and Highland Springs routes from Cherry Valley to the freeway due to dangerous congestion. The only remaining interchange, the one at Cherry Valley Blvd., is already dangerous and seems way too small for the truck traffic I would expect from this project. Cal Trans didn't help us with Highland Springs or Beaumont Avenue in recent years and I don't think they will be able to help here either. This will surely make even a trip to the doctor hard to navigate.

Noise. Warehouse traffic would be 24/7 if this were approved. At night I can hear the rumble of trains 2 miles away. Sound carries because there isn't a bunch of competing background noise. That is what "peaceful" means. Folks go on vacation to find this quality. We have it now and we want to keep it.

Overall County Plan. After I moved to Cherry Valley years

ago, I attended Riverside County meetings as far away as Indio to ensure that our area would retain a rural character. I believed that we had molded a plan to develop Riverside County with zones which retain pockets of quieter, slower, human values among more dense development. I believe people need some sparse open quieter areas. Please help us preserve our vision of many years.

PLEASE.... This Project Needs to be farther from residential communities, perhaps closer to a railroad in a desert.

Fran Flanders, Cherry Valley

F

From: Gene De Fouw [geneadefouw@yahoo.com]
Sent: Monday, January 27, 2014 11:14 AM
To: Rull, Paul
Subject: Support Zoning Change for Riverside County

Dear Representative Paul Rull,

I would like to express support for the planned zoning change to allow the presently zoned residential zone to commercial and allow the constructon of a Warehouse. There are NO houses near the proposed project.

The location is adjcent to the 10 expressway at the Cheery Valley road exit and would result in minimal traffic congestion on the Cheery Valley road.

However**, approval should only be granted if i the zoning includes major expansion of the two freeway ramp**s because the warehouse could expand to 428 loading docks. That would result in major congestion if the two overpasses near the project are not expanded significantly.

This project would add many needed jobs to the area and increased property taxes for the area. Your vote and support is needed. How you stand on this project will portray your position on job growth.

Respectfully Requested,

Gene De Fouw
Beaumont Resident
geneadefouw@yahoo.com

From: Chuck Wimer [wimerwwjd@yahoo.com]
Sent: Tuesday, January 14, 2014 7:56 PM
To: Rull, Paul
Subject: Fw: Gateway Project in Cherry Valley

On Monday, January 13, 2014 4:29 PM, Chuck Wimer <wimerwwjd@yahoo.com> wrote:Dear Mr. Prull:

We have lived in Cherry Valley for 37 years and have loved the rural life that we chose to live - like so many of us who live here. We do not want this Gateway Project to go through with a 428 bay door warehouse being proposed at I-10 and Cherry Valley Blvd. This will affect everyone in Cherry Valley having to deal with all these trucks coming and going. We would appreciate if you would take this matter into consideration. Thank you

Sincerely, Harvey & Anna Wimer

From: Heidi Moria Miccio [h.miccio@gmail.com]
Sent: Monday, January 27, 2014 9:37 PM
To: Rull, Paul
Subject: Proposed zone change for warehouse in Cherry Valley
Dear Mr. Paul Rull,

I am writing to express my concern about the proposed construction of a 2.5 million square foot warehouse in Cherry Valley. As a resident and homeowner in Fairway Canyon, I am strongly opposed to such a building being placed at such close proximity to my place of residence. I am sure you can understand my concern as I am certain this would not be something you'd like in your own "backyard".

For starters, the air quality will surely decline with the increase of trucks accessing the warehouse. Furthermore, the freeway off and on ramps for Cherry Valley Blvd are not equipped to handle the additional traffic. Already, the traffic hold ups to exit the freeway from residential traffic ALONE is enough to create notable problems. I cannot begin to imagine how much more cumbersome this would become with commercial traffic as well.

The close proximity of a commercial building built next to enormous residential communities such as Fairway Canyon and Tournament Hills is outrageous, in my opinion, especially at such a time when property values are starting to increase in this neighborhood. This is extremely beneficial to the area and Beaumont as an upcoming city. This town went from being practically nothing to becoming SOMETHING when the market crashed and now that we are starting to stand on our own feet again, you threaten to take this away from us again, by proposing the construction of such a warehouse which inevitably keep property values low and the area unappealing - and in such a thoughtless manner.

If Riverside county wants to look out for the interest of their cities and inhabitants, it would be wise to keep such a monstrosity from the hills of Cherry Valley and from the residents of Fairway Canyon and Tournament Hills.

A concerned citizen,

Heidi Miccio

From: iqbal ... [ipitt@lycos.com]
Sent: Wednesday, January 29, 2014 12:15 PM
To: Rull, Paul
Subject: No Gateway Project please!

Jan. 29, 2014

Paul Rull
County Planner

Dear Mr. Rull-

I am a resident of Cherry Valley, Calif., and am writing to you to express my strong objection to the Gateway Project whose goal is to bring a distribution center to an area as pristine and peaceful as Cherry Valley.

I am deeply concerned about the harmful and irreversible impact such a project will have on the area, the way it would exacerbate air pollution, increase noise levels, and worsen the traffic situation, and how it will utterly ruin our way of life, plummeting property values in the process.

One of the most beautiful drives in the area is the very area being targeted for the giant warehouse. Currently, driving on Cherry Valley Blvd. is a wonderful experience — the kind that is getting increasingly harder to find in Southern California. Such areas need to be cherished and protected. They need to be left untouched for our children and grandchildren. The introduction of a monstrous warehouse would be, you will no doubt agree, disruptive in every sense of the world. It would be a gross misfit for a region like Cherry Valley and an unattractive eyesore.

I urge you, therefore, to exercise all your power to ensure that the Gateway Project gains no further traction, and that Cherry Valley Blvd., and the idyllic land it runs through, be left as they are.

Sincerely,

Iqbal Pittalwala

From: Jacqueline Smith [lilacbirch@gmail.com]
Sent: Sunday, January 26, 2014 9:16 PM
To: Rull, Paul
Subject: Cherry Valley Warehouse - Gateway
Dear Mr. Rull -

I am going to try to make it to the scoping session tomorrow, but in case I can't I want to let you know how flat out repulsed I am by the idea of this eyesore moving into my neighborhood.

I've seen much new development in my 31 years as a resident of Cherry Valley, and this might just take the cake as far as outrageous and UNNECESSARY goes.

So many buildings and warehouses that are left vacant in the area could be re-developed and save us from the traffic nightmare this would cause. Not to mention, the major DROP in aesthetic quality for the area.

Please let me know if you want any more local opinion on this matter, as I know a good many residents who are not happy about this, but perhaps just can't find the time in their busy schedules to inform you themselves!!

Thanks for your consideration,

Jacqueline Smith
Cherry Valley, CA -since 1982

--



Please consider the environment before printing this email.

Opposition to the Gateway Center project in Cherry Valley

From: Jennifer Rose Booth [jenandjames@gmail.com]
Sent: Sunday, January 26, 2014 7:02 PM
To: Rull, Paul
Subject: Opposition to the Gateway Center project in Cherry Valley

Mr. Rull,

As a residents of Beaumont, we would like to express our opposition to the future building of the proposed warehouse on Cherry Valley Blvd.

First, the amount of trucks is a major concern for our family. As we attempt to exit both eastbound and westbound daily, we have to wait 3-7 minutes to even get onto Cherry Valley Blvd due to the large amounts of traffic. The sheer number of cars, let alone truck traffic is already a huge issue for Beaumont and Cherry Valley residents. If the proposed warehouse is to have 400 plus docks then that means hundreds of trucks will be passing through our on and off ramps daily.

This will lower our property value significantly. This area is just recovering from the low, low property values. This leads to our second reason for opposing this warehouse. Having a 2.5 million square foot warehouse within a few miles of our home would not appreciate the value of our home. Finally, all the trucks would cause pollution in the air and on the streets.

We strongly urge you to reconsider this project and the deep implications it would have.

Sincerely,
James & Jennifer Booth

From: James Honeyfield [jhoneyfield@msn.com]
Sent: Monday, January 27, 2014 12:32 PM
To: Rull, Paul
Subject: Possible 2.5 Million Square Foot facility in Cherry Valley
Paul,

I am writing you on hearing that a 2.5 million square foot facility is being considered in Cherry Valley, I would hope that you would consider putting this facility down the 60 corridor with the other facilities that exist. As I have lived in Cherry Valley most of my life it is a small community that would be severely affected by such a building. Cherry Valley Blvd. is already impacted by the housing development on the West side of the 10 freeway with the addition this distribution center this would not only impact the freeway on and off ramp it would push the congestion back to the main road through Cherry Valley, which is Beaumont Ave. This is also where the local high school resides. Not only would there be a traffic problem, the pollution levels that would increase from the distribution center as well as the pollution from the Tractor Trailers themselves are a detriment to our community. With all of previously listed concerns, these factors would cause a dramatic decrease in property value. Cherry Valley has traditionally been a residential area, this would cause a higher level of industry into a residential area which never bodes well for a community. Now I am not saying that this facility should not be built, but it would make more sense to be put with the other facilities that are in Beaumont off of the 60 freeway corridor or the 60 corridor in Moreno Valley where the infra-structure is already put in place.

Thanks for your time,

Best Regards,

James Honeyfield
909 556 9756

From: Janelle Poulter [jpoulter@banning.k12.ca.us]
Sent: Monday, January 27, 2014 12:54 PM
To: Rull, Paul
Cc: janellepoulter@aol.com
Hello,

I am a resident of Beaumont and use the Cherry Valley Blvd off ramp and street to get to my home. I currently live within two miles of the location for the proposed distribution center planned. I am against this center being built. In addition I am also a school board member for Beaumont Unified. This proposed building will cause a possible hazard to our students who walk home from Beaumont High School, located on the same street, to their homes in Fairway Canyon. I believe the increase in traffic and large trucks will pose a danger to our students. If you have any questions or concerns please feel free to contact me at 951-314-9257. Thank you for your time

Janelle Poulter

From: windfall845@aol.com
Sent: Wednesday, January 08, 2014 3:38 PM
To: Rull, Paul
Subject: Project case I-10 Gateway Center

Follow Up Flag: Follow up
Flag Status: Red
To: Paul Rull, Planner Riverside County Planning Department

From: Property owners Janet R. Gudgell and Patricia M. Peters

Re: Water flow across our property APN 413270015-7 to the west of project case I-10 Gateway Center

We request that a detailed EIR study be conducted concerning water flow to and through our property planned for by the applicant TSG Cherry Valley LLP. There is real potential of flooding. Our property and the Project share a common boundary of over a thousand feet on the downhill or westerly property line.

Please confirm receipt of this e-mail. Thank you, Ms. Gudgell and Ms. Peters windfall845@aol.com

From: windfall845@aol.com
Sent: Sunday, December 22, 2013 8:37 PM
To: Rull, Paul
Subject: re:eir534-Gateway Center Cherry Valley

Dear Mr. Rull

We have received our notice of the scoping session to be held 1/27 /14 at the County Administrative Center concerning project case 1-10 Gateway Center. You state that the session will allow for testimony from interested persons to identify significant issues regarding the project and potential environmental impacts. You also state that the proponent will address these issues through revisions to the proposed project and/or the completion of a final ERI impact report prior to the formal public hearing on the project.

We have never seen, nor read the proposed EIR for this project. Considering that we share a common boundary with this Project and will have several negative impacts upon its completion, we respectfully request a copy of the proposed EIR before this second Scoping session. Our APN: 413270015. We would be most happy to purchase, or borrow or have it sent electronically.

We thank you for sending our scoping notice and we will plan on attending all meetings regarding this Project.

Sincerely,

Janet Gudgell
Patricia Peters

From: Jeff Saenz [jeffrieds@yahoo.com]
Sent: Monday, January 27, 2014 9:22 AM
To: Rull, Paul
Paul,

I understand you are the County Planner and you are considering changing the zoning to allow a huge warehouse to be built north of Beaumont with access off Cherry Valley BLVD. The first thing I would like to know, is this true? If not then sorry to inconvenience you. Now if this is a possibility there are some thing you may want to think about. I travel on Cherry Valley to the 10 FWY, there are already quite a few vehicles on this road. I think it is important that we have industry here here in Beaumont but it is more important we have a master plan for our growing community. I occasionally drive by Temecula and you can tell they did not have a plan when the started to grow, there is a mile back up on the fwy just to get off the fwy. Most all the streets are congested, it is a real pain in the butt to drive around in that town. Now on the other hand take a look at Rancho Cucamonga, they have done a pretty good job making sure the new development is all conforming and all industry is close to fwy access and away from residential. Your decision today will impact this community fro generations to come. I feel this town could be the next big real estate boom but it must be done right.

Thank you for your time,
Jeffrie Saenz

From: Jeremy Ball [jayball3@hotmail.com]
Sent: Sunday, January 26, 2014 5:08 PM
To: Rull, Paul
Subject: Proposed warehouse in Cherry Valley
Mr. Paul Rull,

Thank you for taking time to read this email. I reach out to you this afternoon to express my worries about the proposed warehouse off of Cherry Valley Blvd.

I have lived my whole life in Cherry Valley, a wonderful rural area that has been preserved as such for decades. My concern is that if this warehouse goes in, it will destroy the rural setting that many, such as myself and family and neighbors have enjoyed for all these years. The pollution that will be emitted from the construction project and the hundreds of trucks going in and out of the warehouse daily will be detrimental to the atmosphere here and ruin the many orchards that residents have cared for for years.

There is already so much traffic on the blvd due to the new high school that was put in in 2007 and with a one lane on ramp and one lane off ramp to the I-10 will cause a huge disaster in terms of traffic. A quick zip to the freeway that so many of us have enjoyed will now turn into a half hour struggle to travel but a mile or so. Home values will decrease and Cherry Valley will turn into a thing of the past.

There are plenty of other places in Riverside county that would better suit a warehouse of that caliber, for example out past Cabazon and continuing on to the desert cities that have easy access to the freeway. Construction there would not have a devastating effect on a community as it would here.

I urge you to reconsider your options and not to build on Cherry Valley Blvd.

Jeremy Ball

Ware house

From: Jerry Beeman [jbe7336@gmail.com]
Sent: Monday, January 27, 2014 7:32 AM
To: Rull, Paul
Subject: Ware house

Yearly bad idea. Please reconsider

Thank you

Sent from my iPad

From: Jill A. Padilla [JPadilla@ontariopolice.org]
Sent: Sunday, January 26, 2014 5:20 AM
To: Rull, Paul
Subject: Gateway project

Mr. Rull,

I would like the county to reconsider the building of the Gateway Project in Cherry Valley. We live in a rural, peaceful area that does not need to be transformed into a mini Fontana. The location that the county has proposed is not appropriate for our standard of living. We live and have purchased homes in Cherry Valley and Beaumont to get away from the city. Do not bring the city to us; especially in the form of a monstrous distribution center. We are Cherry Valley, not Cherry Industry.

I am concerned about the pollution and the air quality. I am concerned that you will be marring our beautiful landscape that makes Cherry Valley what it is, with a an enormous warehouse that nobody wants or needs. The traffic on Cherry Valley Blvd. will be horrendous! We do not want two hundred tractor trailers trying to get off the freeway and down that street. Beaumont High School students are on that street, as well as all of the homeowners on the south side of the 10 freeway.

Please take your business elsewhere. Your plan is disruptive and unwelcome to the citizens of Cherry Valley. Build your ugly warehouse in Moreno Valley or Ontario.

Thank you,

Jill Padilla
Beaumont Resident/ Homeowner

From: Joan Paine <jmpaine@verizon.net>
Subject: **Re: Gateway Project**
Date: January 24, 2014 9:50:13 AM PST
To: Joan Paine <jmpaine@verizon.net>

RECEIVED
JAN 28 2014
ADMINISTRATION
RIVERSIDE COUNTY
PLANNING DEPARTMENT



I sent this E mail and an error message popped up "Does Not Appear To Be A Valid address"
So I am making a copy and sending it to you. JPaine

On Jan 24, 2014, at 8:58 AM, Joan Paine wrote:

> I am writing you as a VERY disappointed resident of Cherry Valley This project is Not a good idea - The Off and On ramps on I 10 will be a nightmare to use. I have followed a big rig onto Cherry Valley Blvd he was headed for the repair facility on that street.The off ramp was backed up by 9 cars - that is just with 1 truck using the off ramp .The proposal is for 428 bays-
> You would be creating an unbelievable scenario of traffic- As an asthmatic - Sitting behind an idling diesel is a trip to the Emergency Room for me . To use an alternate route adds 7 1/2 miles to any trip using I 10 The air quality will have a serious effect on our elderly population- those with COPD in particular.
> May I suggest you perform an experiment? Bring 3 or four big rigs out to the on and off ramps at 4 or 4:30 on a week day and see what the impact will be .
> There has to be a better freeway access location for this project than Cherry Valley .Where can I access the environmental impact survey?
> Joan Paine
> 40795 Laredo Trail
> Cherry Valley CA 92223

From: Kathie Dyson [katdys@yahoo.com]
Sent: Friday, January 24, 2014 2:26 PM
To: Rull, Paul
Subject: Gateway Project

Mr Rull

We have just found out that there is a 2.5 Million sq. foot warehouse project being proposed for our area. This is not the right place for a huge warehouse to be built. We do not need these trucks polluting our air space in our small community. There are 4 schools nearby, along with housing tracts and 2 senior communities. Cherry Valley Blvd. is a road we all travel to get both to and from the freeway, and the road is already quite worn and the overpass is quite small. With hundreds of trucks using the freeway on and off ramps every day, this will greatly effect our residents travel. There is a high school on Cherry Valley Blvd., and an elementry school on Brookside Dr., both close to the proposed warehouse. Our children do not need these trucks! Besides the pollution and traffic from this huge proposed warehouse, it will lower the property value of our homes even more, and we have already taken a hit with the down economy We seniors do not need --- nor do we want this project in our small community.

John and Kathleen Dyson

From: John Burrows [burros1s2j@dslextreme.com]
Sent: Sunday, January 26, 2014 7:01 PM
To: Rull, Paul
Subject: Cherry Valley Interchange....
Where exactly is this 2.5 million sq. ft. warehouse to be located, in relation to Cherry Valley/Tukwet?

From: John Burrows [burros1s2j@dslextreme.com]
Sent: Monday, January 27, 2014 12:45 PM
To: Rull, Paul
Subject: RE: Cherry Valley Interchange....

Thank you. From my meager experience as a public works construction engineer I don't find much wrong with the proposed use of that property. Provided there are adequate measures taken to handle ingress and egress traffic related to the I-10, I don't see much of a threat. As long as traffic issues and storm drainage off of that property are addressed, I don't have any initial concerns. That whole thing about 480 bays and 480 trucks is to me mere scare tactics for the uniformed. There is more to this yet. My view is that commercial use of what used to be fallow land could be a good thing. Certainly, if this goes forward that land will not be used for residential development. What I would be seeking would be restrictions on support services in and around this proposed site, other than fueling facilities. Them truckers should have to go to Calimesa or Beaumont for food and lodging. I guess I am an advocate for having a commercial corridor along the I-10 that produces income for the local economy but protects we residents in our chosen environment.

John

From: Rull, Paul [mailto:PRULL@rctlma.org]
Sent: Monday, January 27, 2014 8:10 AM
To: 'John Burrows'
Subject: RE: Cherry Valley Interchange....

Hi John,

Please find attached a copy of the notice of preparation as it will give you some project details, including the project location map. The project is located on the north side of Cherry Valley Blvd, east of the I-10, west of Oro Road.

If you have any questions, please feel free to contact me.

Thanks.

Paul Rull
Riverside County Planning
4080 Lemon Street 12th Floor
Riverside, CA 92501
951-955-0972

email logo smaller

From: John Burrows [mailto:burros1s2j@dslextreme.com]
Sent: Sunday, January 26, 2014 7:01 PM
To: Rull, Paul
Subject: Cherry Valley Interchange....

Where exactly is this 2.5 million sq. ft. warehouse to be located, in relation to Cherry Valley/Tukwet?

From: John E Clark [johneclark936@msn.com]
Sent: Monday, January 27, 2014 11:00 AM
To: Rull, Paul
Subject: Gateway Warehouse Project
Attn: Paul Rull, Project Planning Manager for Riverside County

Dear Mr. Rull,

I've just learned of this project and the meeting scheduled for today 1/27/2014 at 1:30pm. I cannot attend in person but wish to let you know of my concerns about this project. Having just heard of the project I recognize I am late in becoming aware, but wish to record some early thoughts and concerns;

- Plans for 428 truck bays in use 24 hours per day is an astounding load on the I-10/Cherry Valley interchange.
- The volume of trucks will be a very large source of particulate and noise pollution.
- Fast Track status seems inappropriate for a development of this size and impact in an area previously intended for residential use.
- A far better location for this and similar logistics facilities would seem to be at the currently planned Portrero interchange; a location seemingly better suited.

I request that you keep me informed of this activity as it progresses via email to johneclark936@msn.com or regular mail to John E Clark, 1572 Summerlin Ct. Beaumont, CA 92223.

Thanks in advance for bringing these initial thoughts/concerns to today's planning meeting.

John E Clark

Johnson & Sedlack
ATTORNEYS at LAW

Raymond W. Johnson, Esq. AICP
Abigail A. Smith, Esq.
Kimberly Foy, Esq.
Kendall Holbrook, Esq.
Carl T. Sedlack, Esq. Retired

26785 Camino Seco, Temecula, CA 92590

E-mail: EsqAICP@WildBlue.net
Abby.JSLaw@gmail.com
Kim.JSLaw@gmail.com
Kendall.JSLaw@gmail.com
Telephone: 951-506-9925
Facsimile: 951-506-9725

January 13, 2014

Paul Rull
County of Riverside
Planning Department
P.O. Box 1409
Riverside, CA 92502-1409
prull@rctlma.org

EMAIL AND US MAIL

RE: Written Request for all Public Notices regarding I-10 Gateway Center Project, EIR No. 534

Greetings:

Please allow this letter to serve as a written request to receive all notices regarding the I-10 Gateway Center Project, EIR No. 534.

This written request is intended to include all public notices issued pursuant to the County of Riverside ordinances, as well as pursuant to the California Environmental Quality Act ("CEQA"), including notice of any CEQA determination regarding the subject project. This written request is also intended to include any notices of public hearings concerning GPA No. 1127.

Please send all notices to the following address:

Johnson & Sedlack
26785 Camino Seco
Temecula, CA 92590

Thank you very much for your assistance.

Sincerely,

Raymond W. Johnson
JOHNSON & SEDLACK

Cherry Valley warehouse proposal

From: Judi Nightingale [judinightingale@yahoo.com]
Sent: Monday, January 13, 2014 8:00 PM
To: Rull, Paul
Subject: Cherry Valley warehouse proposal

Mr. Rull,

I ask you to please consider the impact to the small and rural community of Cherry Valley as you consider the proposal for a huge warehouse to be built at out off ramp. I moved to Cherry Valley, from the country club area of Redlands, just over a year ago. The reason for the move was so that my husband and I could enjoy a rural and more relaxed environment.

Those of us who live in this town, share the desire for a close community and enjoy the small town environment. A large warehouse at the only exit allowing egress into our community will have an extreme impact on traffic and will also lose the country environment we enjoy.

I work for the County of Riverside and understand our need for economic growth but ask that a more reasonable fit be considered for the I-10/Cherry Valley blvd junction.

Thank you,
Judi
Sent from my iPhone

From: Judy Bingham [judyb115@aol.com]
Sent: Monday, January 27, 2014 12:15 PM
To: Rull, Paul
Subject: Zoning Change

Dear. Mr. Rull,

I am opposed to the zoning change from residential to commercial and allow 2 .5 million sq. foot Distribution Center? Warehouse
near the Cherry Valley/ Tukwet Canyon off ramp of the 10 Freeway.
This will make it almost impossible to get on and off the freeway.
428 loading docks with trucks dieseling 24 hours a day -- 7 days a week. The air quality will be detrimental to all of us who live in this area.

Do you not care about the people of Riverside County?

Who is floating the bond and who are the underwriters?

Judy Bingham

115 Viele Ave.
Beaumont, CA.92223
909 322-9898

From: Karin Starr [karinstarr@gmail.com]
Sent: Monday, January 27, 2014 9:09 PM
To: Rull, Paul
Subject: Warehouse in Cherry Valley

Please do not allow a gigantic warehouse to ruin our community! Is this county land you are throwing away? Are you only lookingg at $$$? There will be thousand of unintended negative consequences of your action if you do not stop this! Please help.

Thank you for you time. I hope you have some positive plans for the County. Focus more on improving schools and adding parks, or why are you in the position you are in?

Gateway project

From: Kathleen [ktmckrause@aol.com]
Sent: Monday, January 27, 2014 12:49 PM
To: Rull, Paul
Subject: Gateway project

I live in the community of Solera in the city of Beaumont. I am opposed to the Re-zoning of the area around Cherry Valley blvd. & the 10 freeway. Re-zoning for special interest is not what our county reps. are elected to office to do. Thank you Kathy Krause

Sent from my iPad

From: Kim Chi [kimchi_art@hotmail.com]
Sent: Sunday, January 26, 2014 10:13 PM
To: Rull, Paul
Subject: Cherry Valley Warehouse project
Dear Mister Rull,

I know you are being inundated with objections over the warehouse that's been proposed for Cherry Valley. I could tell you what you've already heard so far: that no one wants this project to move forward. That will not be much different from what you are already hearing. And its true. People do not want this facility here, marring the cherished rural environ. However, I know that the bottom line will probably be money. So what I seek to tell you instead that revenue, while important, should not trump the concerns of the community.

The traffic that a facility such as this would produce is unthinkable for the area. The freeway is unequipped for such a massive onslaught of vehicles (trucks no less). The surrounding land is a beautiful and untouched rural treasure. This community's backbone is rural farmland. It is what people DO with their land, it is what attracts people to this area, is what Beaumont boasts about to film crews, the reason many farms and ranchers commit their livelihood to this place.

We cherish our clean air and unpolluted environment. Clean land, air, and water are a sovereign right of the people, much overlooked and belied by corporate interests, who do their dirty work far from where they themselves live. That these rights would be sacraficed in the name of speculative consumerism is unjust, but also reflects poorly on you personally. Your position is to protect Riverside county and preserve its assets, as well as enable growth and industry that properly reflects the values of the community. Cherry Valley values its rural farmland and unpolluted environment first and foremost. That is why it is home of a very large organic farm and resort, as well as ethical and eco friendly farms and ranchers. THAT is what we are doing here. The potential pollution (air, noise, light, water, etc) this building may generate is of HIGHEST CONCERN to a variety of agricultural industries.

There is a water shortage here as well, and water must be a very carefully managed resource for this area. Should it be negatively impacted by the construction and later by the water usage of the facility, its employees and never ending truck drivers coming and going, this building could destroy any value it promised.

I moved to this community only a few years ago from Riverside, and was very involved in the art community there. Over the many years, I watched that part of the city's plan grow and evolve. Being part of the city's first artwalks, when there were only a handful of galleries and attendees, I glow with pride seeing how vital the arts community has become to Riverside's identity today. And because of this I know how imporatnt it is for a city to invest in projects that have deeper merit than simply revenue. Nurturing smaller, individual projects that bear unique products and services is, in the long run, what really builds a place into a thriving community that people want to be a part of. Attending to the subtler details and needs of the people is central to civic moral, which equals participation, which is the engine of the city's economy. Just look in 10 years what the arts has become in Riverside, how important it is. No one wants to live in a community famous for strip malls or for a monolithic industrial monstrosity. They want QUALITY. Substance. Culture. Ultimately this is what wins out and carries weight into the future. This industrial complex promises none of that.

I'm sure the county stands to profit from this creation, but will Cherry Valley see the money it will generate? If not, there is NO REASON it will be accepted. The will of the people is often no competition for money. But you must know, as the person who is in charge of envisioning the future of cities, that the citizenry of Cherry Valley will be HARMED by this action. It is not a petty concern. **It is about the way we see our future, how we treat our land, what we value and uphold as a community.** It stands for much much more than the money temporarily got from such an unsanctioned trespass.

PLEASE, as one of the only people who truly represents our local community and has the power to affect positive change here, heed our objections. Place our concerns at the forefront of your deliberation. Our quality of life depends on it. Thank you! We appreciate your hard work for us.

Sincerely Yours,

Kim Knorr

From: Kimberley Wolf [kimberley.wolf@ucr.edu]
Sent: Monday, January 27, 2014 8:36 AM
To: Rull, Paul
Subject: Proposed Warehouse Project Cherry Valley

Dear Mr. Rull,

I live in Cherry Valley and am very concerned about the possibility of the proposed warehouse project on your agenda today. We have lived in Cherry Valley over 30 years and have watched the communities around us grow without benefit of change to infrastructure such as roads. Because traffic has increased on Cherry Valley Blvd, people cut across the city on the two main East/West cross streets, Brookside and my street Orchard. It has become so dangerous on our street we no longer can park our cars there. Last year we had a fatality on our street which was tragic. As happens several times a year, just this last weekend someone ran head on into the barrier on the Cherry Valley on ramp to the 10 freeway. The addition of 400+ truck loading bays is just unfathomable to me, and I cannot see how the area could support it.

The community here has had to shoulder the increased traffic load from housing expansion for too many years now. In addition, the pollution and noise of such a facility would greatly affect the quality of life here in this rural area.

Please, please reconsider this monstrosity of a project which would forever alter our quality of life here in Cherry Valley.

Thank you!

Kimberley Wolf
Enrollment Manager
BPSC, CMDB, GEN, MATH & NRSC
CNAS Enrollment Management Center
Webber Hall 1301
Riverside, CA 92521
(951) 827-3805 Phone

kwolf@ucr.edu
www.cnasemc.ucr.edu

From: Kirk Brown [thecaptainkirk@yahoo.com]
Sent: Friday, January 24, 2014 2:48 PM
To: Rull, Paul
Subject: Gateway Project 2
ATTN: Mr Paul Rull,

This email / letter is in regards to a project referred to as 'Gateway Project 2' that is in the planning stages and to be located in Riverside County off the 10 freeway at the Cherry Valley Blvd exit near Yucaipa / Beaumont / Cherry Valley. This email is written to express clear adamant opposition to this project.

It has come to my attention that this project is designed primarily for the purpose of warehousing retail / consumer products / household goods; and more specifically designed as a 'high-cube' logistics facility. This Heavy Industrial type of project CLEARLY does not fit in this rural area; nor does the project's proposed use fall under the existing zoning for this community.

The Environmental Impacts for this type of project are clear and irrefutable; increased pollution, displacement of wildlife, diminished air quality, excessive demand on a water supply that is already scarce and depleted for current residents, lowered property values, and extreme truck traffic not to mention the life threatening hazardous mixture of heavy industrial trucking with residential traffic. There is absolutely no benefit this type of project could bring to a residential / rural area that would outweigh the detriments. Cherry Valley is an area currently known for it's fruit orchards, scenic beautiful landscape, beauty, and serenity, not at all the type of community for this proposed project.

It is obvious that this project is nothing more than a power play; more power to the already wealthy and who cares about the John Q public. The planning, or lack thereof, for this type of project in this area does not qualify whatsoever as a 'Planning for our Future' project; nor does it in any way 'Preserve our Past'.

Please accept this email / letter written by an official Registered Riverside County voter as a **NO** vote on this project.

Sincerely,
Kirk Brown

Gateway project in Cherry Valley

From: Gmail [hamsmum@gmail.com]
Sent: Monday, January 27, 2014 5:13 PM
To: Rull, Paul
Subject: Gateway project in Cherry Valley

Please note that this area is a rural family area and is not conducive to the facility you are planning to build. Truck traffic is already heavy and the freeway is only 3 lanes wide. Most, if not all, moved here to get away from heavy traffic and have a more peaceful way of living. Please think about what you are proposing and how it would affect this quiet community. This is not the place for a massive facility and many trucks coming and going. There is plenty of space along the 60 freeway if you are looking for land that would not affect residential areas.

Thank you for your time,

Mrs. L. Montoya

From: dreamers6@verizon.net
Sent: Friday, January 24, 2014 10:27 AM
To: Rull, Paul
Subject: Gateway Center Project

Dear Mr. Rull,

I am a 25 yr. resident of Cherry Valley and I am very much apposed to the Gateway Distribution Center project. The destructive impact on our community and on surrounding communities will be multifaceted; Traffic congestion at the freeway on and off ramps, diesel fuel pollution, lower property values in the whole area of Beaumont, Calimesa and Cherry Valley. Most of us have chosen to reside here because of the rural lifestyle, lack of congestion and "usually" clean air, this project would certainly ruin that and its not necessary! no one needs a distribution center in this area and it will in no way benefit the area residents. As usual the project planners are trying to fly under the radar but people out here are becoming aware and they are angry and very soon more will be aware and angry!!
Please feel free to let Supervisor Marion Ashley know that we really don't appreciate this irresponsible project and any involvement he has in it other than assuring its demise.

Sincerely,
Lance Adams

From: Pamela Bunker [pambunker2@yahoo.com]
Sent: Sunday, January 26, 2014 7:51 PM
To: Rull, Paul
Subject: The Gateway Project

Dear Paul,

I am writing to you in regards to the Gateway Project that's being considered for the small community of Cherry Valley, CA.

It is extremely important that you stop this project from invading our little community. They plan to build it on Cherry Valley Blvd.

We use Cherry Valley Blvd. as a major thoroughfare to the I10 Freeway. This community cannot handle a warehouse with 428 loading docks and all of the trucks that will be clogging up our on and off ramps.

We use these ramps to get to and from work every day. It would be a hardship if we had to drive up Beaumont Ave. to enter the 10 Freeway! It's in the opposite direction to where we need to go.

Please I ask you, to stop this from happening? There is plenty of other area's a warehouse of that magnitude can be built and not have such a major impact on the hard working people that need to get to work each day!

Why don't they choose a commercial area?!!!

Not to mention the air quality we would have if these trucks come here. Would you want your family to live in an area with all of that diesel fuel? Cherry Valley is a wonderful little community and we would like to keep it that way and this type of development is NOT welcome here!

Yours truly,
Larry and Pamela Bunker
Cherry Valley, CA

From: Laura Cox [lauracox389@yahoo.com]
Sent: Friday, January 24, 2014 6:59 PM
To: Rull, Paul
Subject: Rural Cherry Valley

Dear Mr. Rull:

Please understand that the residents of Cherry Valley do not want a gigantic warehouse to be constructed on Cherry Valley Boulevard. Please STOP this nonsense from going any further than it has.

Thank you very much for your time and consideration.

Cherry Valley homeowner for 19 years,

Laura Cox
951-769-5435

Gateway Warehouse Project

From: Leta Porter [letamay@earthlink.net]
Sent: Sunday, January 26, 2014 8:35 PM
To: Rull, Paul
Subject: Gateway Warehouse Project

Paul Rull:
I have just become aware of the proposed Gateway Project. I am ALARMED because of the fine particle air pollution that will adversely affect the health of the many seniors and children who live in the surrounding area. Many people have moved here to have a healthier living environment. Are we going to ruin all of the remaining healthy areas for people to live? I would hope we would have more concern for the people!

Concerned Solera resident,
Leta Porter
816 Annandale Rd
Beaumont, 92223

From: Linda Schreiber [lmomgm@yahoo.com]
Sent: Monday, January 27, 2014 4:02 PM
To: Rull, Paul
Subject: No new warehouse in our area!

I live at Rancho Calimesa, a senior mobile home park in Calimesa, and am writing my disdain about a proposed 2.5 million square foot warehouse in my neighborhood. This would ruin our property values and change our beautiful rural community with abundant wildlife and trees to a horrible industrial area. This could ruin the air quality, which is why many of we elderly live here in the first place.

The freeway interchange at Cherry Valley Boulevard is already inadequate, The diesel trucks would potentially be moving in and out of this location 24/7. The constant noise would be stifling to say the least.

Please help us by NOT supporting this project. I might add it is getting very difficult, if not impossible, to find honest people to vote for anymore - I hope you are one of the honest ones.

Thank you for listening.
Linda Schreiber
lmomgm@yahoo.com

From: oneforlis [oneforlis@yahoo.com]
Sent: Sunday, January 26, 2014 9:42 AM
To: Rull, Paul
Subject: Gateway Project

This project is completely unacceptable and unconscionable. To take a beautiful area that residents want to keep rural and degrade like this is unthinkable.
Lisa McCoy
Sent from my MetroPCS 4G Android device

Reject cherry valley warehouse

From: The West Family [mlwest@yahoo.com]
Sent: Monday, January 27, 2014 5:19 AM
To: Rull, Paul
Subject: Reject cherry valley warehouse

I live off Cherry Valley Ave, I just read about a possible warehouse being built off Cherry Valley. Traffic is bad enough to get on or off of the freeway. The last thing we would need is a huge warehouse.
Property value would go down due, to the increased traffic and pollution would increase. This voter says no way.
Reject this project.

Liza West

From: Lyndsey Oliver [lyndseyoliver@hotmail.com]
Sent: Friday, January 24, 2014 2:40 PM
To: Rull, Paul
Subject: No Gateway Project Please!
Dear Paul Rull,

I am writing to plead with you to please not go any further with the gateway project in Cherry Valley on Cherry Valley Blvd. I live just a couple miles from this proposed project, and we moved to Cherry Valley to get away from all the trucks and smog of the city. I have small children and we have a lot of allergies and this project would increase pollution in our charming country town. The city of Beaumont already shut down one huge distribution project proposed off the 60 and 10 fwy last year because our people didn't want it.

Please conserve our city and go in a different and more family friendly direction. Beaumont and Cherry Valley is one of the fastest growing cities in Southern California for families, and we chose this area for it's views and community. Please, I beg you, stop this HUGE project and re-think our county's development! We don't want the congestion and everything that comes with a busy industrial area here in these beautiful foothills.

Sincerely,

Lyndsey

From: Marc [marc16@verizon.net]
Sent: Friday, January 24, 2014 2:46 PM
To: Rull, Paul
Subject: Gateway Center
Mr Rull,

I have been reading about the proposed project known as the "Gateway Center." I am adamantly against this project bring built in, or anywhere near, Cherry Valley. This proposed warehouse will have many negative effects on this area.

1) It will ruin traffic on Cherry Valley Blvd, and make the on and off ramps unusable for regular traffic. 428 bays will generate thousands of trucks daily, at all hours of that day and night. It could very well generate traffic to the tune of a hundred trucks an hour. Cherry Valley Blvd will become nothing more than a throughway to the warehouse.

2) t will foul the air horribly. Diesel emissions are now know to be the worst. Read this study if you care to educate yourself. http://newscenter.berkeley.edu/2012/10/22/diesel-vs-gas-contributing-to-smog/

Thousands of trucks per day ... idling and driving ... spewing out diesel emissions ... will ruin our standard of living, making it difficult for our elderly and our children to breath.

3) It destroy our home values. You may not live around here, but we do. We didn't move out here and buy homes only to have their values decimated because of some giant warehouse monstrosity.

I, as well as everybody else I know, will fight this tooth and nail. I suggest you talk to your superiors about moving this project to another location. It will save them a lot in litigation fees and bad press.

Thank you for your attention to this matter.

Marc Sanders

From: marinalim [marinalim@ymail.com]
Sent: Friday, January 24, 2014 4:02 PM
To: Rull, Paul
Subject: Warehouse on Cherry Valley, Beaumont

Dear Mr. Rull,

Hello, my name is Marina Lim. I'm a resident at Fairway Canyon/Tukwet Canyon off Cherry Valley Blvd in Beaumont, Ca. I read post that my friend posted on facebook about a proposed Warehouse. Now, is this true? If so, I'm truly concerned for my family's well being. We moved from Rancho Cucamonga to Beaumont in 2005 to raise our family in a nice, peaceful, stress-free and clean atmosphere. Also, away from the trafffic and loud noise. I object to this project. Anyway to address my concern in person?

Not only that, my home value has decreased when we purchased in 2005. It will be even more lower if they do build a warehouse. Nothing good will come out of this for my family and other residents. Thank you.

Regards,
Marina Lim

Sent from my Samsung Galaxy S®4

From: Marshall Cammack [marshallcammack@yahoo.com]
Sent: Sunday, January 26, 2014 8:57 PM
To: Rull, Paul
Subject: Fw: Gateway Project
Dear Mr. Rull,

My name is Marshall Cammack and I am a resident of the city of Beaumont. I am writing to you today to state that I do not want the warehouse to be built on Cherry Valley Blve. (Gateway project).

This is a "top tier" size distribution center. I was a manager at a distribution center in Ontario, CA for three years so I know what this project entails and will it bring to pass. As you know, the Ontario area is pretty much all distribution centers. Ontario can pull this off because it has the infrastructure in place to expand and plan for new growth. Multiple lanes and freeways, wide roads, etc. Proper road engineering and planning. All of the freeway exits around Beaumont, especially the Cherry Valley exit are simply not built for heavy truck traffic and will face infrastructure failure very quickly. Re-construction would have to take place as the ramps, bridges, and roads are old and not meant for the hundreds of heavy truck loads that would ride them every day. I'm sure you know how damaging trucks are to roads and bridges compared to cars. Traffic on these roads right now is very light anyway so who knows how long this old infrastructure will last with increased traffic.

Environmental concerns are obvious. People move to Beaumont to avoid the pollution other cities have. Ontario, San Bernardino, Fontana, etc. When we moved to Beaumont from Ontario I couldn't believe how beautiful the sky was in comparison to Ontario and the surrounding areas.

The last item I would like to address is the way this would devalue property values around the area. Some of the nicest homes in Beaumont (Fairway Canyons, across the freeway from proposed site) would have the values of their homes seriously decrease. It doesn't matter if it's across the freeway or not, home values will still go down. The proposed area is also a very nice, scenic area for drivers and those visiting the community. That's why there is a "Cherry Valley Festival", it is close to Oak Glen, etc. Let's be serious, would you really want this being built down the street from your house? The image of Beaumont will also be tainted as people who drive by will only remember the huge warehouse off to the side of the road rather than the beautiful scenery.

PLEASE CONSIDER THIS IDEA:

While this building would devalue the Beaumont area it would most likely increase the value of certain areas of the Banning area. I am very serious when I say that a facility of this sort would increase many areas in Banning and I think it would be something good and "new" for the community. New, large, development hasn't happened in Banning for a long time and I am almost sure that this would be a boom for the city bringing in new tax revenue, something the city desperately needs.

I appreciate your time and understanding.

Marshall Cammack
951-392-9844

From: Martha Saenz [mlsaenz@aol.com]
Sent: Sunday, January 26, 2014 9:53 AM
To: Rull, Paul
Subject: Proposed Gateway Project in Cherry Valley

Hi, Paul

I just became aware of this project two days ago. As a resident of Solera Oaks, a 55+ community in Beaumont, I am extremely concerned over the negative impact this project would have on the quality of life in our area. First of all I'm surprised that residents weren't notified by Riverside County and given the opportunity to voice their concerns. If I wasn't going to be out of town, I'd attend Monday's meeting.

My primary concerns are:

- Environmental impact, in particular air quality. Diesel trucks are the number one polluters for fine air particles that put seniors and children at risk. I don't want Cherry Valley to become the next Mira Loma!
- Rezoning from residential to industrial opens the door for like projects.
- Increased traffic on Cherry Valley Blvd and freeway on and off ramps.

I'd like to request that my name be put on the notification list for information regarding Gateway. Send information to:

Martha Saenz
840 Annandale Rd.
Beaumont, CA 92223

Thank you

From: Martha van Rooijen [martha@mvrconsulting.com]
Sent: Monday, January 27, 2014 1:40 PM
To: Rull, Paul
Subject: SCH No. 2014011009 NOP for I-10 Gateway Center Project--Cherry Valley Deserves Better!
January 27, 2014

TO: Paul Rull
Riverside County Planning Department

RE: Comments for Public Scoping Meeting January 27, 2014
SCH No. 2014011009, NOP for I-10 Gateway Center Project

FROM: Martha van Rooijen, Beaumont, CA

This email is to submit comments for the Scoping Session being held today at 1:30 on the I-10 Gateway Project.

My understanding is that General Plan and Zoning Changes are being considered for this project.

This land-use application should be denied by Riverside County for the following reasons and significant negative environmental impacts. Cherry Valley deserves better than this poorly conceived, environmentally unsound warehouse project.

1. Cherry Valley is part of the Riverside County Pass Area Plan and is listed as a "unique community"

2. Cherry Valley residents have spent years working with Riverside County on the appropriate General Plan, Zoning, and Overlays for their community.
Warehousing, including logistic and fulfillment centers are inconsistent with the current and planned land uses in the proposed project area. The area itself is vacant and in a rural setting surrounded by small farms and rural-type estate residential. The area has large minimum lot sizes and is intended to preserve the Cherry Valley coveted rural lifestyle.

3. Cherry Valley Gateway Policy Area is in place and shows the following for the "Gateway" to Cherry Valley. The proposed warehouse I-10 Gateway Project is not consistent with what the approved planning document is for this area. Here is what the Plan states is consistent, buffering and rural aesthetic gateway features--not big-rigs, warehousing, pollution, visual blight and noise.

   The Cherry Valley Gateway Policy Area is located at the westerly edge of the community of Cherry Valley in an area that is presently largely agricultural or undeveloped. The policy area shall be developed as a gateway to Cherry Valley, and it shall be developed to evoke the rural character of that area. The policy area shall also serve as a community separator between Beaumont and Calimesa. To accomplish these two goals, it is envisioned that clustering and buffering will be utilized in order to preserve open space and maintain the rural character of the area. Higher densities may be allowed through a general plan amendment provided such development meets the goals of the policy area.

   Policies:

   PAP 4.1 Clustering of dwelling units and lots is encouraged in order to preserve open space areas.

   PAP 4.2 Provision shall be made for establishment of a visible "entrance" feature for Cherry Valley within this area that evokes the rural identity of the community.

4. All of the following environmental factors are significantly negatively affected by the proposed I-10 Gateway Project:

   a. Aesthetics--the project will cause visual blight and ruin the rural character of Cherry Valley

   b. Biological Resources--there are animals, flora and fauna that will be affected and destroyed

   c. Greenhouse Gas Emissions--Warehousing and the associated big-rig trucks, workers and machinery will emit greenhouse gases that are not currently in this pristine rural environment

   d. Land-Use Planning--Warehousing is 100% out of compliance with the existing land uses, planning designation and overlays that the Cherry Valley community has worked diligently with Riverside County to have in place. The existing land-use regulations are in place to specifically prevent the type of planning application that the I-10 Gateway project is proposing. A speculative warehouse scheme with massive density and environmental impacts changing quality of life in the small, unique Cherry valley area.

   e. Housing---the area is meant for estate, rural housing and small agricultural uses--all on large lots--warehousing will impact the existing homes and small farms and in fact, prevent further development of the rural housing--when people see giant warehousing, big-rig trucks and associated impacts, they do not want to invest in the Cherry Valley rural lifestyle--they believe their investment will be wasted. So it is not just the current residents who are affected, it is the future small farming, equestrian and estate home builders who will not want to be located in a warehouse zone. I must bring up the Sketchers Warehouse in Moreno Valley--it is a travesty that turned a rural estate area into a visually blighted mess.

   f. Transportation/Traffic--Traffic is a prime concern. Neither Cherry Valley or Oak Valley I-10 onramps are widened or signalized. Traffic backs up from the existing land-uses. Cherry Valley on-ramps have severe visibility issues, are not configured well now--adding in big-rig or warehouse trucking will cause accidents and insane traffic back ups. Even if this developer is required to pay a fair share of the needed interchange upgrades--signalization, lane widening, new ramp configurations with appropriate acceleration lanes on I-10, etc.-- the improvements MUST be in place prior to any warehouses being developed. People say, well it's in the plan and a fair share will be paid. Unfortunately, the intersection is too under-sized and dangerous at both Cherry Valley/I-10 and Oak Valley/I-10 to count that a future Caltrans project will mitigate traffic/transportation concerns. The existing housing that was approved by Riverside County in the Oak Valley area has been built and more is planned, and still the two Interchanges are not on schedule for upgrades or even signals. The back up in the morning and night with just the existing traffic today is a cause for concern.

   g. Agriculture--the area has agricultural uses. Warehousing is not consistent with the area's agricultural, small farm-to-table concept.

   h. Cultural Resources--the Edward Dean Museum is within Cherry Valley. In addition, Cherry Valley serves as a rural gateway to the small hamlet of apple orchards and rural estate homes in Oak Glen in San Bernardino County. Warehousing impacts the cultural resources in Cherry Valley that preserve living pieces of California rural lifestyle. There may also by significant Indian artifacts and other cultural items found in the area that will require sensitive treatment and a high-level of consideration by both Riverside and San Bernardino County historical/cultural groups, as well as potentially having statewide significance.

   i. Hazards and Hazardous Materials--Warehousing is Industrial and will potentially bring

chemicals, processes, pollution, and waste products to Cherry Valley that are significantly negative for the environment.

j. Public Services--Cherry Valley does not have adequate police or fire services now. Riverside County is spread thin in these resources. Adding warehouses to the Cherry Valley area will require additional police and fire services that are not needed now. The developer of the warehouses is just a speculator who will leave--will there be conditions for a Mello Roos/Assessment District that they pay for their share of added services. Will the County expect the warehouse to pay for its impacts to public services? The administration for Cherry Valley is not close to Cherry Valley-warehouses are working and operating 24/7. There is a significant impact on public services to create an island of warehousing in a rural area.

k. Utilities/Service Systems. Cherry Valley is rural. Are the warehouses planning on underground utilities? They should be. The existing grid is older and not a modernized system in Cherry Valley. Warehouses require power and utilities 24/7. In addition, warehouses draw in other land uses such as truck stops, diesel fuel--the warehouses may even put onsite fuel and truck parking that could become a default truck stop--with or without fuel. The reason is that we have seen big-rigs pulled over for months on I-10 as Caltrans has closed the rest stop in Beaumont area--it is not clear if the closure is permanent or for maintenance. However, the trucks that were stopping there are now just pulling over for hours to rest. Will the I-10 Gateway project become a defacto truck stop--it is entirely possible that this will happen as it will be an attractive stop for truck drivers.

l. Air Quality--Big problem with air quality. Cherry Valley now enjoys fairly clear air with good quality--associated with rural living. Intermittently, pollution comes from Los Angeles, San Bernardino and Riverside and from the Coachella Valley now. There is no warehousing in the proposed project area in Cherry Valley--the warehouses will create new air pollution, new emissions that will damage the Cherry Valley residents in the rural area and residents in Beaumont and Calimesa nearby. The area will be a magnet for Big-Rig trucks and many will sit in the parking lot generating emissions. The Big-Rig and smaller trucks will sit idle waiting to get on the inadequate freeway on/off ramps on I-10 at Cherry Valley and Oak Valley.

m. Geology. The soils are pristine in the Cherry Valley Area--emissions, oil and other warehouse/trucking impacts could leak into the soil and affect neighboring rural homes and farms.

n. Hydrology and Water Quality. Water Quality is a big issue for Cherry Valley. There are studies that new water supplies must be found for the existing land-uses and rural plans. Warehousing is not compatible with an area that has water quality concerns. It is noted that Yucaipa Valley Water District will serve the development. Interesting that Beaumont-Cherry Valley Water District is not serving. Beaumont-Cherry Valley Water District has been clear that water supplies are limited, conservation is needed and development may not occur if new water sources are not identified and put into place. Now suddenly enter Yucaipa Valley Water District--they are willing to serve. This is smoke and mirrors. Beaumont-Cherry Valley District should be consulted along with San Gorgonio Pass Water District who brokers water in the region before any warehousing is considered in this area. A water study is needed. The area also has a natural water shed that will be impacted by the warehouses.

o. Noise--warehouses go 24/7. They will bring noise pollution to our region

p. Light/Glare--Warehouses go 24/7. They will bring light pollution to our rural region. City of Beaumont has a Dark Sky Ordinance. Cherry Valley may not have this kind of protection. It is needed. The County of Riverside should consider the effect of a 24/7 warehouse operation on the night skies and surrounding rural land-uses.

5. Expand the Notice to Responsible Agencies for the I-10 Gateway Project in Cherry Valley.

    a. Riverside County needs to add the following agencies to the Noticing this project for the NOP and as Responsible Agencies, if they have not already done so:

        i. City of Beaumont

        ii. City of Calimesa

        iii. City of Yucaipa

        iv. San Bernardino County (Oak Glen Community Planning)

        v. San Bernardino County Board of Supervisors

        vi. Beaumont-Cherry Valley Water District

        vii. San Gorgonio Pass Water District

        viii. San Bernardino Valley Municipal Water District

        ix. Yucaipa Valley Water District

        x. Riverside County Parks and Recreation

        xi. San Bernardino County Parks and Recreation (related to Oak Glen)

        xii. Beaumont Unified School District

        xiii. Caltrans District 8

        xiv. Wildlands Conservancy

        xv. Southern California Edison (SCE)

        xvi. Southern California Gas Co (SGC)

6. Please add me to the notification for this project--public notification or for those interested in actions on the I-10 Gateway Project in Cherry Valley.

7. Finally, Cherry Valley and the surrounding areas deserve a better Gateway Plan for this region than a large-out of scale, out of place, polluting, noisy, traffic/Big-Rig Generating warehouse project that is nothing more than a speculative venture by out-of-town developers. The region deserves monument signage, land-uses and public improvements that celebrate the rural, estate housing, farm-to-home, and rural-service and rural-tourist lifestyle that Cherry Valley stands for, and has always stood for. Warehousing is a tragic development in one of the last places in the Inland Empire that has remained and wants to remain close to its rural/agricultural and local, home-town roots.

Sincerely,

Martha van Rooijen

P. O. Box 236
Calimesa, CA 92320

(909) 709-7505l
martha@mvrconsulting.com

January 22, 2014

RECEIVED
JAN 27 2014
PLANNING DEPARTMENT
RIVERSIDE COUNTY

Riverside County Planning Department
4080 Lemon Street, 12th Floor
P O Box 1409
Riverside, CA 92502-1409

Attn: Paul Rull, Project Planner

Response to NOP of a DEIR for: I-10 Gateway Center Project:

The first item of concern is that a General Plan Amendment from Community Development: Very Low Density Residential and Rural to Industrial should not be allowed simply because a developer wants to build something that is not allowed by the current zoning. Why have a General Plan at all if it can be changed at the request of a developer? If a developer wants to build warehouses -- let him find property that is zoned for that and leave other areas already designated as Low Density and Rural alone. The DEIR must show sufficient reasons why the applicant is not pursuing the project in an area where it could be developed by right. This is the only way that there can be meaningful public review and comment on the selection of this site. Just because it is close to a freeway should not be a sufficient reason. The DEIR needs to explain how the new requested zoning change differs from the original zoning and then list justification for these differences. The DEIR should also include a section explaining why this project might or might not be considered "spot zoning" as well as an analysis of the incompatibility of the proposed warehouse with the adjoining low density and rural uses. Ignoring zoning ordinances is a violation of CEQA.

Then we have the size of the building. Two industrial buildings of approximately 2,560,000 square feet in a previously pristine open area is a horrible idea. These two buildings will cover almost 171 acres of the site leaving a mere 74 acres as open space. What good is "open space" around a "high-cube" logistics center that will be 47 feet high?

Finally there are the grading activities on the site which consists of moving 6 million cubic yards of material. If that much dirt has to be moved to build a project -- then that project is in the wrong place. Building this warehouse

on this site should not be approved for this reason alone.

I am glad to see that there will be no environmental topics screened out from review in the DEIR. Of course that doesn't mean that there will be adequate and feasible mitigation measures for all the impacts to the environment that this project will necessitate. Certain environmental issues are more important that others and need more than the usual cursory study. I have listed them below.

Air Quality: Under CEQA the significance of a project's impacts to localized air quality must be viewed in context, as the "significance of an activity depends upon the setting." Thus the significance of any added pollutant emissions must be judged in the context of an air basin that already exceeds health-based federal air quality standards. (*Kings County Farm Bureau v. City of Hanford 1990)* The South Coast Air Basin is well-documented as having the worst air quality in the nation. Riverside County generally receives the worst possible grades for pollution related to ozone and ranks #1 for high ozone days as compared to other metropolitan areas. (*www.stateoftheair.org)* The county also has the fourth worst particulate pollution problem in the entire country. (*American Lung Association, State of the Air 2011)* It has long been known that the addition of diesel particulate toxicity dramatically increases carcinogenic risk. Components of diesel exhaust, are of particular concern because they can penetrate deeply into the lungs bypassing the body's defenses. All of this must be addressed and studied in the DEIR.

The DEIR must also address "sensitive communities" that will be affected disproportionately by the increase in pollution that is a natural result of warehouse development. Research has shown that the elderly and other target groups are often exposed to unhealthful air more frequently and at higher levels that other groups. (*Hall and Brajer report p.22-23*) Identifying these communities is an essential part of describing the relevant CEQA setting.

The DEIR must also analyze how the health of the residents of these "sensitive communities" would be expected to be particularly affected. Many DEIR's fail to adequately analyze and disclose the details of the Project's air quality impacts and its true effects on public health. The DEIR

must provide enough information to determine how the health of the most vulnerable people in the region will be affected (e.g., residents of Cherry Valley already living directly adjacent to freeways traveled heavily by diesel-emitting vehicles), or how residents' risk of developing cancer will increase based on emissions from this warehouse.

Greenhouse Gas Emissions: The DEIR must also fully disclose and analyze the impacts of the warehouse project on Greenhouse Gas emissions. California as a whole is facing severe impacts from global climate change caused by these emissions. The available science shows, and state law establishes, that the state must substantially reduce its Greenhouse Gas emissions. Any development must be required to show how the project will address these issues.

Any mitigation measures must be specific, enforceable, and feasible from the beginning of the project -- not at some future date. CEQA demands a full analysis and all feasible mitigation of every significant impact resulting from the implementation of any project. A development must not be approved unless and until it has adopted ALL feasible mitigation measures.

Aesthetics: The proposed design of this structure, including its scale, height, and massing, are woefully inconsistent with existing and surrounding conditions as well as the preservation of views from the adjacent sites. The visual character of this "gateway" will be permanently altered as a result of this project. The DEIR needs to include many drawings and photographic displays to show how the proposed building will appear at full build-out in the context of the existing visual setting. There must be substantial visual evidence to show how these "high-cube" mega-buildings will affect the aesthetics of the surrounding areas. Line of sight graphics from a variety of nearby sites with views of the project must be included so that the county will have a basis on which to determine the Project's effect upon aesthetic resources.

TRAFFIC: Any mitigation measures concerning necessary traffic improvements must be certain and enforceable. It is a violation of CEQA's mandate to indicate that improvements are possible, but may not be constructed until a future date perhaps when county or state funds are available.

Public Services: Does Riverside County have enough police, fire and other public service people to meet the needs of this facility? This question needs to be addressed in the DEIR.

Finally, CEQA requires that there are feasible alternatives presented for consideration that could avoid or substantially lessen the project's environmental effects. There must be a reasonable range of alternatives to the proposed project or to its location, that would feasibly attain most of the project's basic objectives while reducing or avoiding many of its significant environmental impacts. Each of these alternatives must be seriously evaluated and discussed in the DEIR.

One final comment. By "fast tracking" this project, some of the opportunities for public input are not available. This is a great disservice to the residents of Riverside County. Also why do we even have a Planning Department if developers are allowed to sidestep that very important evaluation of their building plans. Aren't the planning department people supposed to be the experts on building plans? Shouldn't the county supervisors have the benefit of what those experts have to say about this particular development? A project of this magnitude needs more than just a rubber-stamp from the county supervisors. I hope that isn't what is being planned in this case.

Sincerely yours,

Mary A. Daniel
P O Box 2041
Beaumont, CA 92223

From: Carol Draney [cjdraney@hotmail.com]
Sent: Friday, January 24, 2014 4:55 PM
To: Rull, Paul
Subject: Gateway Warehouse Project
Dear Mr. Paul Rull,

We just heard about the Gateway Warehouse Project in Cherry Valley. We strongly object to this land being rezoned from low density residential to industrial. We feel it will negatively impact the residents in this area especially since it would require major infrastructure to handle the increased traffic and also the obvious diesel pollution.

I am a resident of Solera, a 55+ residential community.

We would like to request to be put on the notification list for any paperwork that is sent out regarding this project.

Our address is 1145 Lantana Rd, Beaumont, CA 92223

Thank you in advance for your consideration,

Michael & Carol Draney

From: cvgal@verizon.net
Sent: Saturday, January 25, 2014 9:55 AM
To: Rull, Paul
Subject: re: Gateway Warehouse project

Dear Mr Rull,

I am a property owner in Cherry Valley in the County of Riverside and would like you to know that I strongly object to the idea or the plan

of the Gateway Warehouse project. Cherry Valley is a quiet little rural community, zoned one acre per residence for the most part and the majority

of us who would like to keep it that way. We moved away from the air, noise and traffic pollution so we can enjoy our quiet peaceful

community. These people knew the zoning in Cherry Valley when they made their purchase--one acre per residence! This project threatens our

very way of life. There are plenty of locations that are more adaptive for this type of industry--Moreno Valley, Thousand Palms, Coachella, etc.--as you know.

Please stop this project.

Sincerely,

Michele Delph

Gateway warehouse project

From: mikiharrison@icloud.com
Sent: Monday, January 27, 2014 10:23 AM
To: Rull, Paul
Subject: Gateway warehouse project

THIS EMAIL HAS BEEN SUBMITTED VIA THE RCTLMA WEBSITE.

Resident of Cherry Valley. Very upset over the fact that I just heard about this pro ject. My concerns are the residents will be subject to much increased traffic, smog, noise and peace of mind. My husband and I moved here to get away from this very thing. We wanted the country life-style and now we might loose it!? Please, stop this from happening. Very concerned. Michelle

Michelle Harrison
8519 Avenida Miravilla
Cherry Valley, Ca. 92223
(909) 816-5089

From: Michelle Mahdavi [msmahd@verizon.net]
Sent: Sunday, January 26, 2014 10:45 AM
To: Rull, Paul
Subject: Gateway project/Cherry Valley
Dear Mr. Rull,

I am writing in regards to the Gateway project/warehouse slated for Cherry Valley. This is the second time I am contacting you. I don't think that people are truly considering the devastation this project would bring to my community. I moved here because I knew that this was the rural atmosphere I was looking for. I wanted to live where my horses were welcome, where it was quiet, and where I was farther from the pollution of noise, air, and lights. Cherry Valley's residents have fought hard and long to maintain this landscape. Currently, guidelines don't allow for houses to be built on less than one acre. That is what keeps my town charming and calm. We have a small road and an already difficult on/off ramp situation. We do not have the infrastructure to deal with the traffic of semi-trucks, we don't have the water to support this structure, and my health does not have the leeway to deal with the noise and air pollution of a 2.5 million square foot warehouse. My horses would be terrified of constant noise and large machines, not to mention often inconsiderate drivers who don't respect the space animals need.

I hate seeing what people are doing to my area. Razed orange groves and the destruction of open land for our natural wildlife to live their lives. Why would you allow developers from far away who don't love or respect this area to come in and make it ugly and dirty?

We cannot keep doing this.

Please do not allow this to happen.

Sincerely,
Michelle Mahdavi
Cherry Valley resident
(909) 260-5790

From: Mitch Hino [mhino@beaumontusd.k12.ca.us]
Sent: Friday, January 24, 2014 4:42 PM
To: Rull, Paul
Subject: Distribution Center

I am a middle teacher in the Beaumont Unified School District. I am deeply concerned over the proposal of this distribution center. I tell my students often how lucky we are to live in the pass area because of the lack of industry and a high density of people. They too share in this joy of living in an area where the air is clean and the city life is far from them. Please consider this distribution center for another location.

M. Hino

From: Nancy Friedman [banjo427@roadrunner.com]
Sent: Sunday, January 26, 2014 7:29 AM
To: Rull, Paul
Subject: re: Gateway Warehouse Project Help

Mr Rull,

I am a very concerned citizen who lives in the beautiful, quiet, smog free area of Solera in Beaumont. This project is absurd to me and my friends and neighbors. We all moved here from large, noisy, polluted cities to get away from all the health hazards that this project entails and surely bring to the residents here. I am outraged by this proposal and very much against it. I hope my concerns are read and taken seriously and into account when decisions are made.

Nancy Friedman

Gateway Warehouse Project

From: Pat Leahy [pcleahy@yahoo.com]
Sent: Sunday, January 26, 2014 9:55 AM
To: Rull, Paul
Subject: Gateway Warehouse Project

Dear Mr. Rull:

I am writing you to express my concern about the rezoning of the land this proposed project is to be built on. The Cherry Valley and surrounding areas are rural in nature and this is a significant reason many of us bought homes and live in the area.

I use Cherry Valley Blvd. every day, and there is no way the exit from I-10 is able to support the increase in truck traffic this project would bring. The air quality in the Pass can only be negatively impacted by the hundreds of diesel trucks a warehouse this large would bring in every day. Approving this project will surely embolden other landowners in the area to look for rezoning their properties to also build monstrous logistics warehouses, further degrading the quality of life in the Pass.

Please share my concerns with the Planning Commission.

Best Regards,

Patrick Leahy
1687 Woodlands Road
Beaumont, CA 92223

Sent from my iPad

From: Patti Gerdine [patti92223@verizon.net]
Sent: Monday, January 27, 2014 11:51 AM
To: Rull, Paul
Subject: Gateway Warehouse Project
Paul Rull – Project Planning Manager Riverside Commission

As a resident of Solera a Senior Community in Beaumont California I am very concerned about the proposed Gateway Warehouse project. As I understand it the Shopoff Company has requested to rezone land bordering the 10 freeway, Cherry Valley Boulevard and Vineland (approximately 274 acres) to build a warehouse. This warehouse will be 2.5 million square feet and used as a logistics center with 428 truck bays that will operate 24 hours a day, servicing diesel trucks. Diesel trucks are the number one polluters of fine air particles that put seniors at risk and as a senior living in a senior community I find this distressing. The proposed property is close enough for me to see from my living room window. Please add me to your notification list.

Patricia J. Gerdine
938 Southwind Court
Beaumont, CA 92223
951-769-5595

My name is Patsy Reeley, 10065 Frontier Tr. CV.

I am President of Cherry Valley Acres & Neighbors, A Non-Profit origination in Cherry Valley with membership of over 400 families.

I am speaking in opposition to this project noting the 17 Environmental issues you list plus ones you chose to ignore…such as devaluation of residential property…State water pipes on the northern section of the property… wild life corridor …just to name a few.

You may claim Warehouses use LESS WATER – Wrong! Every truck driver that stops there will Have to use the restroom – 200-250 trucks per day – do the math! That's a lot of water going down the toilet!

I am appalled that this project was "Fast Tracked' by the Supervisors…it goes against everything the General Plan says…. And everything the residents of Cherry Valley worked so hard to obtain as a Community of Interest.

I would hope the Planner and the Supervisors would deny this project……

And lastly – remember this is an election year…

From: R Hudson [ooma_2@yahoo.com]
Sent: Sunday, January 26, 2014 4:04 PM
To: Rull, Paul

Dear Mr. Rull
We are sending this email to express our concerns over proposed plans for a warehouse and distribution center on Cherry Valley blvd. in Cherry Valley, CA
This is in close proximity of 3 schools, and will only bring more air pollution and traffic to the area.

Robert and Renate Allen. Cherry Valley

Gateway Project - Cherry valley

From: Bridges [bcbridges@verizon.net]
Sent: Thursday, January 23, 2014 6:47 PM
To: prull@rctlma.org.
Subject: Gateway Project - Cherry valley

This project should not be allowed. This is a rural community, with the main access to the 10 freeway is Cherry Valley Blvd. There is already a difficult freeway access on the west side exit. The additional traffic would cause backed up autos trying to get on the freeway east bound.
The air pollution from all those diesel trucks also needs to be considered. There are large senior mobile home developments less than one mile in both directions. There are a number of these warehouses in upper San Bernardino as well as those on Mountain View exit of the 10 Freeway that are all mostly empty. There is also a warehouse development in Beaumont where the 10 and 60 freeways meet. I cannot begin to imagine there is more need for this warehouse in a predominately rural area. This is a community where many of our youngsters belong to 4H and raise animals. Many of us are horse owners since the area is primarily one acre minimum housing lots. We are adamantly opposed to this project. Take a drive around our community and see the personality of our small community.

Sincerely.
Robert and
9375 Mountain View Ave.
Cherry Valley CA 92223

,
Sent from my iPad

From: Sandi Joel [srjoel@verizon.net]
Sent: Friday, January 24, 2014 3:41 PM
To: Rull, Paul
Subject: Gateway Warehouse Project - Cherry Valley/Beaumont

I am writing to voice my opposition to this project and hope you will give serious consideration to denying its moving forward for the reasons listed below.

- First warehouse planned is 2.5 million square feet to be built as a logistics center with 428 truck bays that will operate 24 hours a day servicing diesel trucks that will turnover multiple times like a restaurant table does
- The land next to this is for sale, there is a lot more open land that can be sold for logistics centers turning the area into another Mira Loma.
- Diesel trucks are the number one polluters for fine air particles that put seniors and children at risk and require them to remain indoors during alert times.
- Air does not have fenced boundaries. The Mountain View power plant in Redlands is the worst polluter in Southern California. The air is already degraded, becoming a logistics port would be a death knoll.

Thank you.

Cherry Valley Warehouse

From: Sara [sara_sheeran@yahoo.com]
Sent: Sunday, January 26, 2014 3:56 PM
To: Rull, Paul
Subject: Cherry Valley Warehouse

I am concerned about the proposed warehouse for The Cherry Valley area.
Is there a petition for residents to become involved so that zoning is not approved for this project?
As a homeowner with a family in Beaumont we are extremely unhappy to find out our air quality and peace will be impacted by the flow of trucks in the area.
Our families quality of life should be a priority instead of these types of proposed projects. A clean safe environment is more important for our children than people looking to make money.
I would imagine many residents buying new homes in the Beaumont area would not have done so if they knew this was a possibility. We wouldn't have.
Thank you for your time,

Sara Sheeran

Sent from my iPhone

From: scott giacolett [scottgosvp@hotmail.com]
Sent: Friday, January 24, 2014 1:17 PM
To: Rull, Paul
Subject: No warehouse in Cherry Valley.
Dear Mr. Rull,

I have never helped in a cause like this before,but this looks like the mother of all causes to start with.
WE DO NOT WANT A LARGE WAREHOUSE IN CHERRY VALLEY!! I live along Brookside in Beaumont.
I will help in this fight! Thank you for your time to read my E-mail. Mr. Scott Giacolett.

From: Sean Gill [sgill@cts1.com]
Sent: Sunday, January 26, 2014 11:46 PM
To: Rull, Paul
Subject: 2.5 million sqft warehouse cherry valley

My name is Sean Gill a local resident and I object to this project, there plenty abandoned buildings and land in other industrial city's. This would be horrific for our city to have trucks tearing up and jamming our small streets. This is one of the reasons we live out this way because it's peaceful and our freeway exist aren't congested. Thanks

Sean Gill
CTS Foreman
503-867-5156

From: Sharon K. [jorgiegirl11@verizon.net]
Sent: Tuesday, January 28, 2014 11:33 AM
To: Rull, Paul
Subject: warehouse next door

It has come t0 our att. that there may be a 2.5 million sq. ft. warehouse going up next door to our Rancho Calimesa Mobile Home Park in Calimesa, ca. My husband and I live here and would not like this.It would cause a lot of problems for all the seniors living here. Air quality, freeway interchange, aesthetics, lower our property value,would change our rural area into an industrial area. We moved here 6 months ago and would not have if we had known this could be happening in this area. Please reconsider putting this warehouse next door to us. Thank You

Warehouses on Cherry Valley Blvd

From: Robert Vines [rivines@aol.com]
Sent: Sunday, January 26, 2014 4:49 PM
To: Rull, Paul
Subject: Warehouses on Cherry Valley Blvd

Please reject this proposal on behalf of the residents in the general vicinity of this proposed project.

The freeway access is already dangerous enough without the expected traffic from hundreds of big rigs per day. Public Safety will be at risk.

The proximity to Beaumont HS should be another concern.

Air Quality will be effected as well.

The City may gain in some financial way I'm sure, but if the City has to give anything up, such as tax breaks the City will be asking for a costly and long Legal Action in my opinion.

The Public outcry can be heard at this time for anyone who cares to listen.

Kill this project!

Sherri and Robert Vines
820 Annandale Rd
Beaumont/Cherry Valley

This will lower property values in the area as well.
Sent from my iPad

From: Starla Hanvey [starlahanvey@hotmail.com]
Sent: Monday, January 27, 2014 3:04 PM
To: Rull, Paul
Subject: Cherry Valley Project

I am against further development in Cherry Valley and ask that you reconsider where you put the warehouses.

I have lived in Cherry Valley for 60 years. I stayed in Cherry Valley for all these years because it is rural with little traffic, crime, and has remained a small community ambience. There needs to be some area of our country that remains rural and protected from all that comes with these warehouses. There is room over by the Sketchers warehouse off Highway 60. The warehouse is already there and won't destroy a small community.

We can't accommodate the traffic and accommodate the water demands that this development will bring.

My father built my home over 40 years ago. For the first time I think about relocating. This project could run me out of my hometown. Please consider another location.

Respectfully,
Starla Saiz
Cherry Valley Resident

From: Ted Schlott [thesixschlotts@msn.com]
Sent: Sunday, January 26, 2014 3:48 PM
To: Rull, Paul
Subject: FW: Warehouse and distribution center in Cherry Valley, CA.

From: thesixschlotts@msn.com
To: ooma_2@yahoo.com
Subject:
Date: Sun, 26 Jan 2014 15:39:13 -0800

Dear Mr. Rull,

I am writing to state my concerns about the warehouse and distribution center being proposed for Cherry Valley, Cal.
The first issue of course would be the air pollution. We picked a rural community so that we would not have all the issues that come with the pollution. Second concern for me is the traffic. I drive Cherry Valley Blvd. daily. What are we to do when the Blvd is full of trucks and all I am trying to do is get the kids home from school. Trying to go to work or to the church. I feel there has to be many other options for you to look at.

Thank you,
Stephanie Schlott

From: Steve Price [slprice1@live.com]
Sent: Sunday, January 26, 2014 12:12 AM
To: Rull, Paul
Subject: Gateway Center Project
Mr. Rull,

This is something you want your name associated with? Obviously inappropriate on every level, start with the list on the EIR. There is no logic involved here, only greed. This project impacts far more than Cherry Valley, include Beaumont, Calimesa, Yucaipa, to the list.

All involved in this project know it's not what the communities want or need - so who's really benefiting?

Cherry Valley has a rich, unique history and that's why people move here, often being referred to as 'the best kept secret.' What right do any of you have to come and take that away from thousands of residents? This is where we have chosen to live, specifically because it is rural. How about putting the development in your neighborhood and stay out of ours?

If you have a conscious you may understand the negative impact this project will have…. if not, there's still the EIR, legal and other factors to weigh in.

Steve Price
Cherry Valley Resident

From: S Hallbert [sohallbert@yahoo.com]
Sent: Monday, January 27, 2014 8:09 AM
To: Rull, Paul
Subject: Cherry Valley Warehouse

Dear Mr. Prull,

I have been a resident of Cherry Valley for over 35 years and I have never written to complain before. I know there is going to be growth and there are going to be issues that I don't agree with. But this planned warehouse complex in Cherry Valley is going to ruin our community.

Why Cherry Valley when there are so many warehouse areas in Banning that are sitting vacant? Areas that have been
earmarked for commercial and warehouses, not areas that are horse property and rural living.

I am a Vietnam veteran and I take pride in where I live, the country that I defended and the countryside that has been my home for over 35 years.

Please take a good look at what effect this warehouse complex will do to this beautiful area or Riverside County.

Yours truly,

Steven Hallbert

From: Tammy Hull [tammymh@live.com]
Sent: Saturday, January 25, 2014 11:30 PM
To: Rull, Paul
Subject: Objection to Gateway Center
Mr. Paul Rull,

Changing the zoning in Cherry Valley is wrong for so many reasons: pollution, an obvious traffic nightmare, noise, pollution off the charts for such an area, and most importantly disrupting the natural beauty of Cherry Valley and destroying the environment in countless ways. The residents of Cherry moved here for the uniqueness of the area, peace where there is little left in Southern California, a better way to raise families, and peaceful retirement for others. Cherry Valley has lost enough!

Regardless of where you live Mr.Rull I am quite sure you would not want such a monstrosity of a development next to your home. If this goes through there will only be more of its type and who knows what else, forever changing the course of a charming community that will be unrecognizable not just to the locals put to tourism as well.

In good consciousness you know this is not the right thing to do. This is not the appropriate area for such development. There are better ways to gain financially that would benefit all, not just 'special interests.'

Then there's the EIR that should put it down as there's no way it should pass in favor of this project.

Riverside's slogan; "Planning Our Future…. Preserving Our Past." I believe 'Our' is meant; we the people that live in Riverside not special interests. How about preserving our past by not eradicating it? Is this something you really want your name associated with?

Cherry Valley Resident,
Tammy Hull

From: tamrabarrans@juno.com
Sent: Tuesday, January 28, 2014 8:06 AM
To: Rull, Paul
Subject: Beaumont,CA proposed warehouse
Good morning, Mr. Rull,

I just learned this morning of the proposed warehouse project in the Beaumont/Cherry Valley area and am quite unhappy. I live in this area and use Cherry Valley Blvd. to reach the freeway to go to work and shopping. This type of warehouse will cause severe congestion on this two lane road as well as inadequate access to the freeway. I was fortunate to buy my home, by myself, this past year and can't even begin to imagine how this will affect my property values. Had I not purchased my home when I did, I would not have been able to. I am a very proud homeowner and am investing my hard earned money into my home in order to gain equity. A warehouse such as this will lower the value in my home. In addition, the pollution this will cause is unimaginable.

I strongly urge you to block and deny this warehouse project.

Thank you,

Tamra Johnson
36479 Torrey Pines Drive
Beaumont, CA 92223

Do THIS before eating carbs (every time)
1 EASY tip to increase fat-burning, lower blood sugar & decrease fat storage
info.fixyourbloodsugar.com

Cherry Valley Project

From: typltd1@aol.com
Sent: Monday, January 27, 2014 2:05 PM
To: Rull, Paul
Subject: Cherry Valley Project

Dear Mr. Rull,

My husband and I are unable to attend the meeting regarding the monstrosity proposed in our beautiful rural area. Riverside is not a hop skip and jump from our small town. We live here because we do not want to be in the smog and congestion of the areas closer to the cities.
1 traffic concerns
2 Accidents and crowding
3 air quality
4 will harm the environment
5 will force natural habitat animals like the kangaroo rat out of the area. We were forced to have a kangaroo rat study before we built our home.
Btw we abide by a 1 acre minimum when building houses.
6 we are a rural area without warehouses and factories
7 people still ride horseback and bike in the area
8 we don't have enough water
9 we are sick of being bullied and threatened by developers 10 traffic on the 10 freeway off and on ramps is already difficult enough! Look at the trucks that back up the 10 freeway in the Fontana area truck stops! And that is flat land! Imagine on an incline.

Have you been to our area, maybe we could have you come out and visit. We will point to areas where there is building that you should consider. Or reuse, repurpose and reinvent an abandoned area that needs a tax base to draw from!!!
Think green!!!

Sincerely, The Hanveys
39954 Cherry Valley Blvd.

Sent from my iPad

From: trinabta@gmail.com
Sent: Saturday, January 25, 2014 6:25 AM
To: Rull, Paul
Subject: Opposition to Gateway Project in Cherry Valley

Sent from Windows Mail
Mr. Rull

I would like the county to reconsider the building of the Gateway Project in Cherry Valley. We live in a rural, peaceful area that does not need to be transformed into a mini Fontana. The location that the county has proposed is not appropriate for our standard of living. We live and have purchased homes in Cherry Valley to get away from the city, please do not bring the city to us. Especially in the form of a monstrous distribution center. We are Cherry Valley, not Cherry Industry.

Mr. Rull, I am concerned about the pollution, I am concerned about the traffic, I am concerned about the air quality, and I am concerned that you will be marring our beautiful landscape that makes Cherry Valley what it is, with a an enormous warehouse that nobody wants or needs. Please take your business elsewhere. Your plan is disruptive and unwelcome to the citizens of Cherry Valley.

Thank you,

Trina Brown
Cherry Valley Resident/ Homeowner/ Environmental Activist
951-368-4356

Scoping Session:

Air Quality: The EIR must address "sensitive communities" that will be affected disproportionately by the increase in pollution that is a natural result of warehouse development. Research has shown that the elderly and other target groups are often exposed to unhealthful air more frequently and at higher levels that other groups. (Hall and Brajer report p.22-23) Identifying these communities is an essential part of describing the relevant CEQA setting.

The EIR must also analyze how the health of the residents of these "sensitive communities" would be expected to be particularly affected. Many EIR's fail to adequately analyze and disclose the details of the Project's air quality impacts and its true effects on public health. The EIR must provide enough information to determine how the health of the most vulnerable people in the region will be affected (e.g., residents of Cherry Valley already living directly adjacent to freeways traveled heavily by diesel-emitting vehicles), or how residents' risk of developing cancer will increase based on emissions from this warehouse.

The EIR must also fully disclose and analyze the impacts of the warehouse project on Greenhouse Gas emissions. California as a whole is facing severe impacts from global climate change caused by these emissions. The available science shows, and state law establishes, that the state must substantially reduce its Greenhouse Gas emissions. Any development must be required to show how the project will address these issues.

Any mitigation measures must be specific, enforceable, and feasible from the beginning of the project -- not at some future date. CEQA demands a full analysis and all feasible mitigation of every significant impact resulting from the implementation of any project. A development must not be approved unless and until it has adopted ALL feasible mitigation measures.

From: Victoria Wolf [victoriawvonr@aol.com]
Sent: Wednesday, January 29, 2014 12:29 PM
To: Rull, Paul
Subject: Building super warehouses in Cherry Valley

"Here is the email address for the County Planner: prull@rctlma.org. His name is Paul Rull. "

http://banning-beaumont.patch.com/groups/lloyd-whites-blog/p/25-million-sq-foot-warehouse-coming-to-cherry-valley

Dear Paul:

As a 30 year resident of Cherry Valley, I highly oppose these large warehouse projects and the truck traffic they will certainly draw. We should be reducing truck traffic, not increasing it. The air in the Pass is much worse on more days than ever before. Truly blue skies are ever more just a memory. I moved here from Riverside because of the clean air, the rural nature of a determined to stay that way community, and the local beauty.

On top of that, the entrance to this type community would be the worst possible place. These gargantuans, if they must be built, need to exist in already designated 'industrial zones.' Cherry Valley is about cherry trees, goats, horses, walking dogs to Bogart Park, and taking classes at The Grange. It is about small town atmosphere. It is about the entrance to Oak Glen. It is about natural beauty.

Building these large warehouses would destroy us, along with our spirit, and I beg you to fight against it, or at least help to locate them in a more appropriate place. Fontana? Near the rail yards? What about across from the monstrosity, already built at the northeast end of Moreno Valley, that has already severely limited one of the best views in the county.

Thank you for reading this.

Sincerely,
Victoria Wolf
Dutton St.
Cherry Valley

Twitter.com/wolfiemouse
Examiner.com. Progressive Commentary
Wolfhouse Gardens

From: Zach Taylor [ztaylor14@gmail.com]
Sent: Saturday, January 25, 2014 12:16 AM
To: Rull, Paul
Subject: The Gateway Project / Cherry Valley
Mr. Rull,

As a concerned resident of Cherry Valley, I respectfully, adamantly, oppose this project going forward. What about all the other gigantic empty warehouses in San Bernardino, Redlands, other parts of Beaumont, and Banning? The last thing citizens of the area need is another warehouse that is several times larger. The air/noise/and light pollution will be ridiculous. The community of Cherry Valley is a quiet, rural, town in the foothills. The sight of a warehouse the size of almost fifty football fields would be appalling against the mountain back drop of Oak Glen.

I don't logistically see how hundreds of semi trucks would even access the warehouse without severely crippling the flow of traffic in and around Cherry Valley Boulevard and the I10. Cherry Valley Boulevard is a two lane road, with stop signs at the freeway off ramps. Traffic is already horrible at the off ramps with just residents in the area. I could only imagine how backed up the off ramps, freeway, and surrounding areas would become with hundreds of semi trucks constantly in and out of the area.

I believe the traffic, air, noise, and light pollution from this project will be enormous and a burden to residents in the area. Cherry Valley is a rural community with several farms and pastures. Not to mention there is a nature preserve just on the opposite side of the freeway, downhill, and downwind from this planned warehouse. Housing prices will drop, and I for one will sell my house and move out of the area if this project goes forward. I know for a fact several neighbors will do the same. I don't want to see Cherry Valley become a burnt out corporate wasteland full of empty buildings and run down houses. I plead with you to put the residents, of Cherry Valley, Beaumont, Calimesa, Oak Glen, and Yucaipa, ahead of a company's agenda.

Thank you for your consideration. Any feedback you have would be appreciated.

-Zach Taylor

We would like to voice our objections to the above project. We moved from Redlands over 12 years ago, after 50 years of being born and raised there, to enjoy a rural setting. The crowds, the traffic, the development and removal of so many orange groves had made Redlands a different place and not one we wanted to live in. I don't wish to see the area we live in now changed by the impact this project would make.

I can list all the usual reasons such as air quality, a ridiculous amount of trucks and traffic on Cherry Valley Blvd, freeway entrances and exits that cannot handle these trucks and the Riverside County regulations which state one acre, one house in most parts of Cherry Valley as to why this project is being placed in an unsuitable location. We tried to parcel 5 acres between our son on Vineland Street in Cherry Valley and after 8 years, $18,000.00 and tons of hoops to jump through we gave up. How in the world can you explain to us how this could possibly meet the regulations when our simple request was met with every road block imaginable. We had to pay for an aerial photo and also pay for a county worker to come look at the property for burrowing owls and fairy shrimp?! Our property was approximately one mile from where this new project is looking to go. Explain to us how in the world this huge project is alright and splitting 5 acres into two parcels was not!

The manner in which this has been handled is questionable. If you actually live in this area you would know that this is the worst possible use of the land in that location. To alter that area with tons of dirt makes me wonder since friends of ours building in the area had numerous problems every step of the way with Riverside County just grading for their home. Makes you wonder?? We will be watching this project now that we have learned about it and will pass the word since for some reason it isn't common knowledge what is being attempted in our back yard!

Bob and Marty Ellsworth
9620 Mountain View Ave.
Cherry Valley, Ca.

Charles Bledsoe<trucknchuck@hotmail.com>
Rull, Paul <PRULL@rctlma.org>

Beaumont project

Sir
I know that a lot of people are opposed to this wearhouse project how ever I am pro on this project.
As for the debate about truck pollution people need to be advised that California trucks are the cleanest trucks in the nation with all of the thousands of dollars spent to get compliant with the new laws. As far as traffic it's right off the freeway and not every truck will pick up or deliver at the same time. Most of the wearhouses are open 24 hrs a day and since there are no homes next to this no one should be affected by noise.
I am a truck driver and can tell you first hand I have never seen any place that trucks make roads impassable due to trucks.
Mr Charles Bledsoe
Trucknchuck@hotmail.com
385 242-3269

Mr Charles Bledsoe

Sent from my iPhone

Debbie Avakianjda695@gmail.com
Rull, Paul PRULL@rctlma.org

GATEWAY CENTER IN CHERRY VALLEY

NO,NO,NO,NO....DO NOT SEAL OUR TOWNS FATE OF BECOMING A GHOST TOWN .....

Dear Paul Rull,
I just moved into the area (Feb 1st) Rancho Calimesa Mobile Home Ranch for Seniors. I just left an area infested with delivery trucks. No way in "HELL" do I want this type of building going up in my new neighborhood. There is plenty of desert farther out that you can build your warehouse. Please leave our community alone. I have health issues with breathing already I do not need to breathe any diesel fuel or any fumes. We do not need any added congestion or freeway construction in the area.

Respectfully,

Deborah Terrell
I'm a concerned citizen!

Jan. 22, 2014

Dear Paul:

I just would like to tell you, I'm a Cherry Valley resident & I use Cherry Valley Blvd. for a lot of my business. It would be terrible for me to have all this landscape and traffic + noise for our area.

I moved here because of the rural and the natural beauty of Cherry Valley and the surrounding area.

Please stop this Gateway Center Project. I do not want this kind of business in our area.

Sincerely,
Dolores McCurry

RECEIVED
FEB 03 2014
ADMINISTRATION
RIVERSIDE COUNTY
PLANNING DEPARTMENT

Mr. Rull: This is to let you know of my strong opposition to the Gateway Warehouse proposed for building in Cherry Valley. Besides going against the zoning currently in place for that location, and the pristine surrounding area, this monstrosity would bring increased traffic, noise, pollution, decreased property values, and permanent damage to the rural community and its beauty. Industry does not belong in that location, and the only one to truly benefit is the Shopoff Group which will, of course, make monetary profit from it. This out-of-county group has no vested interest at all in our wonderful area, so it does not matter to them what damage they cause as they build and leave.

Please put me on the notification list for upcoming hearings on this project. Thank you.

Elaine Hernandez

Hello,
I live in Cherry Valley, Ca along with my family. I am writing you to let you know that the "Gateway Center" project is a BAD idea. Cherry Vally is a small town and we would love to keep it that way. We aren't set up for a BIG company to come in.... IF the "Gateway Center" goes through you will mess up our air quality and make it worse for my kids!!! And it will make a lot of truck traffic which the roads aren't set up for its ONLY a two lane road!!!! Our freeways on and off ramps will be so busy that we wont be able to use them we would have to find a different way to and from out house! This "Gateway Center" is not beneficial to a residential area with small roads again its a SMALL town and we don't need or want a big building/business in our town. But if it does go through it will lower mine and every one else's property values. I DO NOT WANT THIS "GATEWAY CENTER" to come into our town it is NOT welcomed!!!!

Hanna
909-557-3975

Dear Mr.Paul Rull,

I recently received information regarding a potential trucking business that wants to build a warehouse on Calimesa Blvd right next to the mobile home park that I live in. I came here because of the peace and seclusion and feel that this business will be the worst thing that could happen to this area.

It is my understanding that this warehouse will store over 400 diesel trucks, which will come and go onto our quiet Calimesa Blvd. It will affect our traffic, air quality, property value, noise level, and the overall charm that has been part of the Calimesa community. People that have come here to live out the rest of their retirement years, as I have, will be greatly affected by this decision.

I am hoping that money will not be your deciding factor as the whole community of Calimesa will reap the negative consequences from this business.

Thank you for your time,
Hope Amen

Comments regarding proposed Gateway Center submitted to Mr. Paul Rull

AIR QUALITY: The number of diesel trucks that would use this proposed facility would negatively affect air quality. A 300 plus site mobile home park is located in the near vicinity to the proposed project. This is senior (55 plus) mobile home park and has many elderly residents many of whom already have respiratory health problems, many on medically prescribed oxygen usage. Their health would be negatively affected by this project.

TRAFFIC: The proposed project would have 428 diesel truck bays, with perhaps 1000 trucks daily using the already overburdened Cherry Valley Blvd/I-10 interchange. Also, with an improving economy the Oak Valley housing development on the west side of the I-10 interchange will resume building houses which will create even more traffic. The truck traffic would also endanger school children who ride the many school buses that use Cherry Valley Blvd. for field trips to Oak Glen area apple orchards. There would also be in increase in street maintenance costs on Cherry Valley Blvd. due to the heavy weights of these trucks.

WATER QUALITY: Many residents in a wide vicinity near this proposed project rely on wells for their water supply, including the 300 plus households in the nearby Rancho Calimesa Mobilehome Park. Diesel fuel, a hazardous material, from the many trucks using this facility would undoubtedly pollute the area groundwater.

These concerns should and must be addressed in an Environmental Impact Report.

Submitted by James Overturf of Calimesa, Ca. phone 909-446-8367

John Russell<choc1up@yahoo.com>
Rull, Paul <PRULL@rctlma.org>
Gateway warehouse

Mr. Rull, my wife and I just wanted you to know how very much we are opposed to building this monster of a warehouse across the field from our 55 community. Not only will this devalue our homes but the pollution imposed on we Seniors will be awful as well. We will also lose access to the freeway and an added danger to our driving. We find NOTHING good about putting this project at this location. If it were being forced on your parents, I am sure you would do everything you could to defeat this project and I certainly HOPE you will consider us in your future decisions regarding this situation. Most Respectfully, John and Shirley Russell

Sent from my iPhone

jonih1@roadrunner.com

Rull, Paul PRULL@rctlma.org

Objection to the proposed truck warehouse on Cherry Valley Blvd.

Per our telcon of this a.m.:
I am very opposed to the building of this facility at this location. This would be very close to a senior mobile home park on Calimesa Blvd. that houses older people who planned on living out our retirement years here. There are some here who have serious lung issues, requiring the use of oxygen. The lowering of the air quality by use of all the diesel trucks would be a disaster for them. Many are at a stage of life and disability that would make moving very difficult, if not impossible. Getting on the freeway from here can be quite difficult at the best of times, let alone what it will be like when 428 diesel trucks are heading out on a daily basis.
Property values are at historic lows, but changing a rural area to industrial purposes will likely render our homes valueless. Trucks do terrible damage to our rural roads, which were not the best to begin with.
I don't know why you would want to place such a facility in close proximity to a senior mobile home park.....but, if you choose to do so, you are showing your callus disregard for the elderly. If you do so, then shame on you.

Joni Haynes
10320 Calimesa Blvd. SPC 49
Calimesa, CA 92320
909-795-0976

Dear Sir,
We moved to Cherry Valley 8 Yrs. ago from Long Beach to get away from Traffic and Big Trucks. We enjoy the fresh air and quite times here If we wanted to live near the trucks and traffic and smell of industry we would have moved to Fontana or Ontario. Please do not allow this project to proceed forward at this location. Put it over by the existing Warehouse areas. We have enough traffic and road wear and over used infrastructure. Thank You for your time and consideration in this matter. My Horses and poultry thank you also.

Joseph Kuhn
37735 Brookside Ave.
Cherry Valley CA 92223

Mr Rull I am ANGERED and APPALLED that YOU would try to pull this off without any consideration to what the people who actually live here might think. We all remember the water fiasco that happened.... and now you want to put his monstrosity in our neighborhood ??? Do you live here????Have you thought of what will happen here? More commercial logistic warehouses....if one is built more will come. If the zoning is changed for this project, other changes will be made. Who is going to want to live or build homes or min-ranches here? For travelers of Cherry Valley Blvd., this will say WELCOME... How sad! What about the natural waterway, the natural habitat for birds and animals of our area. What about our water??? What about contamination of our water? Contamination of our WATER, AIR, TRAFFIC. What about the change from a 2 lane to a 4 lane road and changes to the 1-10 on ramp and off ramp? We all know that change is going to happen.....But, please NOT this type of change. The million tons of dirt to cover this landscape only to be covered with millions of tons of concrete for a commercial logistics warehouse that will have 4XX bays for trucks that will have noisy and smelly trucks traveling in and out 24/7!!!!!!! I Implore you, PLEASE do not do this!!!! Julie Lewis

Please be informed that I am a Cherry Valley resident. I am strongly opposed to the I-10 Gateway project due to the traffic and undesirable impact it will have on the environment.

Katherine Talkington

Mr. Rull,
My name is Leigh Gileno and I am a new resident to the City of Beaumont. I was just informed of the proposed Monster Gateway Center Warehouse that is proposed to being built in the unincorporated area of Cherry Valley that is just a little over a mile from my home. I commute to Palm Springs 4 days a week for work and love the fact that I live in a nice suburban community that is geared toward families. The building of this monstrosity will ultimately hurt our community and I am diabolically opposed to its development. If this were a shopping center then maybe it would be met with a little more enthusiasm or optimism.

I am the former wife of 25 years of a trucking company. If anyone can attest to what this will mean for our community I can. The area proposed for this kind of building is absolutely preposterous. The pollution alone is a big factor…Air Pollution, Noise Pollution, Waste Pollution, Chemical Pollution and the list can continue to grow. Not to mention who ever ends up occupying the building and what they will manufacture will determine other pollutions as well. The damage that Commercial trucks bring to the streets alone will cost the City a lot of money to maintain. Not to mention the congestion of traffic to a nice, quiet rural community. I am not oppose to development but I am opposed to this particular development. We need retail, not warehousing. Give the community more reason to spend money locally not allow someone from the OC to come in and destroy our community. Retail will bring more jobs and sales tax for our Cities.

This project needs to be stopped. We do not want something that will destroy our community with pollutions, traffic and since of a home town family community. We do not want to be industrialized like Ontario or Rancho Cucamonga.

Please send me notifications of ALL upcoming hearings for this project.

Leigh Gileno
Concerned Citizen and Resident of Beaumont, CA.

Attn: Paul Rull:

As a resident of Solera Oak Valley Greens community in Riverside we oppose the Gateway Project as the freeway interchange at Hwy 10 and Cherry Valley Blvd is inadequate to handle the level of truck traffic that would result. The freeway exchanges limited capacity would severely impact the nearby residential community's access to the interstate, create congestion and be a safety issue.

sincerely. Leigh Stewart, 1156 Lantana Blvd., Beaumont, CA

Dear Sir: Please note that as nearby local residents in Cherry Valley, my husband and I

strongly oppose the Gateway Center Warehouse project. We would appreciate

you adding us to the notification list for upcoming hearings about the project.

Our address is: Les & Rhonda Breeden, 9243 Mountain View Avenue, Cherry Valley, CA 92223.

Thank you for your attention to this request.

Dear Sir:

As a home owner in Solera in Beaumont, I am deeply troubled by the prospect of the Gateway Industrial Center being proposed within a mile of where I live. This is a Senior Community and the pollution and noise this project would create would be immense. A project the size of 43 football fields has no place anywhere near the residential areas where many, many people live.

Please do all you can to stop this! Please notify me of any hearings where I may come to speak in opposition to this project. This is extremely disturbing to Beaumont, Calimesa, and Cherry Valley residents. NO, NO, NO!!! Please, please, please listen to us!!

Marsha Wolfersberger
1663 Woodlands Road
Beaumont, CA 92223
951-769-9969

Marsha Wolfersberger 

Greetings,

We moved to this area in 2005 and have grown to love it. We have managed to withstand the economic crash of the housing market and the standstill of progress here in the Pass. While we are all for growth this project would dramatically have a negative impact on quality of life. We oppose the Gateway Project and would value your support in our preservation of what is a dear to those of us in the area.

Quintanilla Household

Rhea Weber<rheaweb@gmail.com>

I am extremely concerned about this potential project moving forward. The size of this enormous warehouse will create many environmental concerns such as air quality, traffic on and off the I 10 at Cherry Valley which is currently congested, noise for two senior mobile home parks as well as two senior housing developments.

Please consider the concerns of many residents of this beautiful and rural area.

Mr. Rull,
Please help us stop the Gateway Center Warehouse. The interchange at the I-10 and Cherry Valley Boulevard can't handle the traffic it gets right now. It's a nightmare, that intersection. Who will pay for the damage to our roads? What about our air? We live here. We will show up in droves to stop this.

Please put us on the notification list for upcoming hearings on this project.

Thanks for your help.
Richard Hobson & Carol Mansell
8886 Whispering Pines
Cherry Valley

Rob and Amy Peterson<peterson541@verizon.net>
Rull, Paul <PRULL@rctlma.org>

Cherry Valley Gateway project

As a Cherry Valley resident I oppose the development of the beautiful rolling countryside along Cherry Valley Blvd for a mega-warehouse which will absolutely destroy one of the last remaining rural areas in the region, not to mention the reduction in the quality of life for residents who have located here because of the rural environment. The arbitrary actions from Riverside bureaucrats is disappointing and demonstrates a lack of concern for residents of the area. Why not build in the areas zoned industrial in Beaumont, Banning or Cabazon?

Rob Peterson
Cherry Valley

Sent on my iPhone

February 5, 2014

Attn: Paul Rull, Project Planner on behalf of
Carolyn Syms Luna, Director for:

LEAD AGENCY:
Riverside County Planning Department
4080 Lemon Street, 12th Floor
P.O. Box 1409
Riverside, CA 92502-1409

Re: PROJECT CASE NO./TITLE: Project Title: I-10 Gateway Center Project
Case Numbers:
- General Plan Amendment No. 1079
- Change of Zone No. 7799
- Parcel Map No. 36564
- Plot Plan No. 25337
- Environmental Impact Report No. 534

Dear Paul:

In response to the NOP for above proposed Project, please be advised that the following considerations and/or elements need to be addressed and included in the Draft Environmental Impact Report (DEIR)

The project is ill-suited for the area, and therefore should not be constructed for the following reasons:

- The area around the site is predominantly rural agricultural/residential, with MPC's to the south. The use best suited for this area is rural residential/agriculture, not industrial warehouse
- Too close to large high quality residential MPC's, Within a distance of less than 2000 feet away to nearest housing tract, this project is far too close and will negatively impact the nearby large scale residential Master Planned Communities of Oak Valley Greens, Three Rings Ranch, Tournament Hills and Fairway Canyon, bringing pollution, blight and decreased property values to these communities that overall comprise over 5,000 homes and over 25,000 residents. A growing consensus from local economists and AQMD confirms that large industrial warehouses should not be constructed near residential communities.

- Land and neighborhood is poorly suited for warehouse. Consensus is growing and is becoming it is becoming widely accepted that large scale warehousing should be constructed around warehouse "hubs" that are found in large flat valleys near large capacity airports and raillines, and away from residential communities. In the IE, these hubs are found in Redlands Valley, Ontario, Moreno Valley and near former air force bases at Norton and March Field. Please note, most coveted Amazon logistics facilities are being constructed at these former airfields. Contrast this with "Gateway I10project" : the topography is rural open space sloping foothill near alluvial fans and natural streams. The nearest warehousing ,hub's are in Redlands (15 miles away) and Moreno Valley (20 miles away). This project would be an isolated eyesore, and does not have the necessary infrastructure most appropriately found in warehouse hubs.
- Water:
    - The developer has not explained why they are bypassing San Gorgonio Pass Water Agencies, which are best suited for considering project, and instead approaching Yucaipa Water agency, which services Yucaipa Valley. Also local water supplies will be negatively impacted as less water will be available to local residents and water pollution generated from warehouse tenants
    - Mitigation to address hydrology and water quality impacts is improperly deferred. Deferring preparation of a hydrology study is wholly improper. A hydrology study must be prepared for this Projectd
    - The EIR requires payment of fees to fund and construct supporting area-wide drainage improvements. CEQA requires that mitigation be certain and enforceable. It is unclear what program funds will be paid to, if any program exists at all. If such a program does exist, it is unclear when, if ever, drainage improvements will occur. Plot Plan Condition of Approval 7.10 states that "[a]ll lots shall be designed and graded to drain to the approved conveyance system" and requires the hydrology report (deferred) to demonstrate that flows for both 10-year and 100-year event will not inundate to any individual lot within the Project. This Condition needs to address impacts to off-site areas as well.
    - The Santa Ana Regional Water Quality Control Board needs to comment on the water quality impacts associated with this Project. In similar proposed projects the Regional Board has found that these projects may violate water quality standards and the board requires that a Water Quality management Plan must be prepared and circulated prior to project approval. The absence of a Water Quality Management Plan suggests that the County is in violation of, or threatens to violate, any permits.
    - The EIR should include an update on receiving or upgrading a wastewater treatment plant, and whether the receiving plant is operating over its capacity and violating water quality standards.
    - The EIR contains no discussion of storm water discharge, flooding, or drainage impacts

- Traffic:
    - The DEIR is failing to study impacts to local streets, local and regional highways including Cherry Valley Blvd., Tukwet Canyon Parkway, Palmer Boulevard, Oak Valley Parkway, San Timoteo Canyon Road; the street systems of the communities and cities of Cherry Valley, Calimesa, Beaumont, and Banning, and the local and regional highways of I-10, SR-60, State Route 111, I-215, and others.
    - The traffic analysis is not analyzing the negative impacts on nearby residential communities.
    - The TIA is failing to adequately address the negative impact of commercial truck trips (the primary vehicles servicing the warehouses) on surrounding road designs, road loads (exceeds existing tonnage capacities), road capacities. Etc.
    - The analysis of traffic impacts assumes that lane configurations and traffic controls will be in place. However, lane configurations and traffic controls are not required. The analysis also incorrectly assumes that the upgraded signaling and intersections will be in place. Reliance on unfounded assumptions makes the traffic analysis completely unreliable.
- Mitigation measures have not been identified.
- Alternatives: Alternative uses for the site have not been identified. Where there is an environmentally superior alternative that significantly decreases the significant impacts of the Project then that alternative must be approved rather than the Project if that alternative is feasible, even if the alternative would impede to some degree the attainment of the project objectives, or would be more costly. [(PRC§ 21002; *Uphold Our Heritage v. Town of Woodside* (2007) 147 Cal.App.4th 587, 597, State CEQA Guidelines § 15126.6(b)] An environmentally superior alternative must be adopted in lieu of this Project.
- Statement of Overriding Considerations: CEQA Guidelines § 15093 (b) provides that when the agency approves a project which will result in the occurrence of significant effects which are identified in the final EIR, but are not avoided or substantially lessened, the agency shall state in writing the specific reasons to support its action based on the final EIR and/or other information in the record. The decision to approve a project in spite of significant environment impacts requires the decision-making agency to balance the economic, legal, social, technological, or other benefits of a proposed project against its unavoidable environmental risks. (Guidelines § 15093(a).) However, the Statement of Overriding Considerations ("SOC") shall be supported by *substantial evidence* in the record. (*Id.*) In *Sierra Club v. Contra Costa County* (1992) 10 Cal.App.4th 1212, 1222, the court said: "Whereas the [mitigation and feasibility] findings … typically focus on the feasibility of specific proposed alternatives and mitigation measures, the statement of overriding considerations focuses on the larger, more general reasons for approving the project, such as the need to create new jobs, provide housing, generate taxes, and the like." Substantial evidence in the record does not support the adoption of a Statement of Overriding Considerations. This Project is totally inconsistent with the benefits claimed in the Statement of Overriding Considerations. Those benefits no longer exist should this Project be approved. The benefits claimed to outweigh unavoidable significant impacts to air quality and biological resources include: providing a variety of complementary land uses; providing dwelling units to respond to housing demand; reducing environmental impacts due to

complementary and mixed land uses; providing recreational facilities; and providing a commercial facility for project residents, among others. None of these benefits exist in this case. A Statement of Overriding Considerations cannot be supported for this Project.

- Noise: No noise studies have been prepared for this Project. These studies are necessary to adequately inform the public of noise impacts and to properly mitigate impacts. Noise associated with distribution/warehouse use is entirely different than noise associated with residential use.
- Land Use Planning: This Project results in a significant land use impact. It substantially alters the balance of uses set forth in the General Plan and Specific Plans. Staff Report claims that this Project is better suited for the area than existing agricultural and residential or other uses must fully evaluate the cumulative impacts of this Project.
- Wildlife: The EIR has not identified the existing wildlife in the area, nor has it evaluated the negative impact and/or mitigation of the project on the wildlife in the area.
- Air Quality: the negative impact on air quality has not been evaluated, particularly Diesel Particulate Matter (PM) and Health Risks. Nor has compliance with local and regional air quality standards been addressed
- The GHG Analysis is absent. The air quality analysis of the I10 Gateway Warehouse Project Plan EIR is not analyzing GHG emissions and therefore adopted no threshold of significance for these impacts. GHG impacts must be assessed. The County must undertake a good faith, reasoned analysis of these impacts and adopt all feasible mitigation, particularly in light of CEQA's new requirements for analysis of GHG emissions as well as recent State legislation aimed at substantial reductions of greenhouse gases. All feasible mitigation measures must be adopted

Sincerely,

Ron Roy
35161 Hogan Dr
Beaumont Ca. 92223

909-796-5551

Mr. Paul Rull
Riverside County Planner
4080 Lemon St.
Riverside, CA 92501

Dear Mr. Rull,

I would like to express my concern regarding the Gateway Center Warehouse. This project would distroy our way of life in Cherry Valley. This is an area where folks come to get out of the city and pick cherries, apples and peaches, and purchase farm fresh produce and pasture-raised eggs. They come to see the ponies, llamas, horses and other livestock. Some enjoy it so much, they move here to raise their children in a rural environment, or retire here out the the hustle and bustle and enjoy the fresh air.

If this project were approved, polution would worsen, traffic would be terrible, our nearby schools, parks, elderly communities and our children would be exposed to all the negative effects of having a steady stream of 18-wheeler diesel trucks on Cherry Valley Blvd. The countryside would be destroyed, devaluing our property.

The Cherry Valley exit and entrance were not built to handle the traffic. It would create a horrific mess for homeowners in this area, as well as all traffic passing through this stretch of the 10-Freeway. One example is the stretch between Cherry Valley Blvd and Calimesa Blvd. exit. This project would bog down traffic due to the uphill slope, slowing a constant flow of 18-wheeler trucks, negatively impacting all those who use this stretch of the freeway. It would be worse than the Fontana exits with all their truck traffic. Cherry Valley is not Fontana. It is an upscale rural community.

If this project went through, people would not longer have a reason to visit or move to this area. Those that built custom homes would take a big loss when they sold their homes. Tax revenues would go down. Long time residence would see their way of life destroyed suffer the ill effects. It would become another dirty, polluted area that people would want to avoid. Please use the upmost care and caution in evaluating this proposal.

Also, I am concerned about the way Riverside County is rushing this project, instead of allowing all neighboring towns and citiess to receive the information and respond appropriately. Notification of neighboring cities and towns have been non-existent. There was a sign on Cherry Valley Blvd for a very short period of time. I believe it was on the wrong side of the street. It contained very little information about the proposed project, and nothing about how to get more information. I can think of no good reason for the vagueness, or for rushing this project through before the surrounding communities could evaluate the impact to them. I would like to encourage you to thoroughly research and understand the effects of this proposed project, and then reject it. It is a bad idea!

Please notify me of all meetings regarding this project and any other project that could effect our way of life in Cherry Valley.

Sincerely,
Sandra Leoni
9375 Mountain View Ave
Cherry Valley, CA 92223
msleoni@live.com
(951) 845-6249

* Please mail me a notice of your next PUBLIC hearing.

Shirley Lithgow
41810 Candlewood Dr.
Cherry Valley, CA. 92223

Attn: Paul Rull, Project Planner
Riverside County Planning Dept.

Many of us in Cherry Valley & the surrounding affected area have just received the very disturbing news of a huge Gateway project that would cause the country area to be industrialized & bringing in the hundreds of diesel trucks that would be needed to service such a huge building and all the polution that all those trucks would cause. Diesel trucks have been know to cause cancer & lung problems to people living close to the Freeways that have heavy diesel truck traffic. Its unbelievable that Gateway would consider such a huge project in a populated area. We have periodic winds but not often enough or strong enough to combat that much pollution. There are many new homes close by. The chicken farm that had been in that location had to move because of pollution. This area is like a bowl that would cause the pollution to no doubt reach Calimesa, Beaumont, & Banning. Im sure there are less populated areas that would be more appropriate. I hope Gatewould consider all the problems involved & find a ~~new~~ more appropriate location.

Thurlow Lithgow

CVAR_08504

Hi I am a Beaumont resident.

I am concerned a about the project on Beaumont Ave. I do not have much information, only that it will create more traffic than we already deal with. According to the information there will be a truck entrance on Cherry Valley Blvd. As it is we deal with the traffic of at least three schools on that area. Can you give me more information as to how it is planned to avoid such traffic situations? Also is this new construction going to have some kind of air contamination effect, or how will it be avoided as well?

Thanks for your time.

Silvia Mendez
silmend2@aol.com

Dear Mr. Rull,

I talked with you this afternoon on the phone regarding the Gateway Project. I also wanted to e-mail you with my concerns regarding this proposed project and the changing of the zoning from residential to industrial in Cherry Valley.

My concern is that this will be changing the overall zoning of Cherry Valley from residential to industrial. We are a small rural community that values our one acre home sites. The industrial warehouses proposed to be put in our area could and would be the beginning for many more warehouses. This is where we live and raise our families and we don't want to be in the middle of light industrial property. The change in zoning is not for our benefit and is very detrimental to our lifestyle.

The impact on Cherry Valley Boulevard with a 428 bay warehouse will change our traffic from a rural community into a trucking lane. Cherry Valley Boulevard is our major road to have freeway access to Interstate 10 and it is **critical** to the local residents who live in Cherry Valley.

Residents who live in Cherry Valley will have to also contend with the view of these mammoth warehouses. Once the landscape is blighted by them there will be no changing back to a residential lifestyle. There is a better place for these warehouses than in our community. I would appreciate your considering the above listed points I have laid out in my e-mail.

I am very **opposed** to the Gateway Project and want to see the following project voted down in Cherry Valley.

Sincerely,

Teri Walder

My husband and I strongly oppose the building of the monster Gateway Warehouse in Cherry Valley. We do not appreciate an Orange County developer coming into our area to profit off of a monstrosity which will totally negatively impact our community. The lack of industrial development and open spaces is what drew us and many others to this area as a retirement community. The country feel is the charm that adds to the property value and quality of life that we experience. This warehouse will ruin all of this! Air pollution, noise pollution, traffic congestion, higher taxes for road improvement and repair, and depreciating home values which will produce blight.

Cherry Valley is a rural area where many people have farm animals and horses. Would they be forced to move if the pollution gets too great and the area gets re-zoned?

Because of my health issues (autoimmune deficiency) I need clean air. This would force us to move. There are many other retirees in this area who have health issues as well.

Please appraise us of any upcoming hearings on this project.

Thank you.

Respectfully,

Tom and Linda Brown

Veronica Cano-Camposveronikasplace@icloud.com

Rull, Paul <PRULL@rctlma.org>

Gateway Center Proposed Warehouse Project

Add me to the email and or mailing list for any and all public meetings
for this project. My home address is:
37148 Winged Foot Road
Beaumont, CA 92223

Sent from my iPad

Dear Mr. Rull,
As a long time resident of Cherry Valley I would like to object, and ask for your opposition, to the proposed Gateway Center on Cherry Valley Boulevard. As a homeowner of the area the thought of driving past a giant warehouse instead of a peaceful rural area is very distressing. Most people who live in Cherry Valley live there because they like the rural atmosphere. Please don't allow our area to become like those in Fontana, Moreno Valley, North Redlands and many others.
Thank you so much for your consideration,
Wendy Walder

Hello,

As a follow up to my previous e-mail, I would like to add my concerns regarding the quality of the roadway currently in place off Cherry Valley Blvd. and the I10 Freeway The roadway is already in poor condition, cracking, and pot holed. There are all ready numerous signs warning of overweight (10,000lbs+) commercial vehicles prohibited on Cherry Valley Boulevard. Again, I do not believe Cherry Valley is the place for this kind of project. The roadway is already in disrepair. I am also concerned of the wildlife in the area (Bob Cats, Coyotes, Mountain Lions, Squirrels, etc...) would be negatively impacted and displaced by this project.

I would like to be notified on any future updates or hearings regarding this project.

Thanks
-Zach Taylor

On Mon, Jan 27, 2014 at 7:26 AM, Rull, Paul <PRULL@rctlma.org> wrote:

Thank you for your comments. I will forward them to the EIR consultant for review.

If you have any questions, please feel free to contact me.

Thanks.

Paul Rull

Riverside County Planning

4080 Lemon Street 12th Floor

Riverside, CA 92501

951-955-0972



From: Zach Taylor [mailto:ztaylor14@gmail.com]
Sent: Saturday, January 25, 2014 12:16 AM
To: Rull, Paul
Subject: The Gateway Project / Cherry Valley

Mr. Rull,

As a concerned resident of Cherry Valley, I respectfully, adamantly, oppose this project going forward. What about all the other gigantic empty warehouses in San Bernardino, Redlands, other parts of Beaumont, and Banning? The last thing citizens of the area need is another warehouse that is several times larger. The air/noise/and light pollution will be ridiculous. The community of Cherry Valley is a quiet, rural, town in the foothills. The sight of a warehouse the size of almost fifty football fields would be appalling against the mountain back drop of Oak Glen.

I don't logistically see how hundreds of semi trucks would even access the warehouse without severely crippling the flow of traffic in and around Cherry Valley Boulevard and the I10. Cherry Valley Boulevard is a two lane road, with stop signs at the freeway off ramps. Traffic is already horrible at the off ramps with just residents in the area. I could only imagine how backed up the off ramps, freeway, and surrounding areas would become with hundreds of semi trucks constantly in and out of the area.

I believe the traffic, air, noise, and light pollution from this project will be enormous and a burden to residents in the area. Cherry Valley is a rural community with several farms and pastures. Not to mention there is a nature preserve just on the opposite side of the freeway, downhill, and downwind from this planned warehouse. Housing prices will drop, and I for one will sell my house and move out of the area if this project goes forward. I know for a fact several neighbors will do the same. I don't want to see Cherry Valley become a burnt out corporate wasteland full of empty buildings and run down houses. I plead with you to put the residents, of Cherry Valley, Beaumont, Calimesa, Oak Glen, and Yucaipa, ahead of a company's agenda.

Thank you for your consideration. Any feedback you have would be appreciated.

-Zach Taylor

Almira Yusi-Lennalmiralenn@yahoo.com

Rull, Paul PRULL@rctlma.org

Warehouse Cherry Valley

Expressing concerns about this project.
Almira Lenn
1743 Scottsdale Rd
Beaumont , CA
92223

Sent from my iPhone

Dear Mr Rull,
Until I find out more about the Gateway Center project, I am going to be against it.
I live in Northern Beaumont and use Cherry Valley Blvd. most of the time to access the 10 Freeway. I believe that the traffic would become unbearable with this project. Also, the air pollution from the numerous trucks that would be using the facility would have a very negative impact on the area.

Please keep me advised of all meetings and activities related to this project.

Thank you,

BIll Souder
bzybill@gmail.com
1750 Snowberry Rd.
Beaumont CA 92223
951 797-3956

Mr. Rull; It's hard for me to believe that a planner would even consider the subject project in an area already bounded by hundreds of homes. The massive enormity of the project would be more suited in an area like Desert Center where there is no city and county traffic and pollution concern. Imagine 1000 trucks in your area rumbling day and night in residential and rural areas. Cherry Valley Boulevard is the only local access to the 10 freeway for those commuting to points west. With 24 hr. trucking moving in the area, access would be difficult or problematic. The developers of this project have no concern for the impact of the local citizens. Their only objective is cheap land and huge profits. I dare say, large trucks rumbling down their streets would bring a cry to their congressman. Our area has been a haven for low density and rural atmosphere. My wife and I moved here 22 years ago because of the rural lifestyle. I realize there is a need for housing in areas not previously developed, but industrial development that disrupts the entire area is just not reasonable and acceptable. I hope you will consider this In rejecting this unreasonable project. Ed Cooper Cherry Valley, CA

_____ Information from ESET NOD32 Antivirus, version of virus signature database 6590 (20111031) _____

The message was checked by ESET NOD32 Antivirus.

http://www.eset.com

PLEASE DO NOT GO FORTH OR ALLOW THE BUILDING OF THE DIESEL TRUCK WAREHOUSE IN CHERRY VALLEY. THIS IS NEXT TO 300 SENIOR M/H PARK. MANY WITH HEALTH ISSUES THAT MAKE DRIVING DIFFICULT. LET ALONE THE OVER PASS THAT CAN NOT HANDLE THE EXTRA TRAFFIC. THERE HAS BEEN MANY ACCIDENTS ON THE OFF RAMPS ALLREADY. THIS AREA IS NOT EQUIPTD TO HANDLE THE IMPACT OF THIS PROJECT. YOUR DENIAL IS GREATLY APPRECIATED. GARY AUTREY....RANCHO CALIMESA

Liz Westmoreland

From: Marty Ellsworth [martboom@msn.com]
Sent: Monday, February 10, 2014 2:17 PM
To: Rull, Paul
Subject: The Gateway Project

We would like to voice our objections to the above project. We moved from Redlands over 12 years ago, after 50 years of being born and raised there, to enjoy a rural setting. The crowds, the traffic, the development and removal of so many orange groves had made Redlands a different place and not one we wanted to live in. I don't wish to see the area we live in now changed by the impact this project would make.

I can list all the usual reasons such as air quality, a ridiculous amount of trucks and traffic on Cherry Valley Blvd, freeway entrances and exits that cannot handle these trucks and the Riverside County regulations which state one acre, one house in most parts of Cherry Valley as to why this project is being placed in an unsuitable location. We tried to parcel 5 acres between our son on Vineland Street in Cherry Valley and after 8 years, $18,000.00 and tons of hoops to jump through we gave up. How in the world can you explain to us how this could possibly meet the regulations when our simple request was met with every road block imaginable. We had to pay for an aerial photo and also pay for a county worker to come look at the property for burrowing owls and fairy shrimp?! Our property was approximately one mile from where this new project is looking to go. Explain to us how in the world this huge project is alright and splitting 5 acres into two parcels was not!

The manner in which this has been handled is questionable. If you actually live in this area you would know that this is the worst possible use of the land in that location. To alter that area with tons of dirt makes me wonder since friends of ours building in the area had numerous problems every step of the way with Riverside County just grading for their home. Makes you wonder?? We will be watching this project now that we have learned about it and will pass the word since for some reason it isn't common knowledge what is being attempted in our back yard!

Bob and Marty Ellsworth
9620 Mountain View Ave.
Cherry Valley, Ca.

Jan. 27, 2014

Dear Mr. Rull and Planning Dept,

We wish to express our extreme objection to the proposed Gateway Project in Cherry Valley and also the zone change from 'Rural' to 'Industrial' in this area.

There are constant winds through the Pass area from both the east and the west. The pollution from this Project would be a serious health concern for residents of the entire Pass area as well as Calimesa and Yucaipa. There are numerous retirees who moved here for health reasons and the pollution from the numerous trucks and diesel particles would be very hazardous to their health. Adequate water and traffic congestion should also be addressed.

Please reconsider giving approval ~~for~~ for the Gateway Project and the harmful effects to the citizens and the environment in this area.

Respectfully,

Mr. & Mrs. Lenard Richardson

10910 Bel Air Dr.

RECEIVED
JAN 30 2014
ADMINISTRATION
RIVERSIDE COUNTY

A.6 - Comments Received after Close of Scoping Period

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LAND DEVELOPMENT COMMITTEE/
DEVELOPMENT REVIEW TEAM
CASE TRANSMITTAL
RIVERSIDE COUNTY PLANNING DEPARTMENT - RIVERSIDE
P.O. Box 1409
Riverside, CA 92502-1409

DATE: April 3, 2013

TO:

Riv. Co. Transportation Dept.	P.D. Landscaping Section	Beaumont Unified School District
Riv. Co. Surveyor	P.D. Archaeology Section	Southern California Edison Co.
Riv. Co. Environmental Health Dept.	Riv. Co. Sheriff's Dept.	Southern California Gas Co.
Riv. Co. Flood Control District	Riv. Co. Waste Management Dept.	Verizon
Riv. Co. Fire Department	Riv. Co. EDA –Fast Track	Adelphia Cable
Riv. Co. Fire Department- Strategic Planning	5th District Supervisor	Yucaipa Valley Water District
Riv. Co. Building & Safety – Grading	5th District Planning Commissioner	Caltrans District #8
Riv. Co. Building & Safety – Plan Check	Beaumont-Cherry Valley Rec. & Parks Dist.	Reg. Water Quality Control Board- Santa Ana
Regional Parks & Open Space District	County Service Area 27	Air Quality Mgmt. - South Coast
Riv. Co. Environmental Programs Division	Community Council- San Gorgonio Pass	Army Corp of Engineers
P.D. Geology Section	~~County~~ City of Beaumont Planning Dept.	San Gorgonio Pass Water Agency

GENERAL PLAN AMENDMENT NO. 1079, CHANGE OF ZONE NO. 7799, PARCEL MAP NO. 36564, PLOT PLAN NO. 25337 (Fast Track Authorization) – EA42179 - Applicant: TSG Cherry Valley, LLP. – Engineer/Representative: Urban Environs – Fifth/Fifth Supervisorial District – Cherry Valley zoning District – The Pass Area Plan – Community Development: Very Low Density Residential (CD:VLDR) (1 Acre Minimum) and Rural: Rural Mountainous (R:RM) (10 Acre Minimum) – Location: Northerly Cherry Valley Boulevard, easterly of Interstate-15 and westerly Vineland Street – 230.0 Gross Acres – Zoning: Controlled Development (W-2) – **REQUEST: The General Plan Amendment** proposes to change the project site's current General Plan Land Use designation from Community Development: Very Low Density Residential (CD:VLDR) (1 Acre Minimum) and Rural: Rural Mountainous (R:RM) (10 Acre Minimum) to Community Development: Light Industrial (CD:LI) (0.25 - 0.60 Floor Area Ratio) and Rural: Rural Mountainous (R:RM). The **Change of Zone** proposes to change the existing zoning from Controlled Development Areas (W-2) to Industrial Park (I-P). The **Parcel Map** proposes to subdivide 228 gross acres into five parcels. The **Plot Plan** proposes to construct an industrial distribution facility consisting of two industrial buildings totaling 2,560,000 square feet, with 428 bay doors, located on 230 gross acres, of which approximately 144 acres would be developed as part of the project. – APN(s): 407-220-004, 407-220-007, 407-220-008, 407-220-009, 407-220-016 & 407-220-017.

Please review the attached map(s) and/or exhibit(s) for the above-described project. This case is scheduled for a **LDC meeting on April 11, 2013**. All LDC/DRT Members please have draft conditions in the Land Management System on or before the above date. If it is determined that the attached map(s) and/or exhibit(s) are not acceptable, please have corrections in the system and DENY the routing on or before the above date. Once the route is complete, and the approval screen is approved with or without corrections, the case can be scheduled for a public hearing.

All other transmitted entities, please have your comments, questions and recommendations to the Planning Department on or before the above date. Your comments/recommendations/conditions are requested so that they may be incorporated in the staff report for this particular case.

Should you have any questions regarding this project, please do not hesitate to contact **Paul Rull,** Project Planner, at **(951) 955-0972** or email at **prull@rctlma.org / MAILSTOP# 1070**.

Public Hearing Path: *DH:* ☐ *PC:* ☐ *BOS:* ☒

COMMENTS: Please See Attached Letter

DATE: 4/11/13 SIGNATURE: _____

PLEASE PRINT NAME AND TITLE: Chris Tracy, Associate Planner - City of Beaumont

TELEPHONE: (951) 769-8614

If you do not include this transmittal in your response, please include a reference to the case number and project planner's name. Thank you.

Y:\Planning Case Files-Riverside office\PP25337\Admin Docs\LDC Transmittal Forms\GPA1079_CZ7799_PM36564_PP25337 LDC_DRT Initial Transmittal Form.docx

CITY OF BEAUMONT

April 11, 2013

County of Riverside
Planning Department
Attn: Paul Rull, Project Planner
P.O. Box 1409
Riverside, CA 92502-1409

Re: Comments – I-10 Gateway Job Center (Warehouse/Distribution Complex)– Case #PP25337 - General Plan Amend. No. 1079, Change of Zone No. 7799, Parcel Map No. 36564, Plot Plan No. 25337

Dear Paul Rull:

The City of Beaumont has reviewed the site plan exhibit for the **I-10 Gateway Job Center – Case #PP25337**, and the City supports projects that generate economic activity, such as this proposal; however, the City is concerned that the proposed two-building distribution/warehouse complex would not be a compatible use for this area.

To the south of the proposal, currently there is the approved Sunny-Cal Specific Plan, which would be directly across the street from this proposal. The Sunny-Cal Specific Plan was approved for 560 Single-Family Homes, with a minimum of 20,000 Square Foot Lots, on the lots that are adjacent to Cherry Valley Blvd, across from this project. Conceivable incompatibilities could include issues relating to noise, traffic, air quality, road circulation, etc.

Additionally, the character of Cherry Valley is rural residential in nature and this proposal would be an isolated industrial park, with no similar projects adjacent too, or within the vicinity of this proposal. It seems that this use could be classified as "Spot Zoning", which is generally not a recommended land use practice.

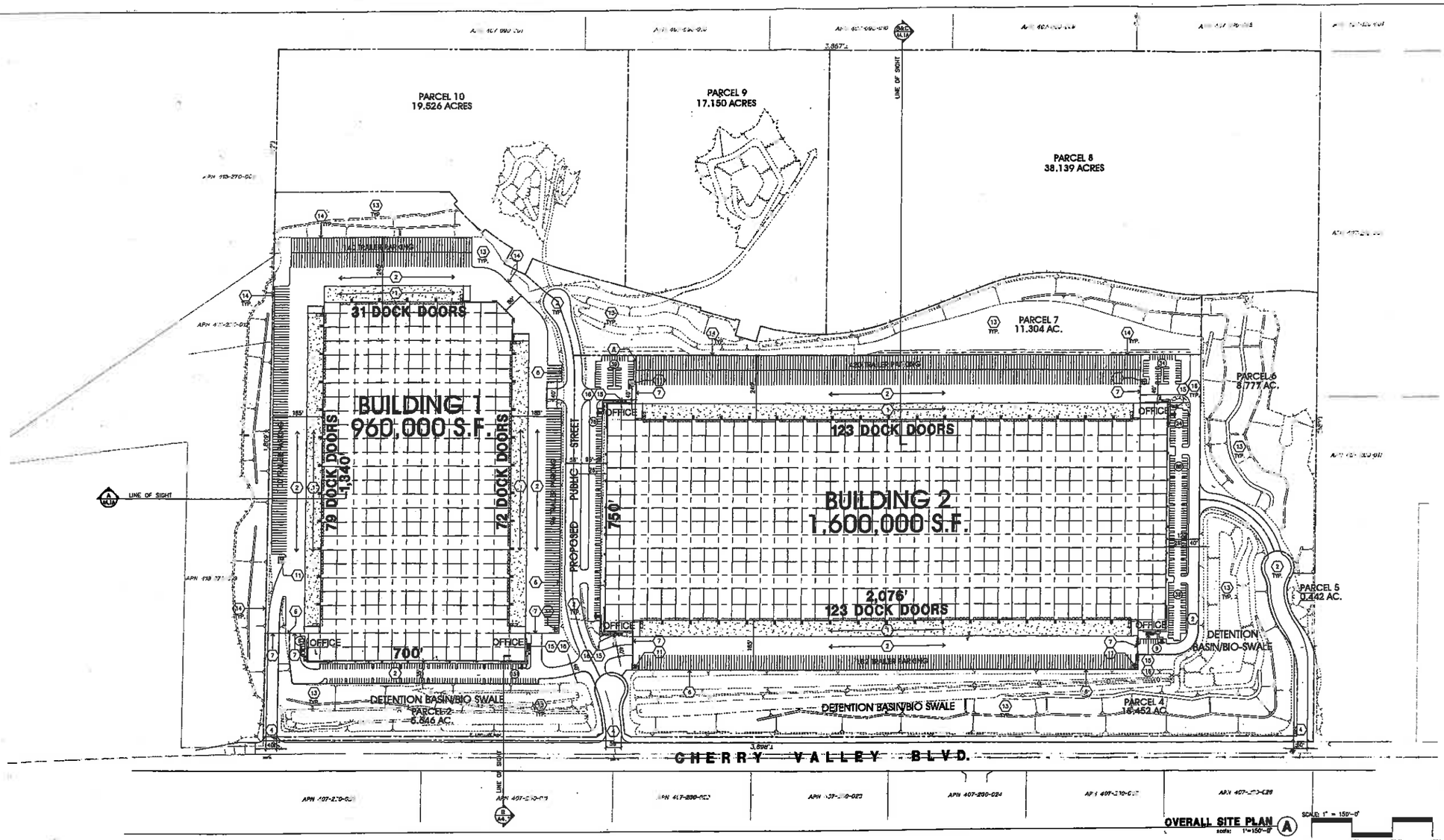
Lastly, there was no discussion, within the transmittal, of what type of Environmental Analysis has been completed so far, if at all, in relation to the proposal. The City of Beaumont would like to review this document when available.

Thank you for the opportunity to comment on this proposed project. If you have any further questions regarding the above mention item, please feel free to contact us here at the Planning Department at (951) 769-8518.

Sincerely,

Chris Tracy, AICP
Associate Planner

550 E. 6th Street • Beaumont • CA • 92223 • Phone: (951) 769-8520 • Fax: (951) 769-8526
www.ci.beaumont.ca.us



OVERALL SITE PLAN (A) scale: 1"=150'-0"

SCALE: 1" = 150'-0"
0 150' 300' 450'

PROJECT INFORMATION

Owner / Applicant
TSG-CHERRY VALLEY, L.P.
2 PARK PLAZA, SUITE #700
IRVINE, CA 92614
TEL: (949) 417-1386
CONTACT: SHAH

Architect
HPA, INC.
18831 BARDEEN AVE. SUITE #100
IRVINE, CA 92612
TEL: (949) 863-1770
CONTACT: SHKON KIM

Applicant's Representative
URBAN ENVIRONS
1345 FOUNTAIN PLACE
REDLANDS, CA 92373
TEL: (909) 798-4446
CONTACT: PAT MEYER

Civil Engineer
HUNSAKER & ASSOCIATES
THREE HUGHES
IRVINE, CA 92618
TEL: (949) 583-0759
CONTACT:

Landscape
HUNTER LANDSCAPE
711 S. FEE ANA ST.
PLACENTIA, CA 92870
TEL: (714) 985-2400
CONTACT: TOM HAYES

Assessors Parcel Number
407-220-004
407-220-007
407-220-008
407-220-009
407-220-014
407-220-016
407-220-017

Construction Type:
BUILDING 1 II-B
BUILDING 2 II-B

Legal Description
IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, BEING A PORTION OF THE NORTH HALF OF SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST, SAN BERNARDINO MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF.

VICINITY MAP



SITE PLAN KEYNOTES

1. HEAVY BROOM FINISH CONC. PAVEMENT
2. ASPHALT CONCRETE (AC) PAVING
3. CONCRETE WALKWAY, MEDIUM BROOM FINISH.
4. DRIVEWAY APRONS TO BE CONSTRUCTED
5. MAN DOORS TO LANDSCAPED AREAS. FINISH TO BE MEDIUM BROOM FINISH. SLOPE TO BE 1/4" - 1/2" MAX. PROVIDE WALK TO PUBLIC WAY OR DRIVE WAY W/ 1:20 MAX. AS REQ. BY CITY INSPECTOR.
6. 8' H WROUGHT IRON FENCE
7. PROVIDE 8' H METAL, MANUALLY OPERATED GATES W/ KNOX-PAD LOCK PER FIRE DEPARTMENT STANDARDS PER DRIVEWAY. GATE TO BE DESIGNED FOR 90 MPH WIND LOAD, EXPOSURE "C". CONTRACTOR TO DESIGN & DETAIL GATES.
8. NOT USED
9. APPROXIMATE LOCATION OF TRANSFORMER.
10. FIRE HYDRANT W/ CONC. FILLED STEEL GUARD POSTS
11. COVERED TRASH ENCLOSURE PER COUNTY STANDARD
12. EXTERIOR PARKING LIGHT POLE.
13. LANDSCAPE. SEE "L" DWGS. LANDSCAPE AREAS INDICATED BY SHADED PATTERN.
14. CHAIN-LINK FENCE AND GATE, PER APWA STD. 600-0(H=8').
15. BICYCLE RACKS W/ COVERED ROOF STRUCTURE
16. OUTDOOR PATIO (403 S.F.)
17. PUMP HOUSE

SITE LEGENDS

- LANDSCAPED AREA
- AC PAVING - SEE "C" DRWGS. FOR THICKNESS
- CONCRETE PAVING SEE "C" DRWGS. FOR THICKNESS
- STANDARD PARKING STALL (8' X 18')
- HANDICAP PARKING STALL (9' X 18')
- END STALLS STANDARD PARKING STALL (11' X 18') SEE AA.1 / F
- LIGHT STANDARD
- EXISTING PUBLIC FIRE HYDRANT
- PRIVATE FIRE HYDRANT-- APPROXIMATE LOCATION
- CATCH BASIN, APPROX. LOCATION. SEE CIVIL DRWGS.
- WATER LINE SEE CIVIL DRWGS
- GAS LINE SEE CIVIL DRWGS
- SEWER LATERAL SEE CIVIL DRWGS.

GENERAL NOTES - FLOOR PLAN

A. THE SOILS REPORT PREPARED BY CENTER & ASSOCIATES PROJ. NO. [illegible] DATED ON 1/7/2013 SHOULD BE A PART OF THESE CONTRACT DOCUMENTS.

B. IF SOILS ARE EXPANSIVE IN NATURE, USE STEEL REINFORCING FOR ALL SITE CONCRETE.

C. ALL DIMENSIONS ARE TO THE FACE OF CONCRETE WALL, FACE OF CONCRETE CURB OR GRID LINE U.N.O.

D. SEE "C" PLANS FOR ALL CONCRETE CURBS, GUTTERS AND SWALES. DETAILS ON SHEET AD.1 ARE MINIMUM STANDARDS.

E. THE ENTIRE PROJECT SHALL BE PERMANENTLY MAINTAINED WITH AN AUTOMATIC IRRIGATION SYSTEM, PRIOR TO INSTALLATION & AT LEAST 60 DAYS BEFORE BLDG. COMPLETION.

F. SEE "C" DRAWINGS FOR POINT OF CONNECTIONS TO OFF-SITE UTILITIES. CONTRACTOR SHALL VERIFY ACTUAL UTILITY CONTRACTOR SHALL VERIFY ACTUAL UTILITY LOCATIONS.

G. PROVIDE POSITIVE DRAINAGE AWAY FROM BLDG. SEE "C" DRAWINGS.

H. CONTRACTOR TO REFER TO "C" DRAWINGS FOR ALL HORIZONTAL CONTROL DIMENSIONS. SITE PLANS ARE FOR GUIDANCE AND STARTING LAYOUT POINTS.

I. SEE "C" DRAWINGS FOR FINISH GRADE ELEVATIONS.

J. CONCRETE SIDEWALKS TO BE A MINIMUM OF 4" THICK W/ TOOLED JOINTS AT 6' O.C. EXPANSION/CONSTRUCTION JOINTS SHALL BE A MAXIMUM 12' EA. WAY W/ 1/20 MAX. SLOPE. EXPANSION JOINTS TO HAVE COMPRESSIVE EXPANSION FILLER MATERIAL OF 1/4". SEE "L" DRAWINGS FOR FINISH.

K. PAINT CURBS AND PROVIDE SIGNS TO UNIFORM OF FIRE LANES AS REQUIRED BY FIRE DEPARTMENT.

L. CONSTRUCTION DOCUMENTS PERTAINING TO THE LANDSCAPE AND IRRIGATION OF THE ENTIRE PROJECT SITE SHALL BE SUBMITTED TO THE BUILDING DEPARTMENT AND APPROVED BY PUBLIC FACILITIES DEVELOPMENT PRIOR TO ISSUANCE OF BUILDING PERMITS.

M. PRIOR TO FINAL CITY INSPECTION, THE LANDSCAPE ARCHITECT SHALL SUBMIT A CERTIFICATE OF COMPLETION TO PUBLIC FACILITIES DEVELOPMENT.

N. ALL LANDSCAPE AND IRRIGATION DESIGNS SHALL MEET CURRENT CITY STANDARDS AS LISTED IN GUIDELINES OR AS OBTAINED FROM PUBLIC FACILITIES DEVELOPMENT.

O. LANDSCAPED AREAS SHALL BE DELINEATED WITH A MINIMUM SIX INCHES (6") HIGH CURB

P. APPROVED CONCEPTUAL LANDSCAPE PLAN PRIOR TO GRADING PERMIT

TABULATION

	BUILDING 1	BUILDING 2	TOTAL
SITE AREA			
Based on Parcel	Parcel 1	Parcel 3	
sq. ft.	1,962,149	2,704,721	4,666,870
acres	45.04	62.09	107.14
BUILDING AREA			
FOOT PRINT	947,294	1,577,400	
MEZZANINE	12,706	22,600	
TOTAL	960,000	1,600,000	2,560,000
COVERAGE site	48.93%	59.16%	54.85%
PARKING PROVIDED			
standard	157	307	464
trailer	338	606	944
Total Parking Provided	495	913	1,408

ACREAGE

PARCEL 1 - 45.045 AC.
PARCEL 2 - 5.648 AC.
PARCEL 3 - 62.092 AC.
PARCEL 4 - 16.452 AC.
PARCEL 5 - 0.442 AC.
PARCEL 6 - 8.777 AC.
PARCEL 7 - 11.304 AC.
PARCEL 8 - 38.139 AC.
PARCEL 9 - 17.150 AC.
PARCEL 10 - 19.526 AC.

COUNTY OF RIVERSIDE, CA
PARCEL MAP NO. 36093

HPA architecture
hpa, inc.
18331 bardeen avenue - ste. #100
irvine, ca
92612
tel: 949-863-1770
fax: 949-863-0851
email: hpa@hparchs.com

LICENSED ARCHITECT — JOHN P. HUNTER — 23457 — 3-31-13 RENEWAL DATE — STATE OF CALIFORNIA

Owner:
TSG
CHERRY VALLEY, L.P.

The Shopoff Group

Project:
I-10 GATEWAY JOB CENTER

COUNTY OF RIVERSIDE, CA

Consultants:

Civil:	Hunsaker Assoc.
Structural:	-
Mechanical:	-
Plumbing:	-
Electrical:	RPM
Landscape:	Hunter Landscape
Fire Protection:	-
Soils Engineer:	Hunsaker & Assoc.

Title: SITE PLAN

Project Number: 6232
Drawn by: A.J.L.
Date: 1-31-2013
Revision:

Sheet:
A1.1

CASE: PP25337
EXHIBIT: A
DATE: 4/3/13
PLANNER: P. RULL

CVAR_08522

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

RECEIVED
FEB 19 2014
ADMINISTRATION
RIVERSIDE COUNTY
PLANNING DEPARTMENT

February 14, 2014

Paul Rull, Project Planner
Riverside County Planning Department
4080 Lemon Street, 12th Floor
P.O. Box 1409
Riverside, CA 92502-1409

Notice of Preparation of a CEQA Document for the
I-10 Gateway Center Project

The South Coast Air Quality Management District (SCAQMD) staff appreciates the opportunity to comment on the above-mentioned document. The SCAQMD staff's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the draft CEQA document. Please send the SCAQMD a copy of the Draft EIR upon its completion. Note that copies of the Draft EIR that are submitted to the State Clearinghouse are not forwarded to the SCAQMD. Please forward a copy of the Draft EIR directly to SCAQMD at the address in our letterhead. **In addition, please send with the draft EIR all appendices or technical documents related to the air quality and greenhouse gas analyses and electronic versions of all air quality modeling and health risk assessment files. These include original emission calculation spreadsheets and modeling files (not Adobe PDF files). Without all files and supporting air quality documentation, the SCAQMD will be unable to complete its review of the air quality analysis in a timely manner. Any delays in providing all supporting air quality documentation will require additional time for review beyond the end of the comment period.**

Air Quality Analysis

The SCAQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The SCAQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the SCAQMD's Subscription Services Department by calling (909) 396-3720. More recent guidance developed since this Handbook was published is also available on SCAQMD's website here: www.aqmd.gov/ceqa/hdbk.html. SCAQMD staff also recommends that the lead agency use the CalEEMod land use emissions software. This software has recently been updated to incorporate up-to-date state and locally approved emission factors and methodologies for estimating pollutant emissions from typical land use development. CalEEMod is the only software model maintained by the California Air Pollution Control Officers Association (CAPCOA) and replaces the now outdated URBEMIS. This model is available free of charge at: www.caleemod.com.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project. Air quality impacts from both construction (including demolition, if any) and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, that is, sources that generate or attract vehicular trips should be included in the analysis.

The SCAQMD has also developed both regional and localized significance thresholds. The SCAQMD staff requests that the lead agency quantify criteria pollutant emissions and compare the results to the recommended regional significance thresholds found here: http://www.aqmd.gov/ceqa/handbook/signthres.pdf. In addition to analyzing regional air quality impacts, the SCAQMD staff recommends calculating localized air quality impacts and comparing the results to localized significance thresholds (LSTs). LST's can be used in addition to the recommended regional

significance thresholds as a second indication of air quality impacts when preparing a CEQA document. Therefore, when preparing the air quality analysis for the proposed project, it is recommended that the lead agency perform a localized analysis by either using the LSTs developed by the SCAQMD or performing dispersion modeling as necessary. Guidance for performing a localized air quality analysis can be found at: http://www.aqmd.gov/ceqa/handbook/LST/LST.html.

In the event that the proposed project generates or attracts vehicular trips, especially heavy-duty diesel-fueled vehicles, it is recommended that the lead agency perform a mobile source health risk assessment. Guidance for performing a mobile source health risk assessment ("*Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis*") can be found at: http://www.aqmd.gov/ceqa/handbook/mobile_toxic/mobile_toxic.html. An analysis of all toxic air contaminant impacts due to the use of equipment potentially generating such air pollutants should also be included.

In addition, guidance on siting incompatible land uses (such as placing homes near freeways) can be found in the California Air Resources Board's *Air Quality and Land Use Handbook: A Community Perspective*, which can be found at the following internet address: http://www.arb.ca.gov/ch/handbook.pdf. CARB's Land Use Handbook is a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process.

Mitigation Measures

In the event that the project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during project construction and operation to minimize or eliminate these impacts. Pursuant to state CEQA Guidelines §15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed. Several resources are available to assist the Lead Agency with identifying possible mitigation measures for the project, including:

- Chapter 11 of the SCAQMD *CEQA Air Quality Handbook*
- SCAQMD's CEQA web pages at: www.aqmd.gov/ceqa/handbook/mitigation/MM_intro.html
- CAPCOA's *Quantifying Greenhouse Gas Mitigation Measures* available here: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf.
- SCAQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook for controlling construction-related emissions
- Other measures to reduce air quality impacts from land use projects can be found in the SCAQMD's Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. This document can be found at the following internet address: http://www.aqmd.gov/prdas/aqguide/aqguide.html.

Data Sources

SCAQMD rules and relevant air quality reports and data are available by calling the SCAQMD's Public Information Center at (909) 396-2039. Much of the information available through the Public Information Center is also available via the SCAQMD's webpage (http://www.aqmd.gov).

The SCAQMD staff is available to work with the Lead Agency to ensure that project emissions are accurately evaluated and mitigated where feasible. If you have any questions regarding this letter, please contact me at imacmillan@aqmd.gov or call me at (909) 396-3244.

Sincerely,

Ian MacMillan
Program Supervisor, CEQA Inter-Governmental Review
Planning, Rule Development & Area Sources

RVC140107-03
Control Number

CVAR_08524

February 19, 2014

Riverside County Planning Department
Attn: Paul Rull, Project Planner
4080 Lemon Street, 12th Floor
P. O. Box 1409
Riverside, CA, CA 92502-1409

Regarding: I-10 Gateway Center Project: GPA1079, CZ7799, PM36564, PP25337, EIR No. 534

Thank you for the opportunity to respond to the Notice of Preparation of a Draft EIR for the above-referenced project. The primary concerns for the City of Yucaipa relate to potential traffic impacts and other impacts that may affect our residents. Traffic impacts and other issues requiring analysis and clarification are listed below. Specifically, we request that the following issues be addressed:

1. Address the anticipated traffic impacts to I-10 and its three interchanges through Yucaipa (County Line Road, Oak Glen Road/Live Oak Canyon Road, and Yucaipa Blvd.) in the Transportation/Traffic Section. Also address the intersections of County Line Road/Calimesa Blvd, Oak Glen Road/Calimesa Blvd, and County Line Road/5th Street in the Transportation/Traffic Section.
2. The NOP states that an application for annexation to the Yucaipa Valley Water District (YVWD) will be filed with San Bernardino County LAFCO. However, the project site is in Riverside County. YVWD is a local government agency that straddles the county line of San Bernardino and Riverside Counties. The Land Use/Planning Section should discuss and clarify the rationale for a LAFCO other than Riverside County LAFCO acting on an annexation request.
3. The NOP states that the westerly 16.5 acres of the project site is located within the City of Calimesa. This area is shown on Exhibit 3 (Site Plan), and although no buildings are proposed, a water quality basin with extensive grading and drainage infrastructure are indicated. The Land Use/Planning Section should discuss the role of the City of Calimesa in the process of considering an approval of the portion of the project site within their City.
4. The number of anticipated permanent jobs that will be created as part of this project should be discussed in the Land Use/Planning and Population/Housing Sections, along with a projection of new jobs or jobs that have been relocated from the region or outside the region.

5. The Aesthetics Section should address any designated scenic highways (I-10 Freeway, Cherry Valley Blvd) and the visual impact of the proposed buildings in this rural/agricultural area.
6. The Riverside County General Plan designation of the project site is Very Low Density Residential (VLDR) and Rural Mountainous (RM). Existing zoning is W-2, Controlled Development, which in Riverside County has historically been a designation for rural/agricultural areas. The Land Use/Planning Section should discuss in detail the General Plan Amendment and Zone Change and the rationale to support the proposed changes to Light Industrial (LI) and Industrial Park (I-P). The Draft EIR should also discuss the precedent that project approval would create for Cherry Valley Blvd. and the I-10 Freeway as a future industrial corridor.

In addition to responses to the above comments, please provide me with future notice of availability of the Draft EIR.

Sincerely,

CITY OF YUCAIPA

Joseph M. Lambert
Director of Development Services

Liz Westmoreland

From: Adrian Mcloughlin [mac7251@hotmail.com]
Sent: Saturday, February 22, 2014 11:31 AM
To: Rull, Paul
Cc: Adrian Mcloughlin

Hello Mr. Rull,
I am writing to you as a concerned citizen who lives in Beaumont, CA. I am concerned about the proposed Gateway warehouse development. I live nearby the proposed site. This development would adversely affect our lives.
My son goes to Brookside Elementary. He could expect to go from peace and quiet to the noise of big rigs jack braking past his school. He could expect to spend more recess time inside due to increased air pollution. This project in the long term could affect his healthy development.
I commute to work using the Cherry Valley entrance to the I-10. My commute would be ruined by the smoke belching big rigs. My safety could be compromised by these rushing juggernauts. This warehouse will change our community from a rural/suburban one to an industrial one. We moved to Beaumont because it is semi rural, if we wanted industrial we would have moved somewhere else. This proposed monstrosity would destroy our property values.
I would like to be notified of any upcoming hearings on this project.
Thanks
Adrian McLoughlin

Sent from Windows Mail

Liz Westmoreland

From: Angeline Twitty [ouract3@verizon.net]
Sent: Friday, February 21, 2014 9:41 PM
To: Twitty Angeline
Subject: Stop the Monster Gateway Center warehouse

Dear Paul Rull,

In response to the article in News-Mirror some reasons for not building the Monster warehouse.
1. Traffic noise from 1000 18-wheelers a week. My ears are ringing listening to the tires hum and gear shifting going up and down hills.
The 18 wheelers will cause congestion and create possible accidents on I-10.
2. The developer is miles away from the project and does not want to incorporate which could cause lots of problems in ownership.
Example: Like part of the land is in Calimesa, Cherry Valley and Beaumont.
3. The diesel tractor-trailers will adversely affect air quality. We don't want smog layers added to our valley.
4. Affects lives of school children riding on school buses when they go on field trips and attractions in the area. The children want to
arrive at their destination quickly. Think how it would be a bus full of 42 students waiting behind a string of 18-wheelers exiting at the
narrow Cherry Valley off ramp.
5. If the Monster eye sore warehouse is built, you better believe our property values will go down. Who wants to live by a warehouse.
6. Warehouse jobs are limited like a fork-lift driver. Not much room for advancement.

PLEASE let's drop this idea of a Monster warehouse and plan to bring into our neighborhood Industry that can provide job positions and growth within a company for our younger generation. Imagine what a beautiful Industrial park could be built on this 2.5 million square foot area. With the right Architect a facility could be designed to add Class to the neighborhood not run it down. Young families are moving into our area because of affordable housing. Let's think about employing them with jobs with wages to afford their new home here in Yucaipa, Calimesa and Beaumont areas. Presently home owners must drive a long distance, some as far as Long Beach or Los Angeles, for employment. If jobs were offered here it would reduce traffic on the freeway, save gas cost and eliminate adding smog to our valley.
Sincerely,
Charles and Angeline Twitty of Yucaipa

Liz Westmoreland

From: gladnie2be@verizon.net
Sent: Monday, February 24, 2014 7:45 AM
To: Rull, Paul
Subject: Gigantic Gateway center warehouse

THIS EMAIL HAS BEEN SUBMITTED VIA THE RCTLMA WEBSITE.

Just read about Riverside Co. fastracking this ungodly sight next to our 10 freeway cooridor. So far we have to warehouses anywhere near this sight & we'd like to keep it that way especially one that is 43 football fields long. Yucaipa has a policy of keeping of keeping the hills & cooridor open. Just because this area is unincorporated you think you can push the $ through & ruin the look of the area for all times as has been done in the Moreno Valley area. Please STOP this from going through. I'm going to do my level best to notify local areas to put a stop to this. Locate the damn thing in the warehouse zone in Redlands, Ontario & all the other zones (also off the 10 freeway but not observed while driving). So you won't make a few tax dollars but the local people will love you for it. Thanks

Liz Westmoreland

From: Cortney Overson [cnoverson@hotmail.com]
Sent: Saturday, February 22, 2014 3:13 PM
To: Rull, Paul
Subject: Gateway Center Warehouse

Dear Mr. Rull,

I have recently become aware of the proposed Gateway Center Warehouse project, that is slated to be built in Cherry Valley. Just the thought of this being built in my neighborhood is greatly concerning. My husband and I own a home in the Stetson community, which is right next to where this monstrosity could be built. The entrance to my tract is off Brookside and that two lane road would be the only divider between the warehouse and my family. I strongly oppose this project and ask that you please inform me when there are upcoming hearings on this project. The proposed site of the Gateway Warehouse is in between two single lane freeway exits that are already often backed up with vehicles from the residents of Cherry Valley and Beaumont, I cannot imagine the thought of adding the amount of eighteen wheeler traffic that this warehouse would bring. Not to mention the noise and pollution that would come with it. I feel that if the Gateway Warehouse project were to be approved it would have such a negative impact on my family's way of life, including our home property value. The home we live in is the first home we have ever purchased, we have three young sons and we love our neighborhood but would consider moving if this project moves forward, which is an upsetting thought. I am asking that you please take my concerns into account regarding this matter.

Thank you,

Cortney Overson
1731 Twin Oaks Ct
Beaumont, CA 92223
760-777-2759

STOP GATEWAY WAREHOUSE PROJECT IN CHERRY VALLEY

TO: MARION ASHLEY, COUNTY PLANNER PAUL RULL, RIV COUNTY BOARD OF SUPERVISORS, RIV. COUNTY TRANSPORTATION AND LAND MANAGEMENT AGENCY (TLMA), RIV. COUNTY PLANNING DEPT., CA FISH AND GAME, AIR QUALITY MANAGEMENT DISTRICT (AQMD), CALTRANS

Stop this montrous project from being built in our pristine rural community. Do not Allow the Shopoff Group from Orange County to rezone and build a warehouse in our resisential community that will alter everything about our community and way of life. It will greatly effect all our surounding communities, Beaumont, Calimesa, Yucaipa, & Banning, lets unite and stop Gateway!

A 2.5 million square foot warehouse, the size of 43 football fields, is planned for the north side of Cherry Valley Blvd, just east of the I-10 interchange. It's called the Gateway Center Warehouse. It will have 424-484 bays for 18-wheel diesel tractor-trailers and the building will be 40% larger than the Sketcher Warehouse on Route 60 in Moreno Valley. Imagine that in the middle of our housing communities.

The Shopoff Group, a developer from Orange County, will build the warehouse and then will attempt to sell it. They claim it will bring jobs. What we can expect is our pristine rural land will be converted into a heavy industrial zone for their own profit. The building of the monster warehouse may create construction jobs temporarily, but there is no guarantee it will employ our local citizens. The Gateway Center Warehouse will bring traffic, noise, pollution, decreased property values, permanent damage of our pristine rural community, and will drastically alter our quality of life.

Act now to keep heavy industry out of Cherry Valley.

Name	Address	Phone #	Signature	Voter
Charles Knox	41034 Cheyenne TR	769-5537	Charles Knox	Yes
Lois Cantrell	41034 Cheyenne TR.	951-769-5537	Lois Cantrell	Yes
Alice Walker	10535 Chester Tr	951-922-6674	Alice Walker	Yes
Doris Ybarra	41154 Cheyenne Tr.	951-769-3499	DORIS YBARRA	Yes
Bobbie Quai	18350 Overland	845 5330	Bobbie Quai	yes
Bob [illegible]	10535 Chester Tr	9519226674	Bob [illegible]	Yes
Sue Barnett	10285 Frontier Trail	9518450867	Glenda Sue Barnett	Yes
Frances Flanders	41045 MOHAWK CIR. Cherry Valley	(951)845 6689	Frances F. Flanders	YES!

CVAR_08531

STOP GATEWAY WAREHOUSE PROJECT IN CHERRY VALLEY

TO: MARION ASHLEY, COUNTY PLANNER PAUL RULL, RIV COUNTY BOARD OF SUPERVISORS, RIV. COUNTY TRANSPORTATION AND LAND MANAGEMENT AGENCY (TLMA), RIV. COUNTY PLANNING DEPT., CA FISH AND GAME, AIR QUALITY MANAGEMENT DISTRICT (AQMD), CALTRANS

Name	Address	Phone #	Signature	Voter
Steve Price	10525 Arapahoe Cir	951-797-3074	St. P	yes!
Tommy Hull	10525 Arapahoe Circ	909-446-2795	Tommy Hull	yes
Heather Greenberg	40985 Laredo Tr	951-797-3205	Heather Greenberg	Yes
Charlotte Foster	10445 Frontier Tr.	951-769-3463	charlotte foster	yes
Dottie Dicks	41094 Cheyenne Ln	951-76936	Dottie Dicks	yes
Sandra L. Streater	922 E. 13th St. Bmt	951-845-5174	Sandra L. Streater	yes
Tasha Ray	1816 Riviera Ave. Beaumont	951-769-9866	Tasha Ray	yes
KATHLEEN A. ROWSELL	13900 BOLO COURT, BEAUMONT	(714) 224-8845 cellphone	Kathleen A. Rowsell	yes
Shirley Lithgow	41810 Candlewood	951-769-5567	Shirley Lithgow	yes
Helen Richardson	10970 Bel Air	951-845-2459	Helen Richardson	Yes
Scott Charlesworth	10045 Commanche	951-845-4944	Scott Charlesworth	Yes
Wanda Ferreira	10265 Cimarron	951 845 4555	Wanda Ferreira	yes
Lourdes Portafaix	40774 LAREDO	951 845-4144	L Portafaix	yes
SANDY SMITH	10274 FRONTIER	951-845-7449	Sandra Smith	—
NANCY J. LEWIS	10457 OVERLAND TRL	951-769-8061	Nancy J Lewis	YES
GAYLE MORENO	10294 CHISHOLM	951-845-9431	Gayle Moreno	✓
VERLY CHRISTENSON	40825 LAREDO TR.	951-845-5420	Beverly Christenson	yes

CVAR_08532

STOP GATEWAY WAREHOUSE PROJECT IN CHERRY VALLEY

TO: MARION ASHLEY, COUNTY PLANNER PAUL RULL, RIV COUNTY BOARD OF SUPERVISORS, RIV. COUNTY TRANSPORTATION AND LAND MANAGEMENT AGENCY (TLMA), RIV. COUNTY PLANNING DEPT., CA FISH AND GAME, AIR QUALITY MANAGEMENT DISTRICT (AQMD), CALTRANS

Name	Address	Phone #	Signature	Voter
RITA ROLLER	10273 OVERLAND TRL	951 403-1633	Rita Roller	yes

To: Marion Ashley, County Planner Paul Rull, Riv County Board of Supervisors, Riv. County Transportation and Land Management Agency (TLMA), Riv. County Planning Dept., CA Fish and Game, Air Quality Management District (AQMD), Caltrans

Block this monstrous project from being built in our pristine rural community. Do not allow The Shopoff Group from Orange County to rezone and build a warehouse in our residential community that will alter everything about our community and way of life.

Signed by 1,465 people:

Name	Postcode	Address
Trina Brown	92223	39692 Baldi Court,
Sheldon Smith	92223	40642 grand ave. cherry valley, ca.
Kayci Jones	92223	39763 Baldi Ct. Cherry Valley
Rhondi Horrocks	92223	39067 Cherry Valley Blvd space 47
Fred McCubbin	92234	31855 Date Palm Dr. , cathedarl city
David Castaldo	92223	PO Box 129
Tammy Johnson	92223	39823 High Street Cherry Valley, CA
Michael Reighley	92647	7942 Aldrich Ave #5 Huntington Beach CA
Mary Samuelson	92223	39691 Baldi Court
Ronald Partain	92223	308 E 12th Street
Krista Earls	92223	1608 Primrose Ave
kimberly hadaway	75482	708 tate st.
Jon Samuelson	92223	39691 Baldi Ct
Judith Walker	92223	1239 Moira St
Leslie Mayfield	92223	1236 wellwood
Beverly Partain	92223	308 E. 12th
Ronald Partain	92223	308 E. 12th
Barbara Downs	92399	12655 2nsd st yucaipa ca
josh hadaway	92240	10625 San Pablo rd
Ron Earls	92223	1608 primrose ave
Miranda Burton	92223	39710 Baldi Ct
Michael Burton	92223	39710 Baldi Ct
Jodie Owens	92223	Po box2104
Heyam Fakhouri Nesheiwat	10509	2424 Route 6 Brewster NY
Steve Diaz	92220	4033 Mockingbird Lane

Name	Postcode	Address
Stan Saraczewski	92223	1163 Penn.
Nicholas Moreno	92223	1139 magnolia ave
Jason Kratz	92223	38910 Lewis court
Michelle Giannini	92223	9075 Bonita Drive
cynthia stewart	92223	839 N California ave
Denise WARD	92223	762 Willow Court
Vicki Oliver-Grunewald	92220	4086 Oak Lane, Banning, Ca.
Daniel Giannini	92223	9075 Bonita Drive
patty vanderpool	92802	933 s. roberts st #3
Crystie Manson	92223	9945 Cherry Ave
Pamela Dopf	92223	10486 Winesap Avenue
Mark Orozco	92223	11555 Stoney Brook Ct.
Diane Smith	92220	295 Lombardy Lane
Kim Lovell	92223	1093 elm ave
Daniel Lamaster	92399	35345
Sharon Hamilton	92223	39880 Grand Avenue, Cherry Valley, CA
Samantha Grunewald	92223	1687 jade ct
Diana Payne	92399	12982 Dale Evans Ct
Meghan Atchley	92399	Ave C
Erin Schell	92223	40024 grand ave Cherry valley, ca
Alice Jackson	92223	513 Monika Ct.
Autumn Jasso	92223	510 Cherry Valley Acres
Caleb Reynoldson	92223	876 Liam Way
Curt Lovell	92223	1093 elm ave.
Taylor Rigsby	92223	33980 Kenneth court
Kyle Beach	92223	38938 Kenneth court
Susan Turley	92223	39145 orchard st
Pamela Bunker	92223	9712Avenida Miravilla Cherry Valley, CA
Nancy Rissi	92223	1692 midnight sun dr
Kjeld Lindsted	92223	38141 Orchard St.
Rob Schell	92223	40024 Grand Ave, Cherry Valley

Name	Postcode	Address
Debrah Brown	92223	88 cold spring ave
Ashley Schleiden	92223	39657 baldi ct cherry valley, ca
Brandie Stephens	92399	13642 Holmes St
David Walker	92399	34952 Beech Ave.
Carrie Stull	99687	Pobox 875042
Gretchen Toon	92223	1159 caselton
Christy Horn	92373	305 w. Olive ave. apt #3
Teri Stull	92223	P.O.Box 639 Beaumont
James Honeyfield	92223	9249 Oak Creek Rd. Cherry Valley, CA
Kristin Mann	90806	3616 Falcon Ave
Laura Breazile	92223	578 fox ridge rd
Ann LeMaster	92223	1572 Hunter Moon Way, Beaumont, ca
Gina MacKinnon	92223	10835 delicios lane cherry valley ca
Danial Partridge	92220	1202 Aspen Lane
Jon Bebee	92223	1623 Vasili Lane Beaumont Ca.
Kathleen Pendley	92223	1255 Chestnut Ave
Darrin bergeron	92223	114 east 11thstreet
Jo Jojola	92223	1002 magnoliaAve
susie biby	92220	4230 evergreen lane
Lisa VanGreuningen	92223	1513 Mountain View Trail, Beaumont, Ca
Joan Todaro	92223	40120 High St., Cherry Valley, CA
Ruth McIntosh	92223	1270 Euclid Ave
Pete Kiyasu	92223	1685 Golden Way, Beaumont, CA
Star White	92399	34645 cape Cod Ct
Jason Jones	92223	39763 Baldi Ct.
Eric Audet	92223	Po box 54
Joanne Kofoed	77070	8301 Willow Place Dr N #2701
Kristina Krumbein	92220	1252 Foothill Dr.
Lillian Gillespie	92223	35519 Snead St
Vivian n	92223	1257 north larkspur lane
Virginia Valdez	92220	856 Liam Way Beaumont,Ca

Name	Postcode	Address
Lodi Meza	92223	Butterfly Court
aaron brandon	92223	1559 midnight sun dr
Gloria Dunmire	92399	31297 Tennessee Lane, Yucaipa
kristy christopherson	92223	825 Euclid Ave
Kathy Cathey	92223	1436 Willowbend Way
Teresa Amaya	92223	701 aspe. Glen
Stacey Bellinger	92223	10205 ralph rd
Laura Perez	92223	1474 Willowbend way
Julie Hlebasko	92223	1633 Rose Ave
sheryl nelson	92220	1252 Foothill Drive
Shannon Ellsworth	92223	1549 Phoenix dr
Jennifer Economen	92223	106 boston ave
Lee Bachellor	92223	10223 Jonathan Ave
shari lattin	92223	10669 jonathan ave.
Meghan Lusk	92223	35487 Byron Trl
Lorisa Jimenez	92223	34946 Hagen heights
Aurielle Ebb	92223	1665 s monte verde dr beaumont
reina enrique	92128	16238 Avenida Venusto Unit C
Cory Marsteller	92223	9245 Beauview drive
Melody Odell	92399	34381 Bella vista dr yucaipa ca 92399
Kyndall Mitchell	92320	932 Park Avenue
Grace Gerken	92223	9071Rancho Dr. Cherry Valley
chris wilson	92223	39086 Vineland St
Lorie Ballard	84335	3833 n 3200 w, Benson, ut
Donna Nelson	92220	5700 with Wilson st. banning ca
Megan Feyer	92223	1634 Lakeside Ave
Sally Brown	92320	10961 desert lawn dr #386
Stephanie Hyde	92223	1691 Jade Ct
Lori Johnson	92223	725 Michigan
Miranda Cunanan	92223	756 willow court beaumont ca
Randy Dopp	92223	38660 Vineland St.
Marquez Dopp	92223	38660 Vineland St.

Name	Postcode	Address
Jei Roberts	92223	36476 Bay Hill Drive
Tamra Johnson	92223	36479 Torrey Pines Drive
Melissa Hanvey	92223	39954 cherry valley blvd
Coby Webb	92223	38545 Alva Dr.
Kim Payne	73099	10009 Millspaugh Way
audra lucas	92223	826 classic ave
Holly Johnson	92223	39045 Orchard, Cherry Valley
Linda Hulsey-Magness	92230	PO Box 786
Melissa Leader	92223	9331 Bonita Dr.
Kim Murphy	92223	1103 Radka ave
Thomas Conner	92234	31020 Avenida Ximino Cathedral City California
Brandon Burk	92354	26243 Newport Ave
Stephanie Schlott	92223	919 Willmont Way
Jessica Johnston	92223	10611 El Monte Drive
K. Danice Rose	92223	34660 Boros Blvd.
Linda Riley	92223	9365 Byham Lane, Cherry Valley, Ca.
Daryl Randall	92220	4409 Terry Lee Circle
Tamara Russell	92587	29605 Vacation drive
Joel Barraza	92223	187 East 10th Street
Krista Erickson	92223	1417 Willowbend Way
Meghan Bryant	92223	1529 Apple Canyon Road
angel Barraza	92223	435 cougar way
tamra thompson	92220	674 n 6th st banning ca
Heidi Fisher	92320	35154 Mesa grande dr.
Adam Fisher	92320	35154 Mesa grande dr
Sandy Jones	92399	35213 vineyard st
Claudia Garcia	92223	935 Wilsey Way
Rochelle Baker	92223	11030 Hannon Rd
Dawna Dorcas	92336	15506 Raymond ave
Deborsh Sanker	92399	13677 Oak Mesa Dr
vada miller	92220	18778 deer trail rd banning ca
Mary Shingler	92223	40023 High Street

Name	Postcode	Address
Michelle McClelland	92223	38960 Alfred Ct
Casey Slaten	92223	38938 Kenneth court cherry valley ca
Tillie Hanvey	92223	636 Egan ave
Katie Bennett	92223	1592 Shadow Hills Trl
Susan Pratt	92223	10711 Fabian lane
Cecilia Kelley	92223	11542 Rivers Bend Drive
Chandra Cavanaugh	92223	11542 rivers bend drive
Kari Prinz	92223	34342 Venturi Ave
Tori Harding	92223	67 graham st
Lacey Andrian	92223	1309 comfrey leaf drive
nick manning	92223	10862 winesap ave
Josh Baker	92544	43539 Amazon st
Stanley Sufficool	92223	1556 MOUNTAIN VIEW TRL
cheryl angle	92320	10320 Calimesa Blvd Calimesa Ca
Veronica Orozco	92223	1551 E 8th St
Betsy Russell	92223	787 Vallecito Avenue
Heather Mullenix	92223	1735 Morgan avenue
sherri myers	92223	1435 E. 8th St.
Margie Coen	92223	10803 Bellflower Ave.
PJ Martinez	92223	1270 Maple Ave
Katie Herring	92223	1451 tours ct, Beaumont, ca
Rebecca Ashmore	92223	37251 Cherry Valley Blvd
Nicholas Hordynski	92223	37980 Vineland ave
hayden hughes	92220	4291 hillside dr. banning,ca
Elizabeth Sosa	92543	134 franklin st
Shauna Johnston	92223	996 Queen Anne's Lane
Julie Forster	48060	3423 pine grove ave
Darla Sass	92223	38411 view drive
Melissa Romero	92223	11234 Burke Street
Carol Flores	92374	1721 E Colton Ave #113
Mark Cathey	92223	1436 Willowbend Way
Linda Castro	92223	34890 Middlecoff Court Beaumont, CA

Name	Postcode	Address
Bonnie Simpson	92233	34407 Devlin Dr
Anna Castro	92222	34890 Middlecoff Ct
Janet Walker	92223	10587 Jonathan
Brenda Canales	92220	2233 silver star drive
Darrel Kuhse	92220	969 Oakland Hills Dr Banning CA
Autumn Stone	92223	37181 Meadow Brook Way
Raul Castro	92223	34890 Middlecoff ct
Roxana OHarra	92223	40430 dutton at CV -CA
Tim Owens	92220	976 Lunar Lane
Lorraine Montoya	92223	1735 Morgan Ave
Rachelle Sanders	92223	1111 Radka Ave
Deborah Candelario	92223	po box 3328
Dorothy Ayer	92325	12480 Crest Forest
Jacklyn Krumwiede	92223	37782 High Ridge Dr
Cindy Snow	92223	34334 Devlin Drive
Katie Davis	92223	Po box hm
Sharon Stuhrmann	92223	9395 Mountain View Avenue
Lisa Walker	11218	604 17th St. #2
Jilana Dunaway	92223	226 E 6th st
Stacy Patrick	92223	1370 Tremella Court
angelita garcia	92223	1148 Michigan Ave.
Troy Goodman	92223	10952 Noble St. Cherry Valley
Misty Cope	92553	23285 hemlock ave apt. 8 Moreno valley ca
Brianna De Marco	14623	4 alfie drive
Emelia King	95928	18 Alameda Park Circle
Jenelle Nickerson	92223	248 Elm Avenue
Irma Granger	91016	346 N. Oak cliff Road
Tammy Cannucci	65608	rr 2 box 585
Nick Jacobson	92223	1373 mandrake way
Glenda Hawkins	92223	10880 DELICIOUS LN
Tayha Conn	92223	1431 bittersweet dr
Terri Aragon	92373	30892 E. Sunset DR. S.

Name	Postcode	Address
Alyssa Taber	92223	39611 lincoln st
Della Elliott	92845	11872 Amethyst St. Garden grove, Ca.
Stan Owens	92223	976 lunar ln
TISA WEISZ	92320	2276 N. San Gorgonio
Andrea Murray	92223	1240 N California avenue
Jeffrey Espinoza	92223	9085 Oak Glen Road, Cherry Valley
Jacob Cannon	92223	1229 Orange Avenue
Leo Pope	92223	37980 Vineland st
Kati Boyce	92374	1304 Julie ct
christine stewart	92223	1639 snowberry rd.
Lindsay Jacketti	92507	270 mandarin way
Cathy H.	92223	1633 Rose Ave., Beaumont, CA
Mike Hamilton	92223	9776 Avenida San Timoteo
Julie Stengel	92223	1775 Long Drive Beaumont Ca
Peter Sierra	92507	375 Central Ave #60
Alexandria Pistilli	92223	1338 San Miguel Drive
Carole Eatough	92399	35374 Sunlight Drive
Judi Nightingale	92223	37980 Vineland st
Sarah Rios	92223	9184 Bonita Drive
katie chilcoat	92220	103 e barbour st
Rios Rocky	92223	9184 Bonita Drive
Rani Sanders	90019	1571 S Genesee Ave
Christine Mclaughlin	92233	1673 stone creek road
Ray Woll	92223	9423 Oak Glen Rd, Cherry Valley
Christina Ocampo	92320	1134 villa calimesa Ln.
Cortney Overson	92223	1731 Twin Oaks Ct.
Angie Hubbs	92223	749 Stargazer Street, Beaumont, CA
Cory Ackman	92223	1626 puma ct Beaumont ca
Sheryl Wooldridge	92223	36604 Bay Hill Dr
laura ruiz	92223	demaret dr.
Cory George	92284	6823 Avalon AVE
jon harding	92223	67 graham st

Name	Postcode	Address
Tonya Johnson	92223	601 Ashford Court
Tammy Hitchcock	92544-5015	25910 carbob ln
Parissa Djafari	92506	6900 Brockton ave suite #2 Riverside.
Erin Moore	92223	10985 crowther lane
Aimee Petite	92399	33929 Old Trail Dr., Yucaipa
Nolan Moore	92223	10985 crowther lane
Terri Nevins	92399	33478 Lansford St
Jennifer Tomlinson	92203	41419 Ludden court
roger ashford	92359	1111 olivine ave
HEIDI BONHAM	92223	9510 BYHAM LANE, CHERRY VALLEY
Victoria Karalun	92223	64 Graham Ave, Beaumont, CA 92223
Marck Ramos	92223	39770 dutton at cherry valley
jacob foulk	92223	1752 vasili lane
Michael Karalun	92223	64 Graham Ave
Melanie Rollier	92223	105 Oak Valley Parkway
Andrea Shutt	92223	34279 devlin dr
Justin Shutt	92223	34279 devlin dr
Taylor Matic	92220	933 north 7th street
Christopher Conner	92223	1125 Palm ave
Christina tims	92504	3837 Melody
Fiorela Piedra	92346	1894 N Central Ave
christopher petite	92399	lake breeze dr
shane leeger	92223	40223 Oneal Ave
Jodi Jones	92223	1364 mandrake way
Michelle Webster	92223	9869 Kehl Canyon Rd
Tara Bickford	92223	35331 Trevino Trail
Keith Barrett	92223	10310 napoleon St. Cherry Valley. CA.
Betty Joseph	92223	11020 Union Street, Cherry Valley
Jo Ellen Depka	92008	1852 palisades dr. Carlsbad, ca.
Elena Barrett	92223	10310 napoleon St. Cherry Valley. CA.

Name	Postcode	Address
Sam Halstead	92359	210 sliger rd mentone ca
Darrell Feuerhahn	92320	34971 Buena Mesa dr
Loretta Miranda	92223	39815 grand ave
Marisol Ramirez	92320	1243 Heritage Drive
Jason Garrison	92223	39643 grand ave cherry valley
Sarah Cloes	92223	9241 avenida miravilla
Ryan Gomez	92220	72 repplier
Jennifer Colucci	92220	508 Sioux circle
Angie Woolman	86301	p.o.box 3562, prescott,az
Alex Lozano	92223	40410 pippin way, cherry valley CA
Daisy Walling	92582	2847 tuberose drive
Janele Dubocq	92223	35283 Trevino trl. Beaumont ca
Kristine Debevec	92223	1528 Sundance dr. Beaumont ca.
Anthony Lambropoulos	92223	1720 Spyglass Ct.
stacey crawford	92223	1016 palm ave
Shirley Ferguson	92223	873 Westchester Road
Casey Reynolds	92284	58455 pimlico st
Richard Ferguson	92223	872 Westchester Road
Nanette McHenry	92374	1804 Cave St
Gus Ruiz	92223	11193 Demaret dr
Janelle Vendeville	92374	1556 Campus Ave
Darlene Griffin	92223	39244 Oak View Lane
Christina alarcon	85364	1252 s.6th ave
Jeremy Palmer	92223	1085 Palm ave
Michelle Theisen	92359	32829 kilkare road Mentone Ca
Mary Stanfield	92223	40634Dutton Street,Cherry Valley,Ca
Jessica Wippert	92399	35244 Vineyard St
Ryan Hanzich	92223	34267 Venturi ave. Beaumont ca
Sarah Williams	96818	4545 Paperbark Ln
Matthew Erlendson	92223	1695 Vasili ln Beaumont ca
jessica roberts	92399	34785 pecan ave
Heather McCulley	92223	1019 N Shooting Star Dr

Name	Postcode	Address
Sarah Henry	92223	1647 Apollo Way
larry moore	92223	105 oak valley
alvin schimtz	92223	105 oak valley
Brandi Cass	92223	40650 Lincoln St, Cherry Valley, CA
Kristen Valdivia	92223	38546 Vineland St apt 2 cherry valley
Andrew Ledford	92223	11278 Casper Cv
Camille Padilla	92223	39876 lincoln st cherry valley ca.
Mindy Mendoza	92223	35317 Trevino Trail
Kise Newton	92223	35317 Trevino trail
Mike Duarte	92223	34932 middlecoff ct
Dakota Perry	92223	35317 Trevino Trail
Dawnya Hiner	73005	615 E. Texas Dr. #402 Anadarko, Ok
Janelle Barnes	92223	790 pine ridge cir le
Brent Steele	92223	1284 Santa Paula Ct. Beaumont, CA
HILARY LARSON	92223	1323 Burdock Street Beaumont, CA
Debra Erlendson	92223	419 cougar way 1C
anthony mendoza	92223	10881 delicious ln
Jonathan Ramos	92223	352 b street
Trever Messenger	92223	40404 orchard plc.
Ted Manthey	92223	1359 San Miguel Dr, Beaumont, CA
Tiffany Stewart	92223	37192 meadow brook way
Melissa Crosby	92223	1481 Freesia Way
chandra cavanaugh	92223	11542 rivers bend dr
Deborah Trunnell	92223	39883 high st. Cherry valley ca.
Diane Pitman	92399	33856 Old Trail Drive yucaipa Ca
jill ponds	92223	39741 lincoln st
Valentina Doucette	92223	Magnolia Ave
Christopher Mendoza	92399	32021 Avenue E Yucaipa, CA
Linda Delgado	92223	38756 Cherry Valley Blvd.
laureen sanchez	92223	951 E 9TH st beaumont ca
John Mirarchi	92223	1171 Dixiana
Susan taylor	92223	11167 cherry ave cherry valley ca.

Name	Postcode	Address
Kristina Ramos	92223	352 B St.
Courtney Beck	92223	11278 Casper Cove
Allyson Sears	92223	po box 596
Curtis Burhop	92223	38620 Cherry Valley Blvd. Cherry Valley, CA
Carli Van	92223	1428 Canyon Pine Road Beaumont, California
Nathan Reeves	92223	1527 Sagebrush Pl
Regina Rios	92223	9650 avenida Miravilla
Darrell Brown	92223	10050 Star Lane
Amy Fish	92557	11570 kiwi ct
mijo roberts	91101	780 Earlham st. apt 11
Lacey Cannady	92223	665 Palo Alto Ave. Beaumont, CA
Michelle Hyso	92223	1177 Magnolia Ave
Rosario Steelman	92223	35035 Hogan Dr.
Lynda Ritter	92324-7510	2005 East Colunga Street
Dolores Jessie	92234	68567 E Street
Charlotte Elmore	92223	464 N Sunset ave
Diane Lockwood	92223	39971 Bing Place
Bill Lockwood	92223	39971 Bing Place
Danny Cataldo	92223	49 California ave
Jennifer Espinoza	92223	1342 palm ave
Natalie Wilson	92220	988 Linda vista dr
Katherine Olivas	92223	1786 Long Drive
Joseph Moshier	92223	772 alder street Beaumont ca
Fred Casteel	92223	620 Canyon Crest Rd
Tyler Gallup	92223	1070 chestnut ave, Beaumont CA
Sam Farrell	93033	129 Yosemite Dr, Oxnard CA
Grace Ashmore	92223	37251 Cherry Valley Blvd, Cherry Valley Ca
Irma Valencia	92223	1330 gordon ct.
Robert Allen	92223	PO Box 3243, Beaumont,CA
Dorina Watkins	92234	28730 Avenida Marquesa
Sandeep Konda	92223	34823 Miller pl

Name	Postcode	Address
Angela Holliday	66517-0146	PO Box 146 7240 Harris Road
Andrea Iacono	92223	840 Massachusetts ave Beaumont ca
I yoo	92223	snead st
Loretta Saucedo	92407	2616 Sunset Lane
Melissa yoo	92223	35459 snead street
Katherine Talkington	92223	39096 Vineland St.
Desiree Sandoval	92223	13156 Perkins Cir
Michael Fay	92223	453 Laraine Dr.
Christina Rios	92223	1680 n deodar dr
Zachary Petite	92223	828 bogey dr
Dennis Connolly	92223	35045 Trevino Trl
Michelle Bordato	92223	1342 Gordon ct
Liza Zagaceta	92223	1521 susan st beaumont
Terry Cox	92223	39540 Orchard ST. Cherry Valley Ca.
Mario Zagaceta	92223	1521 susan st beaumont
Joshua Zagaceta	92223	1521 susan st beaumont
jeffrey basick	92223	1601sunnyslope ave
Deena Segrist	92307	p.o. box 605 Apple Valley Ca
Molly Cox	92223	39540 Orchard Street Cherry Valley CA
Taylor Perry	92220	754 N Park Ave
Robert Campbell	92320	402 Sandalwood Drive
Jessica Marcy	92223	10183 Friendship Rd.
Marjorie Nieves	92224	942 Pebble Beach Rd; Beaumont
Sally Hazell	92220	3800 W. Wilson St spc 67
brandon Newquist	92230	PO Box 649
michael griffin	92223	32 Newburn
justin brooks	92220	1757 w Nicolet st
marsha greenfield	90249	2305 redondo village
Ted Quintana	92223	1246 Oakhurst ct.
Shari Smith	92223	38939 Lewis Coury
Karen Chavez	92220	10735 Gilman St. Banning, ca

Name	Postcode	Address
Daniel Honeyfield	92880	8476 Vienna Drive
Brittanie Allen	92223	1194 Sagamore Cir Beaumont, CA
Angelica DeJolie	85041	744 W. McNeil St.
Nichole Swoda	92223	702 palm avenue Beaumont ca
kristen kammeyer	92346	7431 marigold ave
Gary Hironimus	92220	620 N. 12th St, Banning, CA
Bernadette Hironimus	92220	620 N. 12th St, Banning, CA
debra pochop	92223	1232 Katherine ct
heather compise	92223	1069 olive ave
Cheryl Le Vezu	92220	2517 W. williams st.
Kathryn Van Rhee	92223	1518 pacific trails way
Lee Chene	92223	40915 Laredo Trail, Cherry Valley, Ca
Brenda Ramirez	91977	524 Ramona ave spring valley ca
Sally Pettit	92223	1640 Primrose Avenue
gloria O'Hair	92223	40200 Dutton st.
Melissa Herrera	92223	1687 Golden Way
michelle anderson	92223	1759 miranda lane
Jose Herrera	92223	1687 Golden Way
Anthony Herrera	92223	1687 Golden Way
Matthew Parker	92220	743 S 12th St, Banning, CA
Denise Woodruff	92223	1146 Euclid Ave
genia albright	92405	3031 n Pershing ave
Diane Gallagher	92660	1048 Irvine Avenue
Tiffany Soto	92233	1705 Shane Ln
Melissa Cormell	92223	P.o. Box 843 Beaumont, CA
Chelsey Hurst	92220	60 e gilman st banning ca
Kevin Carlson	92223	1323 Burdock Street Beaumont, CA
carolyn Reinbolz	92223	1491 Bluebird Ct
Mary Cook	92223	1245 Michigan Ave.
Debra Hopp	92223	1483 Bluebird Ct. Beaumont, CA
Magdalena Soriano	92223	1446 road runner lane
Nancy Honeyfield	92223	9249 oak creek rd

Name	Postcode	Address
Analee Olufson	92220	935 eucalyptus dr
Robert Stansbury	92223	39970 lambert rd cherry valley ca
Adrienne Ortega	92223	Watson Way
Andria Thomas	92399	34621 Ave E
Kelly Norris	92223	1248 Massachusetts ave
Bonnie Landa	92223	10340 Bel Air Drive
Autumn Earle-Rodriguez	92223	1430 Midnight Sun Drive
Lloyd White	92223	1276 Katherine Ct
frances Sandoval	92411	1341 davidson ave #1
Karen Smerber	92223	1242 Massachusetts ave
Diane Franklin	92223	10055 Frontier trail
shelley groegler	92320	165 cottonwood dr
Pedro Olague	92223	83 Birdsong Ct
Pete Marcy	92223	10181 friendship dr
Miranda Norgren	92223	237 gable ct beaumont ca
Vineda Rangel	92223	10341 Bel Air Dr, Cherry Valley, CA
Kurt Norgren	92223	237 gable ct beaumont ca
Darcy R	92223	113 Maple Avenue
Steve Mehlman	92223	1736 Desert Almond Way
Olivia Montaghami	92223	13055 Wedges Dr Beaumont Ca
Laura Smith	92506	3729 Briscoe Street
Shawna Gloudeman	92223	13133 Perkins circle
amanda stone	92223	10050 star lane cherry valley ca
Kimberly Smith	92223	10489 Bellflower Ave
Debra Levstek	44130	12106 Denver Dr
Jenn Chen	92320	1149 Cherry Lane
Edith Boal	92223	410 Lana Way
David Dopp	92223	1244 Chestnut Ave
doreen temple	92223	8550 oak glen rd
Chani Beeman	92501	4428 Houghton ave
Kathy Cox	92223	40340 Dutton St.
Catherine Baldi	92223	10185 Winesap

Name	Postcode	Address
Mary Placial	92223	726 RobinGlen rd beaumont
Terry Rhodes	99329	PO Box 175
Jaimie Papp	92223	39798 Brookside ave
jenny barreto	92320	1530 white oak ct
Greg Valdivia	92223	38546 Vineland st apt 2
Levi Elmore	92223	38546 Vineland at
Kelly Elmore	92223	38770 Florence st
pedro barreto	92320	1530 white oak ct
Jessica Lund	92223	36481 Torrey pines Drive
Gregory Valdivia	92223	38546 Vineland st
Joshua Lund	92223	36481 Torrey pines Drive
Shauna Casey	92223	1257 Maple Ave
Kelsey Wikum	92320	190 singleton canyon rd
Kristi Munoz	92399	11501 Silverado Way
Cynthia Smith	92223	1744 s forest oaks drive
daisy gil	92223	13178 Nilsen court
Mariana Santana	92223	38440 View Dr.
Mitch Hino	92223	718 cherry valley acres
kimberly triplett	92320	375 smoke ridge trail
Diane Miller	92223	1590 Valhalla Ct
John Dyson	92223	1078 Northview Dr
michael fitzjarell	92374	707 daisy court
Sandra Amaral	92223	10028 Star Lane Cherry Valley
athalia marquez	92223	1786 shane ln beaumont ca
Julie Salinas	92223	1244 Sea Lavender Ln
SHARON RILEY	92399	12201 South Oak Glen Road
Bobbi Hernandez	92582	398 Overleaf Way
Leonora Ponzo	92223	1772 Ash Ct.
steven wilson	92223	40269 high st
Kristine Carlson	92223	10590 Winesap ave.
Zach Taylor	92223	11107 Coody Ct.
Jordan Ngowaki	92224	773 Edgar Ave
Jennifer Kisa	92223	1426 harvest ct

Name	Postcode	Address
Ashley Pratten	92223	10190 live oak ave
Diana Webster	92223	10189 nancy ave
Traci moon	92223	1202 orange ave Beaumont
Rita Delgado	92223	38756 Cherry Valley Blvd
Mary DeWaard	92223	39810 Lincoln St.
Amber Madden	92230	PO BOX 910
Teresa Hershey	92203	79084 Cliff St.
Janice Cass	92220-1111	4565 Hillside Drive, Banning CA
Shannon Sellers	92223	37275 High Ridge Dr, Beaumont, CA
Gladys Albert	92223	10901 Bel Air Dr.
Ana Burgess	92223	34761 Kite Ste
Jacque Antinucci	92223	951 union
Ethel Mesecher	92223	10810 Deerfield Drive, Cherry Valley
Amalia Eberhardt	92223	34918 miller pl
Linda Ross	92399	12781 Medlar Street
Carol Hershey	92223	315 Oak Valley Pkwy, Beaumont
lisa kline	92313	12528 michigan st
jm kline	92313	12528 michigan st
Alicia Vanden Heuvel	92220	11385 N Sunset Ave
Carol Ann Parrilla	92223	972 Pavo dr
Monica Quintana	92223	38924 High Ridge Drive, beaumont
Christian Quintana	92223	38924 High Ridge Drive, Beaumont
kristina rencoret	92223	11031 picard pl
Jennifer Burmeister	92223	35109 Trevino Trl Beaumont CA
Melody Bridges	92223	40418 High St.
Jennifer Preciado	92223	1737 twin oaks ct
Cressie Bridges	92223	40418 High St
Kay Williams	92270	38600 Peterson Road
Robert Simonoski	92223	1652 Big Sky Dr.
Jennifer Hastings	92223	34988 Middlecoff Ct
Julie Short	92223	1755 Morgan Ave. Beaumont
Keith Short	92223	1755 Morgan Ave.

Name	Postcode	Address
Christian Short	92223	1755 Morgan Ave. Beaumont
Cameron Short	92223	1755 Morgan Ave. Beaumont
Gina Kenitzer	93611	796 park ave
Martin DuSold	92223	9100 Avenidamiravilla Cherry Valley calif.
Yvonne Montecalvo	91786	1358 N. Euclid Avenur
Robin Maupin	92399	13666 Cottonwood Trail
pellowe collins	92399	31759 ave e yucaipa
Christe Mcmullen	92404	565 Sonora San bernardino
Erin Levy	92262	642 Calle Petunia
Jennifer Liebertz	92241	22600 Berry Road, Desert Hot Springs
Renee Ortiz	92223	749 Aspen Glen Ln.
Joan Kempton	92223	39823 High Street Cherry Valley, CA
vic rencoret	92223	11031 Picard Place
Alicia Moran	92399	35172 hollow creek dr
Marilyn Barrett	90632	PO box 2808
Nikki Lamaster	92399	36345 ave D
Diane Solomon	92373	950 Pine Ave. #108
Leslie Bagg	92223	10120 Donner Trail
Larry Patterson	92223	38950 Lewis Ct.Cherry Valley Ca.
Steve Darrow	92399	34427 Glenwood drive
MONICA ROST	92399	40288 PINE BENCH ROAD, OAK GLEN CA
Tanja Sandoval	92373	213 primrose ave
Reuben Sandoval	92373	213 primrose ave
Gary Rosano	92320	1253 2nd Place Calimesa, CA
Elke Thompson	92223	37356 Gallery Lane
john burstein	92320	1116 3rd st
Chris Thompson	92648	219 15th Street
Elizabeth Garrison	90042	Los Angeles
Brandon Dominguez	92220	3788 red bluff ln
John Carroll	92223	1165 Lantana Rd. Beaumont. CA
Kevin Reems	92320	10320 Calimesa Blvd. SPC 244

Name	Postcode	Address
Lisa Westphal	92399	34595 Yale Drive
Richard Taylor	92223	39623 Cherry Valley Blvd.
Anne Yowell	92223	10409 Overland Trl
Yvonne Delongchamp	93330	2140 n Alessandro rd
Tammy Hull	92223	10525 Arapahoe Circle
Steve Price	92223	10525 Arapahoe Circle
James McDonald	92320	1435 Johnson Rd.
Courtney Scott	97232	2106 NE Flanders, Portland, OR
Linda Whelan	92506	5858 Sunset Ranch Riverside, CA
Jeannine Patnode	92223	10005 Frontier Trail Cherry Valley
Sarah Meade	92507	One Pentland Way Box 730 Riverside, CA
Zelda Austin	92223	1562 Four Seasons Circle
Rebekah Hanke	92223	11405 Pepper Lane, Beaumont
Petra Lakes	92404	162 e marshall blvd
Mark greenberg	92223	40985 Laredo Trail
SHIRLEY McMULLEN	92223	IO460 FRONTIER TRAIL
Amanda Hooper	94501	1170 9th st
Cynthia Eppler	94501	1215 Regent Street
Amber Donoho	92399	Po box 7151
Erin Humbles	94501	1620 wood
Cynthia Chandler	92399	35345 ave D Yucaipa, Ca
Leah Paez	92223	749 Orange Ave.
Peter Ortiz	92223	749 Aspen Glen Lane
Jennifer Booth	92223	34660 Boros Blvd.
Jo Taylor	92223	39623 Cherry Valley Blvd
Darlene Crossley	92223	10130 Donner trail
Barbara Schulman	92691	21111 palanca
Shelley Furtado	92223	1785 Miranda ln
Rick Sanchez	92223	10599 noble st beaumont ca
Lance Adams	92223	9498 Mountain View Ave., Cherry Valley, CA

Name	Postcode	Address
Michael Freese	92223	39478 Cherry Valley Blvd., Cherry Valley
Mary Freese	92223	39478 Cherry Valley Blvd., Cherry Valley
Mary Freese	92223	795 East Sixth street, Beaumont
Deborah McKinney	92373	20 Hastings St. Redlands Ca.
Francine Saitta	92869	536 S. Esplanade Street, Orange, Ca
Tammie Burley	92223	39727 Baldi Ct
Rhiannon Jimenez	93555	237 n gold canyon
Steffani Perez	92399	11892 Lake Breeze Circle
Rachel Simo	92223	747 Chestnut Ave. #E202, Beaumont, CA
Alycia Costin	92223	10014 Jonathan Ave.Cherry Valley
Sharie Buenting	92223	1791 Hannon road
Nancy Beard	92223	1182 Evergreen circle
Karen Miank	92223	651 Weng Star St. Beaumont CA 92223
chris maldonado	92223	1283 foster street Beaumont
Ezequiel Morales	92223	1680 Apollo Way
Chris Lanier	92399	34874 Ave D
Brandy Osborn	92399	13618 5th street
Heather Dent	92399	Country Lane
April Bourn	89143	8037 Dancing Springs St
Jody Oltman	92223	1018 Darby Dan wAy
Jason Hershey	92223	315 Pak Valley Parkway
Shannon Hershey	92223	315 Oak Valley Pkwy "P", Beaumont, CA
Vanessa Villalobos	92223	549 Orange St.
S J Perry	92223	600 Donna Dr
blanca villalobos	97211	4843 ne 32nd place
Terry Talkington	92223	39096 Vineland St.
Terry Coates	92223	9597 rancho drive
Gwynne Gilson	94518	1770 Gilardy Drive
Fred Flora	92223	34322 Devlin Dr
Angelica Fonseca	92223	34322 Devlin dr

Name	Postcode	Address
Gabriel Flora	92223	34322 Devlin dr
Benjamin Williamson	92223	1544 Polaris Ln
James Richmond	92223	10088 Beaumont Ave.
Stephanie Blanco	92223	35053 Trevino trail
Veronica Cedeno	92223	1488 Midnight Sun Dr.
Juan Cedeno	92223	1488 Midnight Sun Dr.
Brian Cedeno	92223	1488 Midnight Sun Dr.
ALBERT SWAREZ	92223	9455 BYHAM LN, CHERRY VALLEY, CA.
William Tanner	92223	39433 Tokay St., Cherry Valley, CA
Reva Bloom	92223	39433 tokay street
Keven Roark	92223	10085 Beaumont Ave.
Anita Landingham	92399	33847 Nebraska St Yucaipa CA
Renee Curtis	92373	65 Norwood Street
Donna Wall	92223	40902 Laredo Trail, Cherry Valley, CA
Cristi Paris	92223	40805 Laredo Trail, Cherry Valley, CA
Lori Fones	92377	2593 N. Idyllwild Ave.
Megan Carroll	91214	4732 Sunset Ave.
Brian Belgarde	91214	4732 Sunset Ave. La Crescenta, CA
David Matthews	92220	18415 Keyes Dr
Phil Goebels	92223	Cherry Valley
Cheryl Dullabaun	92373	1627 Benita Marie Crest
Annie Rice	92223	1165 Normandy Rd.
david daniels	92223	1426 canyon pine Beaumont california
Scott Paxson	92223	35473 Trevino trl
Amber easley	92373	206 W. Olive Ave.
Suwat Wattananukij Wattananukij	92223	38232 Divot Drive
Michelle Robbins	92223	11267 Picard Pl
Jacqueline Horta	92223	1265 n. Larkspur lane
Dana Snow	92223	38623 Orchard Street
Steve Lech	92506	P. O. Box 21168

Name	Postcode	Address
Chris Ashton	92223	38648 cherry valley blvd
Shea Porter	92373	Rasheawallace@yahoo.com
Georgia Parker	92320	166 Fisher Court
Heather Martin	92223	38939 Lewis Ct.
Tonya Hunting	92223	1486 Bedford Court
Ray Vellozzi	92223	35465 Trevino Trail Beaumont CA.
Karen Holritz	92399	35378 Shade Tree Rd
Jonathan Raef	92320	1271 Heritage Dr
john hernandez	92223	1679 stone creek rd
Adrian Horta	92223	1265 Larkspur LN
Jessica Horner	92220	1068 Elisa Dawn Dr
kathy baldwin	92223	35457 trevino tr
bobby baldwin	92223	34547 trevino tr
Dana Pina	92223	13096 wedges dr
Katie Romanchuk	96708	1401 W Kuiaha Rd
Danielle Duarte	92223	34932 middlecoff ct
Michael Aguilar	92320	190 Singleton Canyon Road
Mona Yuhas	92399	13668 Canyon View Drive
Laura Ornelas	92320	186 Myrtlewood Dr
Dana Rochat	92223	39580 Vineland Street
Eric Edman	92223	39581 Vineland Street
Delia Quintanilla	92223	1693 Stone Creek
ALMA frausto	92223	1660 quail summit dr. Beaumont ca
Cuahutemoc Villalobos	92220	936 Oregon trail
john kesler	92223	10465 Frontier Tr
Natalie Aceves	92223	39060 Cherry Valley Blvd #21 Cherry Valley_ CA_
Nadia Solis	92407	4995 N Varsity Ave, San Bernardino
tomas aceves	90027	2041 N Vermont Avenue #201 Los Angeles Ca

Name	Postcode	Address
Suzi Varela	92223	699 Lucille Ct
Ivan Ramos	92223	352 b st
Jason Ponds	92223	39741 licoln st cheery valley ca
Judith Ferch	92220	1091 Cottonwood Road
Indolfo Pineda	92223	715 aspen glen ln. Beaumont Ca
Madelyne Hernandez	92223	Bluebird Ct
April Colquitt	92223	1334 Clover Way
Tammy Olive	92223	1771 Date Street
Robert Montaghami	92223	13055 wedges dr
chenou yang	92220	691 omar st
Karen Campbell	92320	279 E. Avenue L
Jamie Taylor	92223	11107 Coody ct.
Cynthia Alvarez	92220	221 e theodore st
Mayra Salcedo	92220	Banning ca
Claudia Lewis	92223	35015 Trevino trail
Francisco salcedo	92220	banning ca
Charmaine Fox	92405	726 la Porte
Kong Moua	92220	349 16 st.
cecil hanvey	92223	39954 cherry valley blvd
Thomas Edmonds	92649	17171 Bolsa Chica st Huntington Beach, CA
gina Beloat	92223	1148 cedar hollow rd
Cynthia Hassett	92399	34948 San Carlos ST
Kristen Hughes	92399	34201 Via Buena Drive
Mary Sartin	92223	PO Box 193
Gina owens	92333	18673 E Nilsen Court
HANS VADO	92223	496 E 15TH ST APT#7 BEAUMONT CA
Daniel Greek	92223	1348 Avalon avenue, Beaumont
Lizette Nava	92223	1201 olive ave
Charlres Barnett	92223	1771 Desert Alomnd Way Beaumont Ca.
francois mackay	05819	1294 mt pleasant st ext
Kathryn Giordano	92399	34593 Princeton Dr

Name	Postcode	Address
Rhea Weber	92223	10435 Bel Air Dr
Cybil Craghead	92223	38668 Florence ave
Ann Barrett Gardenhire	92374	1489 pleasantview dr Redlands
Anna Klinzing	92223	35406 Byron Trail Beaumont, CA
Carmen Medina	92223	10950 bel air dr cherry valley ca
Adam Wagner	92399	35691 Oak Creek Dr
Rosemarie Peterson	92223	10765 Cherry Hills Drive
Georgia Conrad	92223	10671 Deerfield drive
Susan Karalun	92223	995 Gleneagles Rd
Jennifer Foy	92329	PO Box 29460
Nicole Panattoni	92399	11644 Doral Ct, Yucaipa
Joseph Bonaventura	92223-5592	10685 Cherry Hills Dr., Cherry Valley, CA
Armando Parrilla	92223	972 Pavo Dr Beaumont
Ron Politte	92399	35447 Birchwood St.
Nancy Closson	92223	38943 Orchard Street Cherry Valley
Donald Horn	92223	40813 Caballero Dr
Hans Mehner	92223	10560 Bel Air Drive
Debbie Norton	92557	11544 Spyglass Circle
Sarah Webb	76244	11834 basil dr Fort Worth tx
Leah Dixon	92223	873 Beaumont ave
Sheryl Robinson	92223	10621 Bel Air Dr
Patricia Aspan	92223	10990 Bel Air Dr.
calvin weber	92223	10435 Bel Air Dr.
sheila parker	92399	12228 4th st
Robert Bateson	92223	10440 cherry ave
Dorinda palato	92223	1533 Susan Street
Virginia Hinkle	92223	10745 Cherry Hills Dr., Cherry Valley
Melanie Avakian	92223	10223 beaumont ave
linda negrete	92405	3132 n. D. St. san bernardino,ca
Edward Delgado	92223	40760 Northmoor Drive
Robert Cervantes	92220	937 w. george st.
pat doherty	92223	10145 nancy - cherry valley

Name	Postcode	Address
William Perry	92223	40853 Caballero Dr.
Lane Garland	92223	10850 Bel Air Dr.
James Overturf	92320	10320 Calimesa Bl Sp 300
Kenneth Law	92223	10805 Cherry Hills Dr, Cherry Valley ca.
Cecilia Morfin	92551	15244 pepper ct, Moreno Valley, CA
John Novak	92223	10920 Bel Air Dr
Carolina Rivers	91405	7055 Sepulveda apt 21
mary white	92223	40824caballero dr
Ruth Woods	92223	40843 Caballero Dr., Cherry Valley, Ca 92223
Sarah Godbold	92223	10816 Cherry Hills Dr
Jennifer Avakian	92223	910 E 13th street
Lyndsay Hidy	92373	434 ash street
Janelle Marks	92313	12720 Garden Ave
joan young	92223	10655 cherry hills dr.
Stephanie Hodson	93117	450 Ellwood Beach Dr #2
Donna Buch	92223	11010 Bel Air Dr
Al Lawrence	92223	10391 Bel Air Dr
Erica Brown	92223	39407 Tokay Street
Vivian Dunipace	92223	41201 Cheyenne Trail
Alberta Terrel	92223	10730 Deerfield dr., cv
Larry James	92223	935 Monarch Court, Beaumont, Ca.
Deborah DeForge	92223	39420 VINELAND ST
jodi hassett	92840	10392 doris ave
Cindy Gil	92223	421 cougar way #a beaumont ca
Salli Siddle Anderson	92220	341 My St.
krystina hanrahan	92223	39834 high st
Dianne Terwilliger	92320	10961 Desert Lawn Dr. SPC# 461
Martha van Rooijen	92223	34967 Hagen Hts, Beaumont, CA
Caesare Reyes	92223	1062 Wellwood Avenue Beaumont, CA
Daniel Hernandez	92223	1487 bluebird ct
Joy Obade	92223	817 Sherwood court

Name	Postcode	Address
Julie Lacombe	94087	250 w El Camino Real
Olivia Gonzales	92223	427 Cougar Way Apt. 1C, Beaumont
Dale Obade	92223	817 Sherwood Court
Noelle Miranda	92223	427 Cougar Way Apt. 1C, Beaumont
Iris Novak	92223	10920 Bel Air Drive
Theresa Mirci-Smith	92223	40642 Grand Ave Cherry Valley CA
CHRIS BROWN	92223	35456 Stockton St.
Daniel Diez	92223	1224 Oakhurst Ct.
Sarah Huibregtse	92223	35464 Stockton Street
Doug Huibregtse	92223	35464 Stockton Streer
Stephanie Grady	92592	33240 Corte Yaca
Brenda Etheridge	92223	10815 Cherr Hills Drive
Samantha Johnson	92223	36479 Torrey Pines Dr Beaumont CA
TRACY MADDOX	92374	1721 E COLTON AVE #62
Priscilla Magnera	92399	13582 3rd street yucaipa ca
Samantha Carrillo	92223	961 Chestnut Ave
Frank Reilly	92223	1502 Evergreen Ave.
Eric Burhop	92223	38620 Cherry Valley Blvd
Cynthia Molle	85045	16045 South 17th Lane
Wanda Bomer	92223	314 w 10th place
Cali Nieland	83815	6143 N. Colfax St. Coeur d' Alene ,Idaho
Melissa Mooney	92223	11105 cherry Ave
Iqbal Pittalwala	92223	9085 Oak Glen Road, Cherry Valley, CA
victor Dominguez	92224	1038 Magnolia Ave Beaumont Ca 92223
Leslie Schiff	14620	589 Elmwood Terrace
Jennifer Schaeffet	92223	823 Sherwood Ct.
Sarah Valdivia	92223	1247 michigan
jessica wilson	92373	1204 san jacinto st. redlands ca
Cory Cates	92399	11050 bryant street #67
kevin meadows	92223	1099 massachusetts
Kara Laycock	92223	1648 Ravenswood Rd

Name	Postcode	Address
Gary Martin	92223	1734 scottsdale rd, beaumont, CA
Daniel Garcia	92583	144 shoal reef ave san jacinto
Robin Chapman	92220	2075 mountain ave
Jessica Stapleton	85143	4110 e sierrita rd
Ana Diez	92223	1224 Oakhurst Ct. Beaumont CA
Edward Austin	92223	1562 Four Seasons Circle, Beaumont, CA
Patsy Reeley	92223	10065 Frontier Tr Cherry Valley CA
Melanie Bailey	92223	34735 Woods Pl
Robert KUHN	92223	10300 Bel Air Dr., Cherry Valley, CA
Melissa Watkins	92223	1504 big sky dr
Cathy Schaefer	92223	40443 Grand Avenue
Mari Kuhn	92223	10300 Bel Air Dr. Cherry Valley, CA
Margie Crandall	92223	729 Euclid Ave
Tim Green	92223	1577 Mountain View Trail
Jessica Carter	92408	174 N Plymouth Way San Bernardino CA
Shauna Rodenbo	92115	4734 Redland Drive
Dena Button	92223	164 Gothic Ave
Judith Bingham	92223	115 Viele Avenue, Beaumont
Janelle Morrow	92359	1365 Crafton Ave. Apt. 1084
siarra logan	91741	540 E. ADA AVE
Mark Cox	92223	40340 Dutton St
Matthew Bomberger	92223	39721 Lincoln
Donna Springer	92223	40911 Cheyenne TR
JOE A MITCHELL	92223	10280 OVERLAND TRAIL,CHERRY VALLEY
Francis Savoy	92223	39235 Oak View Ln
bRENDA DALTON	92399	California St, Yucaipa
Patty White	95726	P O Box 384, Pollock Pines, CA
Haley Feher	92223	808 classic ave
Ashlee Smith	92223	1440 Beaumont Ave Ste A2 #239
Jodi Lugo	92223	1672 Panther Lane
Sharon Starr	92223	508 Agnes Street

Name	Postcode	Address
laary vasquez	92223	1771 Date st.
Inge Schuler	92220	1030 W Westward Avenue, Banning CA
KEVIN JONES	92223	1364 Mandrake Way
Diana Martin	92122	4353 Nobel drive
Bettie Hovey	92223	10611 Bel Air Drive
James Karalun	92223	995 Gleneagles Rd
LAWRENCE SHACKLETON	92223	10750 Deerfield Dr
Margaret pinchbeck	92223	36772 Bay Hill Drive
Marc Sanders	92223	10335 Napoleon Street
Patricia horn	44484	1923 s. Feederle drive se
Amber Facio	92224	1699 n deodar dr
Nathaniel Sanders	92223	9403 avenida san timoteo
Susan Savolainen	92220	1610 W. Barbour St., Banning, CA
Erin Sanders	92223	10335 Napoleon St. Cherry Valley, CA
Wanda Dodge	92223	40804Caballero Drive Cherry Valley
Tiffany Wagner	92223	1713 Evan way
kaTHRYN quillin	92223	37018 winged foot
Katherine Baker	92220	468 N 20th St
ralf paddock	92223	37018 winged foot
Bennett Muckleroy	92223	10840 bel air dr cherry valley ca.
Lorraine Holmes	92223	9315 Mountain View Ave.
Mark Hegstrom	92223	1203 Moira Street
Meagan Glauser	92223	38622 Florence Ave
Edwin Cooper	92223	9634 Rancho Dr. Cherry Valley
Jodi Lindman	92223	933 Southwind CT
Dana Lindman	92223	933 Southwind CT
jennifer reek	92223	1001 E 10th Street
Michelle Hickman	92220	975 N 8th St
Mel Jones	92223	11280 Sunnyslope Ave
Joseph Pochop	92223	1232 katherine ct. beaumont ca.
john koval	92223	9990 cherry ave. cherry valley

Name	Postcode	Address
Priscilla Clasen	92223	10878 Cherry Ave. Cherry Valley
Kristen Wiedenman	92223	1004 maple ave
Robert Fontes	92223	1116 radka ave
Selina Fontes	92223	1116 radka ave
Carol Fontes	92223	10367 live oak ave
Greg M	92223	Beaumont
Brenda M	92223	Beaumont
Lang Hollis	92399	11757 Pactfield Pl
Julia Rogers	92223	1479 moonlight dr
Jerri Stark	92223	10311 Bel-Air Dr.
Audra Anderson	92223	10290 Cherry Ave
jason boz	92220	295 Lombardy lane
June Cano	92582	110 Lori Ann Street
rachel closson	92223	1452 tours ct
rachel closson	92223	8345 oak Glen road
Sandra Streeter	92223	P.O. Box 483, 922 E. 13th St, Beaumont, CA
Renee Elliott	92223	9870 Nancy Ave
James Hathaway	92223	37283 Mulligan Dr Beaumont ca
Mary Mason	92223	10941 Bel Air Dr.
Gail Van	92220	4913 Silverado Avenue
James Grancich	92223	11143 Cherry Ave. Cherry Valley
sandra swank	92223	41831 Candlewood Dr, Cherry Valley
Beverly Gibson	32223	10216 Frontier Trail
Diane Mierzwik	92223	40323 Avenida Altejo Bella
James Furr	92223	38850 Cherry Valley blvd.
Deborah ODell	92223	1733 N Deodar Dr
Kathleen Rowsell	92223	13900 Bolo Court, Beaumont, CA
Bill ODell	92223	1733 N Deodar Dr
ben sanders	39056	113 Pinehaven place, Clinton ms
michael warren	92223	10459 bel air drive,cherry valley, CA
karen warren	92223	10459 bel air drive, cherry valley, CA
ronald padua	92223	970 brentwood road

Name	Postcode	Address
Shari Scholte	92223	754 Mockingbird Circle, Beaumont
Robert Lehmann	92223	8955 Oak Creek Road
Anna Craddock	92223	10943 Bellflower
Barbara Lehmann	92223	8955 Oak Creek Road
Jose Veana	92223	36348 straightaway drive
Karen Hoak	92399	12192 15th street
Allbina Villalovas	92220	4807 W. Castle Pines
Philip Lattuca	92399	34096 Castle Pines Drive
Bev McLaughlib	92223	Beaumont
natasha palmer	92223	1113 cherry ave
Gregory Thomson	92223	10590 Bel Air Drive, Cherry Valley, CA
Dan Closson	92223	38943 Orchard Street Cherry Valley
Michelle Mahdavi	92223	38437 View Drive
Thomas Shields	92223	10660 Bel Air Dr CherryValley
fred meier	92223	9101 avenida miravilla
Shirleyjean Heyne	92223-3744	9634 Oak Glen Road
Keith Heyne	92223-3744	9634 Oak Glen Road
Sean Dickinson	92223	1194 Woodburn Circle
Beatrice Romo	92223	1247 w. monte verde dr
Elizabeth Schnarr	92224	502 Lucille court
Christina Dickinson	92223	1194 Woodburn Circle
Beatrice Romo	92223	1241247 w. monte verde dr
Peggy Eldridge	92223	10921 Bel Air Drive, Cherry Valley, CA
Kenneth Johnson	92223	1607 Ravenswood Rd. Beaumont
Marty Martin	92223	10881 Deerfield Drive
Linda Jean Foster	92223-4817	10466 Cherry Avenue
Dawn Cox	92223	1195 Woodburn
Scott MacDonald	92223	1455 Big Sky Dr.
Rebecca MacDonald	92223	1455 Big Sky Dr
Bobbi Burnett	92223	1235 Oakhurst Court
Alexandria Pedersen	92223	1148 wellwood ave beaumont

Name	Postcode	Address
Samuel Romero	31098	108 Phipps place
Kathleen Dyson	92223	1078 Northview Dr
steven pallow	92223	10280 cimarron trl.cherry valley ca.
Desiree Penny	92345	9919 topaz ave #74
cheryl pallow	92223	10280 cimarron trail, cherry valley
Jason REARICK	92223	1104 rain lily way
Michael Bruce	92223	40678 High st. Cherry Valley, ca
Suzanne Aed	92807	6284 E Norhtfield, Anaheim
Lea Deesing	92399	33468 Lansford street
April Schmidt	92223	1059 Pennsylvania
Christian Daft	92320	1265 Heritage Drive, Calimesa , Ca
Cheryl Benton	92320	505 E. County Line Road
Sheila Harrower-James	92223	40928 Cyptess Pt Dr
Shana Trent	92399	33303 Warwick Hills Road
Strawter E.	92220	1114 south Florida street Banning, Ca
Janet Robitaille	92223	40809 Oregon
Joan Seigler	92860	PO box 751 Norco Ca
Britney Croad	92223	39515 Orchard St
Gary Cox	92223	1195 Woodburn Circle
rowdy Russell	92223	275 e. 13th street
Carly Nelson	92223	40223 O'Neal Ct.
Dallin Ball	92223	39885 Vineland Place Cherry Valley
Irene Suare	92223	161 maple ave
Danya Lynd	92223	40430 Dutton Street
Sonja Jose	92223	10283 Overland Trail
julie Nikniai	92223	10420 Live Oak Avel, Cherry Valley, CA
glen james II	92223	40852 Brookside Ave
tracy fry	92223	40277 high st
Bryana Button	92223	164 Gothic Ave
Dawn Carrillo	92223	1775 Brittney Rd
Alice Morse	92399	13576 California Street

Name	Postcode	Address
Jenny Holmes	92223	1346 Barbetty Way
Nancy Sappington	92223	10650 Deerfield Drive, Cherry Valley
Nancy Hall	92223	13865 Bolo Court
Susanna Aguilar	92233	1135 Sea Lavender Ln
Felicia Heck	92223	40400 Lincoln st
dalia brown	92223	39510 grand ave
Tami Cuellar	92571	3308 Blossom dr.
Karolee Schindler	92223	10700 Cherry Ave.
Caroline Urso	92223	34805 Stadler St.
Channon Lamb	92223	11220 Casper cove
John Saunders	92223	11220 Casper cove
Amy Kellison	92399	33800 Chapman Heights Road #722
Blake Harber	92223	1393 moonlight dr
gina francis	92373	po box 786
Jennifer Shoultes	92223	37097 Winged Foot Rd
Andrea Hammock-Moseley	92223-6212	35356 TREVINO TRL
William Moseley	92223	35356 Trevino Trail
Matthew Croad	92223	39515 orchard st
gail white	92223	10224 chisholm trl
Michael Caton	92223	117 Myrl Drive, Beaumont
Martin Wagner	91722	16547 E Masline Street
James Burdett	00461	PO Box 97 Kundiawa, SP
Jo-Ann Garcia	92220	1574 Alessandro St.
Gwyn Frost	92223	10281 cherry ave
Torrance Frost	92223	10281 cherry ave
raquel vandermolen	92648	1510 lakeside ln
Scott Giacolett	92223	1738 Twin Oaks Ct
Meredith LanZa	92223	1235 w. Monte verde dr.
Carolyn Washburn	92223-8600	1729 Dalea Way, Beaumont, CA
Jessica Lind	92223	9589 1/2 Rancho drive, cherry valley
Irene Haney	92223	9686 Rancho Dr., Cherry Valley, CA
Chris McDonald	46157	65 circle dr

Name	Postcode	Address
Brandy Olive	92223	1771 Date Street Beaumont Ca
Some again Jackson	92223	39932 Lambert Pl Cherry Valley
Daniel Reinbolz	92223	1491 bluebird ct
richard burton	92223	10761 bel air drive
April Saldivar	92223	38023, High Ridge Dr
Craig Carignan	92223	723 Flower Street
Greg Koegel	92323	40967 cypress point dr cherry valley ca
Tracy Moss	92223	451 Tartan Way, Beaumont, CA
Brian Rice	92223	1225 Oakhurst Ct, Beaumont, CA
Calvin Mcfield	92223	1280 w monte Verde dr Beaumont ca
becky buffington	92220	9795 bluff street
Amy Broten	92223	1056 Cardiff Way
robert swingler	92223	9870 nancy ave
Kimberley Wolf	92223	39664 Orchard St
Joseph Mathews	92223	1448 tahoe st
Lisa Rakestraw	92223	40300 Grand Avenue
Amy Kearney	92223	40544 high st
Natalie Cunningham	92223	39955 grand ave
Christy Valdivia	92224	35389 Stickton street
maria urias	92223	717 xenia ave #14
shawn bennett	92223	34805 stadler street, beaumont, ca
shauna Copeland	92223	10248 Taylor Drive
Elicit Ashton	92223	38648 cherry valley blvd
William Buring	92223	10801 union st cherry valley ca
Jerry Underwood	92320	10961 Desert Lawn dr Calimesa ca
Jimmie High	92223	1422 Redwood St
Mercy Alvarez	92223	959 Wilsey Way
Jeff Elser	92223	Cherry Valley
Tammy Faulkner	92223	1440 Beaumont Ave Ste A2274
Michelle Wagner	92223	9757 Kehl Cyn Rd Cherry Valley
Brenda Brenneisen	92230	po box 784

Name	Postcode	Address
Charlene Ward	92223	39746 Baldi Ct
Amanda Mathie	92223	po box 341
Laura Flinn	92223	1729 Double Eagle Ave
Veryl White	92223	8746 Apple Tree Lane
Joyce Alejos	92223	40185 grand ave.
Jessica Smith	92220	707 North Allen Street
Melanie Peterson	92220	45885 Porter Street Banning Ca
Teri Oldendorf	92223	36678 straightaway dr
Paul Mays	92223	1297 Santa Paula ct
Perla Piña	92223	1711 tee time ave Beaumont ca
Kris Beckman	92223	38201 Cherry Valley Blvd
Courtney McBurney	92345	14750 Harding St
Julia Stanton	92223	1649 s. Monte verde dr
Jill Padilla	92223	634 Canyon Crest Dr, Beaumont, Ca
Jamie Foster	92223	1245 Massachusetts Ave
Anna Ferreira	92223	1691 S. Monte Verde Drive, Beaumont
kiplund mann	92223	40471 pippin way Cherry Valley ca.
Judy Buchheit	92223	10700 Bel Air Dr
Jaye Morrell	92399	34925 Hollyoak Way, Yucaipa
Linda Schreiber	92320	10320 CALIMESA BLVD., No. 16
Kristy Baker	92549	25230 Palomar Road
Amanda ODell	92223	1733 n deodar dr
Elizabeth Claussen	92544	25910 Faircrest Cir
S. Michelle	92223	702 Hillview
Elvin Walt	92223	38711 Vineland st. Cherry valley
angela mares	92223	39822 High St. Cherry Valley
cathy spradlin	92223	39514 grand
frank spradlin	92223	39514 grand
Robin Fisher	32234	5800 bear branch rd
Chanelle Neilson	92223	1679 Golden Way
Margaret Swaim	92220	4133 Wilson St Spc 132, Banning CA
Heidi Murphy	92223	13130 Endresen Ct.

Name	Postcode	Address
joseph estrada	92223	452 E 9th st beaumont ca
Richard Hobson	92223	8886 Whispering Pines Rd., Cherry Valley CA
Debbie Cochran	92223	1676 snowberry rd
kellie boatman	92223	1060 Lyra Way Beaumont, CA
Brenda Kreutzer	92223	9923 Ave. San Timoteo
hanna van grouw	92223	38931 cherrystone ave.
Debbie Avakian	92223	9643 Avenida San Timoteo
Claudia Castle	92399	11931 Oak Glen Rd, Yucaipa, CA
Joanna Isleu	92223	1227 east Deodar dr
Mary Nava	92399	13356 camellia dr
Kelly Lewis	92223	10795 Cherry Hills Dr.
John Kreutzer	92223	9923 Avenida San Timoteo, Cherry Valley
Denise Johnson	92223	bay hill dr
Kaila Kreutzer	92223	9924 avenida San timoteo cherry valley
Nychaelle Fenske	92230	14711 Manzanillo St., Cabazon, CA
Bruce Voss	92223	1575 Shadow Hills Trail
jessica melvin	92220	220 lombardy lane
val hurtado	92223	Avenida miravilla
Ashley Starr	92223	1395 Bird of Paradise
Mary Daniel	92223	P O Box 2041
Claude KIng	92223	9239 Lilac Lane
George Eldridge	92223	10921 Bel Air Dr. Cherry Valley
Juliet Jones	92223	1215 W.Monte Verde Dr.Beaumont Ca
Kaileen McNulty	92223	36977 Dunhill Ct
Barbara Dickinson	92339	P.O. Box 141
loretta rebhan	92395	12393 hickory ave
Rick Jay	92223	546 Heidi Cir
Sean Renna	92223	36977 dunhill ct
Kaitlyn DeWaard	92223	39810 Lincoln street
Christopher Wetzel	92223	1287 W Monte Verde Drive
Jennifer Francis	92223	1786 Morgan Ave

Name	Postcode	Address
Kelsey Tedrow	92223	1025 Palm Ave
Jeff Ferreira	92223	1691 S.Monte Verde Dr. Beaumont
Kiley Ferreira	92223	1691 S.Monte Verde Dr. Beaumont
Sarah Sampson	92359	8424 Coulter Pine Rd
Jessica Southard	92223	35287 Hogan Dr, Beaumont, CA
Melody Brown	92223	40178 High st Cherry Valley CA
Jillian Carlson	92223	1331 comfrey leaf drive
Donna Gonzalez	92223	702 ILLINOIS AVE. BEAUMONT,CA
Michelle Napier	92399	35034 Persimmon Ave
Robert Carlson	92223	1331 comfrey leaf dr
Jenifer Higgins	92223	38961 Lewis Ct
Andrea Ocampo	92320	410 w Ave I
Aaron Jimenez	92320	528 Erwin st Calimesa Ca
Juventina Viramontes	92223	37695 Brookside Ave
Cynthia Fitch	92223	39772 Orchard Street Cherry Valley, CA
Bruce Williams	92223	1440 Beaumont Ave. A2-316, Beaumont, CA
Lorren Larson	92223	961 Ironwood Rd
Gerardo Rico	92223	1233 E.Deodar Dr. Beaumont CA
Chris Shaw	92320	1040 2nd pl
Lisa Koger	92320	181 Victoria Lane
mary nixon	92223	1444 Michigan ave #64 beaumont ca
Brandy Hernandez	92223	1695 Panther Lane
George Hernandez	92223	1695 Panther Lane
Candice Marden	92359	1248 Chrysolite ave. Mentone ca 92359
Robert Carroll	92223	36546 Bay Hill Dr Besumont
Glen Congdon	92223	1279 Oakhurst Ct
Diana Tull	92223	1777 Scottsfdale Rd
Brent Gladue	92346	7676 Dory Way
Rosie Griffith	92220	719 Spring Dr., Banning, CA
keri simo	92223	35490 stockton st beaumont
pam vera	92223	720 Allegheny st Beaumont CALIF

Name	Postcode	Address
Danielle walborn	92399	35218 fir ave #10 yucaipa ca
Stephen Kinzey	92346	7145 Pleasant View Lane, Highland, CA
Samantha Martinez	92223	9980 Jonathan Ave
Kevin Trout	92223	1735 Long Dr
Kristen Finley	92223	39670 grand ave cherry valley
Janelle Anguiano	92223	1283 santa paula ct
alan Babcock	92223	1665 ravenswood rd Beaumont
Amy Segovia	92223	1663 Apollo Way
Leighann Odenbaugh	92223	1726 Spyglass Ct
Donea Matheson	92399	11839 Adams Ct
Jason Peters	92399	11937 Adams street
Kaira Garcia	92223	34298 Crenshaw St.
Brent Murray	92223	1240 N California Ave
Dennis Winters	92223	40937 cypress point Dr
chris melton	92223	1380 mandrake way beaumont, ca
Stacie Ott	92223	1565 Poppy Court
Vanessa Vandergoot	92223	11269 cherry ave.
Derek West	92223	36780 Torrey Pines Dr Beaumont CA
Julie West	92223	36780 Torrey Pines Dr Beaumont CA
Jolynn Gatten	92399	34924 Michael Ln
Barbara Oberg	92223	10728 Chisholm Trail, Cherry Valley, CA
Paul Lewis	92220	950 April Lane
Terry Dabbs	92223	13141 Connor ct
Charles Brewer	92399	32147 Dunlap Bl. Yucaipa Ca.
Diane Jones	92223	130 E. Dale St
alisha hansen	92223	39822 high st
Christy Arwood	92223	9189 Oak Creek Rd
Sandy Pearson	92223	10993 Crowther Ln
Brian Petty	92223	1378 bird of paradise ct
Heather Nelson	92223	1745 Miranda Ln
anthony barnes	92543	225 w. fruitvale ave apt. c34

Name	Postcode	Address
Ashley Slaten	92223	713 Greentree Lane Beaumont CA
Lyndsey Oliver	92223	1492 bluebird court Beaumont
Amber Cook	92223	440 East 13th Street
Johnny Beck	92627	864 W 19th St.
Dave Gewock	92223	Picard pl
Ted wright	92223	1032 Willmont Way
Christine McCrary	92223	1075 Euclid Ave.
Irene Wilson	93446	1710 canyon crest Lane
Mark Stone	93544	32043 largo vista
MARIANNE MCCRARY	92223	40470 ROME BEAUTY WAY CHERRY VALLEY CA
avery bryn	92399	yucaipa
Julie Wells	92220	3911 W Ramsey St. Apt 205, Banning, California
Sheila Goodnight	92223	1575 shadow hills trail
Sterling Fenn	92223	1431 Willowbend Way
David Fenn	92223	1431 Willowbend Way
Roger Dickson	92220	334 Santa Rita place
Elizabeth Jay	92223	546 Heidi circle
James Arwood	92223	9189 Oak Creek Rd
luwana ryan	92223	9574 mtn view ave cherry valley ca
marcia tulledge	92223	1767 dalea way
Tiffany Fricke	92223	661 Chestnut Ave. Beaumont, CA.
Patricia Jones	92223	1626 Puma Ct
David Fricke	92223	661 Chestnut Ave. Beaumont, CA
Franklin John	92223	10055 Frontier Trail, Cherry, Valley
sonya gibson	92582	flamingo dr. san hacinto, ca.
Tonya Pressey	92223	39712 cherry valley blvd
Judy MacMillan	92320	10961 Desert Lawn Dr Spc 500, Calimesa, CA
Jeremy Ellsworth	92223	1549 Phoenix Dr.
Halee Hoch	92223	1652 Panther Lane
john russell	92223	1025 northview dr,beaumont, ca.
amelia shulda	92223	35356 Snead street

Name	Postcode	Address
Kathie Jenni	92223	508 Cherry Valley Acres, Beaumont, CA
Lynn Phillips	92399	12790 lantana ave
Stephanie Dils	92223	9189 Oak Creek Rd
Jennifer Cass	92223	40650 Lincoln Street
Linda Donardt	92223-8530	996 Ironwood Rd
Becky V	92223	1423 Augusta St
Michael Springer	92223	39643 Orchard St
Ryan Pearson	92223	10994 Crowther Ln
Keri Miner	92223	40433 grand ave.
Pennie Ashford	92223	35479 Byron
Dale Vander Tuig	92223	10310 Bel Air Dr.
Lesa Whittington	92399	11540 2nd st
Dennis MULLENIX	92223	1735 Morgan avenue
Michael Bigness	92223	10861 Bel Air Drive, Cherry Valley, CA
Gloria Groza	92220	240 Lombardy Lane
Jennie Rose Sylva	92223	36974 Dunhill Ct
Jennifer Ashford	92223	765 Alder St
Walt Copeland	92399	12393 1st st Yucaipa ca
dominique buring	92223	10891 union st
Jamene Alderson	92223	950 Beaumont Ave 3230
Dustin Becerra	92223	623 Beaumont Ave.
Jamie W.	92223	437 Lana Way
Sean Ashford	92223	35479 Byron Trl Beaumont Ca.
Dorothy Smietana	92223	149 Tijeras Creek
Sarah Jessen	92223	37938 Brutus Way Beaumont CA
Melissa Thacker	92223	36773 Gallery lane
Michael Reaves	92223	34298 Crenshaw Street, Beaumont, CA
Richard Pettit	92223	1640 Primrose ave. Beaumont, CA.
Nikolaus Kreutzer	92223	9923 avenida San timoteo
Gilbert Sanchez	92320	1060 barnnes ct cali.esa
DonYell Clifford	92223	11015 Karen Dr

Name	Postcode	Address
Yolanda Dolinger	92223	10095 Chisholm Trl.
Terri Sylvester	92223	40334 Avenida altejo Bella, cherry valley, Ca
Shannon Carbajal	92223	1433 Liatris Way
Susan Myers	92223	10801 Bel Air Drive
Chris Carbajal	92223	1433 Liatris Way
Darrin Zowarka	92223	35259 trevino trl
Jeanine Alvarado	91708	15761 Earhart Ct.
Jacqueline Smith	92223	PO Box 3073
Winston Rodriguez	92223	1280 Santa Paula Ct
Catherine Salmon	92223	1721 Shane Lane
Lynn Warren	92223	9070 Whispering Pines Rd. Cherry Valley
Bernice Deboer	92223	1018 Northview drive Beaumont
Breanna Burton	92223	11225 Casper Cove
Leigh Aveling	92223	36885 Golden Valley Lane
Kari Zowarka	92223	35259 Trevino Trl.
Terry Crafts	92404	San Bernardino
Stephanie Favila	92223	610 citrus street
Becky Parisi	92320	331 Midori Lane
Aide Villalobos	98512	3080 Hampton Dr SW
Joseph Noble	92373	832 serpentine dr
Michelle Hisey	92223	429 cougar way apt 1b
Jason Peter	92223	1335 Beaumont Ave, Beaumont CA
B. W. Brown	92223	10143 Pawnee Circle, Cherry Valley, Ca
Irma GRANITO	92223	36305 Clearwater Court
Starla Saiz	92223	40246 Grand Ave
Eunice Choi	92223	36996 Meadowbrook Way
Kyle Clifton	92223	38682 Florence st
Mary Harris	92376	219 N. Clifford Avenue
Regina Reyes	92223	34250 Crenshaw Street
Robert Seigler	92223	41030 Mohawk, Cherry Valley
Barbara Crouse	92223	8931 Whispering Pines Rd, Cherry Valley, CA

Name	Postcode	Address
Kristin Mickelson	92223	735 aspen glen ln
bob Dalton	92346	27028 la verne ct highland ca
Lindsay Cano	92399	34965 Summerwood Dr
Randalynn Rice	92399	34007 Pinehurst Dr
Susan Vander Woude	92224	39885 Grand Ave Cherry Valley, CA
Edward Martinez	92223	408 E 15th st #4
Mark Vander Woude	92223	39885 Grand Ave. Cherry Valley, CA
Jennifer Griswold	92399	31816 Ave E Yucaipa CA
ashley Sanchez	92399	Ave B
Annie Yoo	92223	1723 Long Dr., Beaumont, CA
Nicole Sabolchic	92223	708 canyon crest rd
Jessi Swanson	92374	845 joni ln
CHERYL GREEN	92399	13572 SAN JUAN AVE
anthony smith	92223	10001 live oak ave cherry valley ca
Shannon Phillips	92223	1375 San Miguel Dr
Anthony Miller	92220	1575 Altura pl
Terri McMahan	92373	1619 Heron
David Paynter	92503	4851 D Jackson ST
Maria Dryden	92223	560 Cedar View Dr
Seleste Sabatino	92223	10138 Beaumont Ave
Stephanie Washburn	92399	12967 Columbia Ave Yucaipa Ca
Alice Rose Padmore	92646-7024	8622 Hatteras Dr
Brittiney Darton	92223	1425 cherry ave #109
Camilo Ruiz	92223	1020 Chestnut ave.
Tawnya Romo	92220	1390 Aspen Ln
Shawnna Cicero	92223	Chestnut Avenue
Samuel Garcia	92223	847 Cherry Avenue
Maggie Kapp	92223	1681 Landmark Way
Jeanette Ragland	92223	39870 Brookside Ave.
Shirley B. Russell	92223	1025 Northview Drive Beaumont
cora lowe	92223	1417 sundance dr
Jared Keith	92399	13270 oak crest

Name	Postcode	Address
Steven Rakestraw	92223	40300 Grand Ave. Cherry Valley Ca.
Dana Stark	92508	17855 Kenny Rd., Riverside
Gennie Robles	92223	37395 mulligan dr
Kelly Kirchgater	92223	1286 Larkspur Lane
Steven Hallbert	92223	9198 Avenida Miravila
joanne ERBE	92223	p.o. box 722 Beaumont ca 92223
Diana Schulz	83686	11211 fowler
Shantel Bacon	92223	1338 burdock street
MARY LANDS	92223	8980 Whispering Pines Rd
Barbara Boutwell	92223	1681 Landmark Way
Melissa Butt	92223	36256 bay hill dr
Steve Loe	92399	33832 Nebraska St., Yucaipa, CA
Rose Versace	92320	173 Myrtlewood Dr. Calimesa
Rosemarie Chudy	92399	37225 Oak Glen Road
danielle ray	92223	10525 el monte dr apt b cherry valley
Albert Guillermo	91724	1154 e. Wanamaker drive.
Heidi Knight	92223	El Monte Drive, Cherry Valley
Raelynn Rea	92359	3031 mill creek rd
Amanda Clanin	92223	40590 Dutton St.
Joseph Sabolchic	92223	708 canyon crest rd
Melissa Rodger	85140	1288 e pollino st
James Middendorf	92223	10951 Deerfield Drive
Vicky Elisalda	92223	10645 Cherry Hills Dr
michelle torrez	92223	1431 bittersweet drive unit e
Ronald Elisalda	92223	10645 Cherry Hills Dr
Stacey Ross	92399	12781 Medlar Street
Monica Sager	44827	313 Cross Street
Holly Tillen	92223	1674 Lemon Ave
Ian Tillen	92223	1674 Lemon Ave
Joanna Hartnell	92223	358 Trevino Trail
Brandalyn Anders	92223	1269 edgar ave.
Alex Aparicio	92223	1267 Edgar ave.

Name	Postcode	Address
Christopher Ibarra	92223	606 Citrus Street
Kirk Brown	92223	40178 High St. Cherry Valley
Jason Ross	92399	34056 Castle Pines Drive
Shannon Esparza	92399	PO Box 1415
Jose Esparza	92399	11824 Auburn Ave.
Cindy Serrano	92223	1032 jonabell
Jillian Elliott	92223	1704 a monte verde dr
Kenny Clanin	92333	40590 Dutton St. Cherry Valley
lurline khatib	92223	1564 Phoenix drive beaumont
Corina Soukup	92223	1687 n deodar dr
Maria Anderson	92223	1027 Massachusetts Ave
Hank Lefler	89121	3529 Sunny Dunes Court
Eric Ustation	92223	1643 S Monte Verde Drive
jason schmidt	92223	10185 nancy ave
jennifer ustation	92223	16543rd s. Monte Verde dr.
jeffrey klinger	92223	1730 morgan ave beaumont ca
Derrick Elliott	92223	1704 s. Monte verde dr, beaumont, ca
jason bouman	92399	35261 santa rosa dr
Brooke Valentine	92223	39592 Grand Ave
Monte Brown	92583	2023 E Washington Ave
Dustin Glauser	92223	38622 Florence Ave.
Josh Jenner	92223	11309 Bean Street
Shelby Stone	92223	35593 Trevino Trl
Sheila O'Brien	92506	Riverside, CA
Lori Agon	92399	35688 Country Creek Dr.
Daniel Hanke	92223	11405 pepper lane
Kimberly Burleson	92223	1715 Miranda Lane
gesille silab	92223	1628 s monte verde dr beaumont ca
Brian Fegel	92223	38186 Vineland Street
Jaclyn Lee	92223	743 Robin Glen Road
Dwan Lee	92223	743 Robin Glen Road
Susan McFayden	92399	13217 Oak Crest Dr

Name	Postcode	Address
Ryan Herr	92223	9181 Beauview Dr
Dane Davidson	92399	11429 Casa Blanca st
Linda Yost	91737	10320 Rancho St.
Dan Ruiz	92220	1692 W. Lincoln St. Banning CA
Paul Easterling	92223	11437 Locke Ln Beaumont
Melissa Maxwell	92223	10746 winesap ave
Sherry Hansen	92223	10295 Cimarron Trail Cherry Valley
Nick Mcfayden	92223	1740 Sharon ct
kathleen Raney	92399	33765 Washington Dr
Ryan Perkins	92223	9181 Beauview Dr
Donna Orr	92390	13370 San Juan Ave. Yucaipa CA
Gary Wang	92223	418 Lana Way
Greg Baker	92223	11030 hannon rd Cherry valley
J Monica Siden	92220-5160	1032 Southern Hills Drive, Banning, CA
Rachael Easterling	92223	11437 Locke ln
Niki Dorn	92399	11788 fairway dr
Ronald Stettler	92220	2683 Gusty Way
Melissa Monge	91786	330 Amber Ct #205
Michael Burleson	92223	1715 Miranda Ln Beaumont
tyler macdonald	92223	1455 big sky dr.
Minnie Grish	92223	1296 wall flower way
Susan Gagnon	92223	37031 Amateur Way
Mauricio Hurtado	92223	1525 Flamingo St. Beaumont, ca
Odos clanin	92223	40590 dutton st,cherry valley
lindsey moreno	92223	36263 straightaway dr beaumont ca
Jana Green	91750	2561 Price Drive, La Verne, CA
Garrett Arwood	92223	9189 oak creek rd
Patt Rosenberry	92502	Po box 52
Candy Coons	92373	248 cajon at #17, Redlands CA 92373
Dawn Mccrary	92220	5059 W Wilson Street
Kandi Klinger	92223	1730 Morgan Ave

Name	Postcode	Address
Brian McMullen	92313	22010 Vivienda Ave Grand Terrace, Ca
Amy Peterson	92223	10881 Crowther Lane
cassandra pedregon	91764	808 n. lassen ave.
Brandi Teets	92223	10435 live oak ave
Amy Causey	92220	1022 S 22nd street
Matthew Koser	92223	11233 runyan rd., beaumont, CA.
Kimberly Ballard	92399	34663 Maplewood Lane, Yucaipa, CA
Alyssa scarbrough	80020	106 jade st. Broomfield co
Lorette Oliver	92223	11080 Hannon Road
adam rowe	92223	8981 avenida miravilla cherry valley
Melanie Dowdy	92223	1214 tumbleweed
Natalie Thomas	92223	489 hickorytree ln
mark schulz	92882	220 w. Kendall st. Corona ca
Cynthia marble	92223	9820 cherry ave
Wendy Ternes	92399	13537 canyon view drive
Chris Dowdy	92223	1214 tumbleweed
Patrrick Kaschube	90732	7 Atlas Dr San Pedro, CA.
Cassie Mcfayden	92223	1229 oakhurst ct
Pam Alps	92223	40396 Orchard pl
James Saldana	91709	3233grand ave
Alice Magers	92223	8606 Oak Glen Road
marina lim	92223	34925 stadler street
Autumn McLees	92223	11251 Union St
elisha McLees	92223	11251 Union St
Angelina Frainee	92399	32021 ave e unit 1 Yucaipa ca
Chris deleon	92223	1689 east Larkspur Ln Beaumont
sergio rodarte	92223	11286 littler ln
Joe Parrilla	92223	972 Pavo dr
jeff anderson	92223	34925 stadler street
Sara Jerome	92223	136 Kinn Avenue
Carolina Zequeira	92223	38279 High Ridge Dr. Beaumont

Name	Postcode	Address
Eileen Herbert	92223	11245 Demaret Dr
Rick Gohn	92223	34919 stadler st. beaumont
Kyle Anders	92223	1269 edgar ave
joseph warren	92399	34844 yuciapa Blvd
Martha Rodarte	92223	11286 Littler Ln, Beaumont Ca
Irene Philbrook	92223	1115 Cherry Ave. Beaumont Ca
David Morton	92223	573 Ashford Court
Tina Benavides	91737	9806Hlbiscus
May Justice	92223	37214 parkway drive, Beaumont CA
Kymberly Steiger	92220	681 W. George St
Greg Justice	92223	37214 parkway dr. Beaumont ca
Kimberly Awender	92223	279 e 13th st
Russell Pene	92223	1775 n deodar drive Beaumont ca
Roman Lugo	92223	13121 Kelly St
peter vanderford	92223	34937 Stadler Street
Olga Lefebvre	92223	10896 Bellflower ave
Erin English	92399	9852 Yucaipa Ridge Rd.
Elizabeth Solares	92223	34419 Morris street
Gary Stoh	92223	951 Gleneagles Road
Erick Rodriguez	92223	501 not sunset ave
Heather Patrick	92223	1394 Bouvardia Place, Beaumont
michael Smith	92223	1321 palm ave
Melisa Sternjacob	92220	1517 w jacinto view rd
Lisa Copeland	92223	38145 Orchard St.
kristen johnson	92553	12833 perris blvd
Chique Flores	92223	1377 maple ave Beaumont
annette rice	92320	579 w county line rd
Annita Hommel	92220	155 e hays
Jessica Atwood	92223	1009 sea lavender LN
Sandi Doyle	92399	13506 Lantana Ave
Kimberly Hall	92223	1345 Early Blue Lane
Denise Kubotsu	92223	10191 nancy ave
Alex Quiroga	92320	338midori ln

Name	Postcode	Address
Krystal Fones	92223	1350 comfrey leaf dr.
Aleta Walker	92220	1132 Dysart Dr. Banning, California
Linda Rogers	92220	Sun Lakes
Shannon Vanderford	92223	34937 Stadler Street
Daniel Milbrandt	92223	1011 Violet Ct
David Duncanson	92223	939 Monarch Ct, Beaumont
Bailey Franzen	92223	11286 Coody Court Beaumont CA
Angelica Rocha	92223	1677 Apollo way
Jody Salmon	92223	1460 Caspia Pl
Patricia Rodríguez	92320	1055 Douglas st calimesa ca
Delany Salmon	92223	1460 Caspia Pl
cynthia Mcghee	92223	34937 Stadler Street
steve patino	92220	1520 e nicolet
George Farrell	92223	10831 Deerfield Dr., Cherry Valley, Ca.
Ilonka Farrell	92223	10831 Deerfield Dr., Cherry Valley, Ca.
Kristin Caudill	92399	13617 custer st yucaipa
carol hamil	92320	1000 douglas st, calimesa
David Krodel	92223	703 ALLEGHENY ST Unit #37
Christopher Bandak	92223	1341 Avalon ave
barbra child	92223	37275 winged foot rd
Christine Anderson	92223	34609 Venturi ave
Kenneth Yoder	92224	39139 cherry valley blvd
Edward Fleming	92223	10055 Comanche Circle
kerri Williams	92399	34786 ave h
Rosana dominguez	92220	3788 red bluff ln
Rebekah Warren	92223	9070 Whispering Pines Rd.
Erick Bennett	92223	36119 blue hill drive
Kristen Higgins	92223	1202 Cedar Hollow Rd
Ronda Dinkins	92223	10756 Nancy Ave
teresa lugo	92223	1734 s forest oaks dr, beaumont
James Dinkins	92223	10756 Nancy Ave

CHERRY VALLEY PASS ACRES AND NEIGHBORS
P.O. BOX 3257
BEAUMONT, CALIFORNIA 92223

February 19, 2014

Via E-mail and Fax

Paul Rull
Project Planner
County of Riverside
4080 Lemon Street, 12th Floor
P.O. Box 1409
Riverside, CA 92502-1409
prull@rctlma.org
Fax: 951-955-1811

Re: I-10 Gateway Center Project

Dear Mr. Rull:

We are submitting these comments concerning the Notice of Preparation of a Draft Environmental Impacts Report for the I-10 Gateway Center Project on behalf of Cherry Valley Pass Acres and Neighbors ("CVAN") and the Cherry Valley Environmental Planning Group ("CVEPG"). Please provide us with all future notices regarding this Project.

CVAN is a California non-profit corporation comprised of more than 300 families, many of whom live and work in Cherry Valley, an unincorporated community of interest located east of the proposed project.

CVEPG is a California non-profit corporation that was established to protect and preserve the environment and water supply in and around Cherry Valley.

As a preliminary matter, we understand that the County of Riverside has set a deadline for submission of comments for 45 days after receipt of the notice of the NOP. While we are submitting our initial comments within that time period, you should recognize

that in accordance with applicable law we reserve our rights to submit additional comments, orally and in writing, up until the time the City takes final action on an EIR.

The NOP relates to a proposed project consisting of two 47 foot high industrial buildings totaling 2,560,000 square feet, with 428 bay doors, as well as a General Plan Amendment and Change of Zone to remove the project site from the Cherry Valley Gateway Policy Area and to change the applicable zoning from residential to industrial.

Cherry Valley Policy Area and Cherry Valley Gateway Policy Area

As is indicated by the proposed General Plan Amendment and Change of Zone, the proposed Project is inconstant with the plan for the Project site and the surrounding character of the area. Due to this inconsistency, the Project would have, among other things, significant aesthetic, cultural, and land use impacts. These impacts should be fully mitigated or avoided.

The Project site is stated to be located in the Cherry Valley Policy Area and Cherry Valley Gateway Policy Area. As stated in the County of Riverside General Plan, The Pass Area Plan, "Cherry Valley, located east of Interstate 10 and north of Beaumont, is a rural and equestrian community with small orchards, mobile homes, and single family residences." The intent of the Cherry Valley Policy Area "is to maintain the predominantly rural community nature of this area." The Pass Area Plan recognizes the "rural atmosphere of the area," the limited capacity of public services, and flooding hazards. The Cherry Valley Gateway Policy Area "shall be developed as a gateway to Cherry Valley" and "shall be developed to evoke the rule character of that area." The proposed industrial Project is

wholly inappropriate for the site as it would substantially degrade the rural character of the area. The EIR should thus consider alternative locations for the Project.

Agricultural Impacts

All loss of agricultural resources should be fully mitigated. The EIR should consider, among other things, the use of conservation easements to mitigate the Project's impacts.

Air Quality and Climate Change Impacts

The Project will likely rely extensively on the consumption of fossil fuels, including the heavy volume of truck traffic generated by the Project and the Project's consumption of energy. Reliance on fossil fuels will result in significant air quality and climate change impacts. It is well settled that pollutants associated with fossil fuel use will have significant adverse impacts on human health and our environment, and will impact both current and future generations. The area is currently designated as non-attainment under the Clean Air Act and there is a statewide effort to reduce emission of greenhouse gases below existing levels. Because air pollutants already exist in the atmosphere at unacceptably high levels, it is vitally important to both reduce current emissions and to minimize creation of new sources of pollution. This Project will exacerbate the current pollution problem.

The EIR should fully disclose the direct and indirect emissions the Project will cause and the methodology used. The EIR should further disclose all environmental impacts, including health impacts and other impacts associated with the release and deposition of diesel particulate matter. The evaluation of impacts should consider all affected areas,

including all areas where traffic will increase, not just a relatively small area immediately surrounding the Project site. All types of traffic, including passenger vehicles, trucks, trains, airplanes, and cargo ships should be considered.

The Project should fully mitigate its significant air quality and climate change impacts. In addition, the County and applicant should consult with expert agencies, such as the California Air Resources Board, the California Air Pollution Control Officer's Association, and the South Coast Air Quality Management District, to, among other things, identify feasible alternatives and mitigation measures. Mitigation should include: onsite renewable energy production; solar water heaters; use of electric vehicles; obtaining emission offsets so that there is no net increase in the local area's emissions; utilizing only native drought tolerant landscaping; avoiding or minimizing sources of volatile organic compounds found in certain paints, solvents and other substances; minimizing or prohibiting idling of trucks; facilitating use of public transportation and carpooling by workers; use of recycled water for all permitted uses; include electric charging stations and car pooling spaces in the parking lot; use dust abatement during construction; and use of passive solar design.

Biological Impacts

The EIR should identify all impacted species and the impacts to them. The analysis must include evidence from surveys and information from expert agencies, such as CalWild. The EIR should consider impacts to migration and local movements. It should also consider impacts on and offsite due to the noise, pollution, lighting, and conversion of

open space which could both directly kill a species and result in a disturbance which causes of species to change its behavior. The analysis should consider the effects of climate change, which would likely be exacerbated by the Project, including any foreseeable changes to habitat and ranges of species. Mitigation should include an increase in the open space on the Project site, obtaining conservation easements on other sites to preserve open space and habitat, funding conservation efforts by agencies or non-profits to protect or improve habitat, and all suggested measures by expert agencies.

Hazardous Materials

The Project will introduce new sources of hazardous materials to the region. The EIR should identify all hazardous materials that the Project may cause to be released including fuel, solvents, cleaners, diesel particulate matter, air pollutants including green house gases and toxins, lubricants, coolants, paints, and oils. The EIR should also consider all potential sources of releases such as storage tanks, trucks and other vehicles, pipes, and equipment used at the site. Impacts to consider include groundwater and soil impacts, health impacts, and air quality and climate change impacts.

Hydrology

The Project is located in area that provides natural drainage and is subject to flooding. The Project will alter the hydrology of the site by altering drainage channels and placing an impervious surface over a large area. The EIR should thus fully evaluate hydrology impacts and fully mitigate any significant impacts, both on and off site. The

analysis should consider the impact to groundwater recharge and impacts to the quality and quantity of water being discharged at the Site.

Noise

The Project site is currently rural and generates very little noise. The EIR must provide an analysis of all sources of noise from the Project (including engines, air conditioning units, horns, car alarms, and opening and closing of doors on truck bays and truck trailers). The analysis should consider actual impacts, not just whether a noise ordinance would be complied with. The analysis should consider all times when operations would be conducted and impacts both on and offsite. Offsite impacts would include noise from trucks, including increased noise caused by trucks travelling up grade.

Recreation

It is noted that informal trails exist on the Project site. The loss of these trails should be mitigated. Measures that should be considered include a conservation easement on other lands which allow for trail use.

Traffic

The EIR should consider both local traffic impacts and impacts throughout the region. The analysis should consider, among other things, the impacts to emergency response times, impacts to the levels of service of all impacted roadways, any infrastructure that will be needed on and offsite to accommodate the increased traffic, the physical wear and tear to roads and infrastructure caused by the Project's traffic, impacts to public transportation, including both increased demand for services, and impairment of service

times caused by increased traffic, and all vehicle miles travelled associated with the Project. The Project's significant impacts should be fully mitigated. Among other things, the EIR should consider measures that would offset the Project's traffic impacts by reducing other sources of traffic impacts.

Water Supply

The EIR needs to identify viable sources of water to supply the Project. The analysis must consider all current demand and foreseeable future demand in the region. There is not sufficient ground water in the region to supply current uses, thus the Project should not depend on the use of groundwater as it will only exacerbate overdraft conditions. The EIR should evaluate the use of recycled water. Because many agencies and project proponents indicate in the approval process that recycled water will be used, but ultimately fail to utilize recycled water once projects are approved, the County should make construction of the Project dependent on recycled water and necessary infrastructure being available. The EIR should also evaluate use of State Water Project water. And because SWP water and the infrastructure needed to supply have not always materialized as planned, construction of the Project should be made contingent on substantial evidence that SWP water will be available in sufficient quantities.

All feasible mitigation measures should be adopted so that the Project's water supply impacts are minimized. This includes a requirement of: native drought tolerant vegetation; dual flush ultra low flow toilets; use of recycled water for irrigation and all other approved purposes, and low flow fixtures.

Cumulative Impacts and Growth Inducing Impacts

As noted above, the EIR should consider the entire area potentially impacted by the Project, not just the immediate area surrounding the Project site. For the area that the EIR does analyze for its cumulative impact analysis, a detailed statement of why that area was selected should be provided. It may be that the area is adjusted based on the type of impact at issue. The EIR should also consider all past, present, and foreseeable future projects in its analysis. All relevant agencies should be contacted to request a list and description of projects to consider. If an agency does not respond, available resources, such as the internet, should be used to identify projects. The EIR should consider all impacts throughout the supply chain, from manufacturing to consumption. For instance, if the Project would cause an increase in pollution from production of goods or an increase in the consumption of products with toxic properties, impacts should be disclosed and analyzed.

Growth Inducing impacts should be thoroughly analyzed, including the increased construction of infrastructure, housing, retail, and manufacturing facilities the Project may induce.

Thank you for providing us with the opportunity to comment on the Project.

We look forward to participating in future meetings and reviewing the EIR.

Very truly yours,

Patsy Reeley
President Cherry Valley Pass Acres & Neighbors

Patrick Doherty
President Cherry Valley Environmental Planning Group

cc: Robert C. Goodman, Esq.

Liz Westmoreland

From: Dan Lewis [danjuliezoe3@verizon.net]
Sent: Monday, February 17, 2014 1:49 PM
To: Rull, Paul
Subject: 1-10 GATEWAY CENTER PROJECT BOUNDARY ADJUSTMENT

Mr Rull I am ANGERED and APPALLED that YOU would try to pull this off without any consideration to what the people who actually live here might think. We all remember the water fiasco that happened.... and now you want to put his monstrosity in our neighborhood ??? Do you live here????Have you thought of what will happen here? More commercial logistic warehouses....if one is built more will come. If the zoning is changed for this project, other changes will be made. Who is going to want to live or build homes or min-ranches here? For travelers of Cherry Valley Blvd., this will say WELCOME... How sad! What about the natural waterway, the natural habitat for birds and animals of our area. What about our water??? What about contamination of our water? Contamination of our WATER, AIR, TRAFFIC. What about the change from a 2 lane to a 4 lane road and changes to the 1-10 on ramp and off ramp? We all know that change is going to happen.....But, please NOT this type of change. The million tons of dirt to cover this landscape only to be covered with millions of tons of concrete for a commercial logistics warehouse that will have 4XX bays for trucks that will have noisy and smelly trucks traveling in and out 24/7!!!!!!! I Implore you, PLEASE do not do this!!!! Julie Lewis

Liz Westmoreland

From: David Teets [dteets@verizon.net]
Sent: Wednesday, February 19, 2014 9:08 PM
To: Rull, Paul; Ashley, Marion
Cc: kevinminnich@yahoo.com
Subject: Gateway Center Warehouse

Supervisor Ashley,

The purpose of this e-mail is to let you know that I vehemently oppose the construction of the Gateway Center warehouse in Cherry Valley. I am a lifelong resident of Riverside County and have lived in the cities of Riverside and Perris, as well as the unincorporated areas of Jurupa Valley and now Cherry Valley. In addition to calling Riverside County home, my wife (Brandi) and I are proud employees of the County.

In 2002, we decided to move our family out of the Orangecrest area of Riverside due to smog, congestion, and basic quality of life issues that affected the entire family. We looked in many areas and finally decided on Cherry Valley due to its country atmosphere, clean air, and lack of congestion. When my parents (cc'd) retired two years ago, I convinced them to move to Riverside County and now they currently reside in the city of Calimesa.

This proposed warehouse will greatly affect the air, congestion, and small town feel; a few of the things that brought us out here in the first place. It is a depressing thought to believe we could have a warehouse the size of the Sketchers building in Moreno Valley, as well as hundreds of semi trucks traversing this area on a regular basis. As you can see, my family has a vested interest in the area, as well as Riverside County, and we would all appreciate it if you could pass on this project in favor of something else.

Regards,
David & Brandi Teets
Cherry Valley, CA

Liz Westmoreland

From: Deanna Gilis [tanddgillis@yahoo.com]
Sent: Saturday, March 01, 2014 11:55 AM
To: Rull, Paul
Subject: our land

leave it aloan do not build this crap on it take it out were no body builds like the desert

Liz Westmoreland

From: Dyke Leonard [dykeleonard@hotmail.com]
Sent: Thursday, March 06, 2014 9:39 AM
To: Rull, Paul
Subject: Gateway Center warehouse

I am totally against this project. It will ruin our quality of life and the beautiful rural area in which we live.

Liz Westmoreland

From: Coop [ercooper75@verizon.net]
Sent: Thursday, February 13, 2014 4:13 PM
To: Rull, Paul
Subject: Gateway Center Warehouse

Mr. Rull; It's hard for me to believe that a planner would even consider the subject project in an area already bounded by hundreds of homes. The massive enormity of the project would be more suited in an area like Desert Center where there is no city and county traffic and pollution concern. Imagine 1000 trucks in your area rumbling day and night in residential and rural areas. Cherry Valley Boulevard is the only local access to the 10 freeway for those commuting to points west. With 24 hr. trucking moving in the area, access would be difficult or problematic. The developers of this project have no concern for the impact of the local citizens. Their only objective is cheap land and huge profits. I dare say, large trucks rumbling down their streets would bring a cry to their congressman. Our area has been a haven for low density and rural atmosphere. My wife and I moved here 22 years ago because of the rural lifestyle. I realize there is a need for housing in areas not previously developed, but industrial development that disrupts the entire area is just not reasonable and acceptable. I hope you will consider this In rejecting this unreasonable project. Ed Cooper Cherry Valley, CA

_____ Information from ESET NOD32 Antivirus, version of virus signature database 6590 (20111031) _____

The message was checked by ESET NOD32 Antivirus.

http://www.eset.com

Liz Westmoreland

From: Alan Gooch [agooch@MASTERCRAFTHOMESllc.com]
Sent: Thursday, February 20, 2014 12:34 PM
To: Rull, Paul
Subject: Gateway Project in Cherry Valley

Hello,
It's always typical for residents to resist change, especially when that change adds traffic and more people to their neighborhoods. Most of them have been residents of Beaumont since 2003 or later, they are part of the expansion that was resisted previously. What they are not considering is the fact that this would bring jobs to their community and more revenue for their city for infrastructure, not to mention more neighbors who could wind up being close friends someday. I strongly support this project and will do my best to help convey the positive aspects of this development to folks I meet. Thanks,

Alan Gooch, *Sr. Sales Counselor*
RE Lic# 01362327

Description: SingletonHeightsLogo

169 Singleton Canyon Rd, Calimesa, CA 92320
Phone (909) 795-0780 • Cell (951) 821-0123

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Liz Westmoreland

From: Georgia Conrad [gconrad@dc.rr.com]
Sent: Tuesday, February 18, 2014 2:56 PM
To: Rull, Paul
Subject: Planned Gateway Project

I have been informed of the plans to turn our community into a Commercial Warehouse area! As a resident of Cherry Valley you do represent me in this matter. I am thoroughly opposed to this plan. Its bad enough that we are faced with handling an additional housing development here but to impact our infrastructure with the heavy traffic and congestion that would result from the approval of this plan is totally unacceptable.

Respectfully,
Georgia Conrad
10671 Deerfield Drive
Cherry Valley, CA 92223

Liz Westmoreland

From: Gladnie Bender [gladnie2be@verizon.net]

Sent: Friday, March 07, 2014 4:56 AM

To: Rull, Paul

Subject: Gigantic gateway center warehouse

What are you thinking fast-tracking a gigantic warehouse in the unincorporated area of Cherry Valley. Just because the area is unincorporated doesn't mean we can destroy the look of pristine hills & valleys. We need to keep the cooridor free of those monstrosities (unlike Moreno Valley). We have such a beautiful corridor coming up through Yucaipa & out to the desert, free of monster warehouses. Please do not do this. Rethink what you're doing for the sake of environmental effects w/trucks clogging up the arteries to/from & the asthetic look of the area. Keep the hills free of this. Yucaipa has adopted this plan & you should continue through w/it. Contact Yucaipa for info on this--you will like the results. People driving through the corridor should be free of this unsightly warehouse, 43 football fields long. Please do not do this for the sake of progress. There are many locations for this kind of warehouse (warehousing areas already exist everywhere in the Inland Empire. The $ you recieve for this is not worth it for the sake all the people who love the look of coming up the hill & out to the desert. Take a drive & really look at this, it's beautiful. Gladnie Bender

Liz Westmoreland

From: Helen [qtgramy@aol.com]
Sent: Sunday, February 23, 2014 11:02 AM
To: Rull, Paul
Subject: Gateway Center warehouse project north-east of the Cherry Valley exit

Dear Mr. Rull:

As a resident of Cherry Valley for 57 years, I am hereby expressing my grave concerns regarding the new monster Gateway Center warehouse project proposed to be built on the north side of Cherry Valley Blvd, east of the Cherry Valley exit.

Our beautiful, rural community has been home to me ever since I was a child and the fond memories of growing up here can never be replaced. This exit off Highway 10 happens to be the only direct access into Cherry Valley and I dread that anyone would even consider replacing our picturesque rolling hills with this concrete monstrosity.

I am a voting constituent and I strongly oppose the Gateway Center warehouse to be built here! I would hope you will do everything in your power to preserve our lovely community and oppose this project.

Please put me on your notification list for upcoming hearings on this project. Thank you.

Sincerely,

Helen Messrah
38915 Cherry Valley Blvd.
Cherry Valley, CA 92223
(951) 318-0611

Liz Westmoreland

From: Jim Arwood [jim@nds-ca.net]
Sent: Tuesday, February 18, 2014 4:25 PM
To: Rull, Paul
Subject: Cherry Valley Gateway Center Project

Dear Mr. Rull,

I have recently been informed of a proposed warehouse project in Cherry Valley.
After review of the draft environmental impact report, this project must not be allowed to continue and I am contacting you to voice my opposition to the project.
The impact to the rural community and home values in the affected area would be devastating. Below is just some of issues to consider:

- Traffic impact on Cherry Valley Blvd. (This is a main arterial road which residents use to commute to and from)
- Construction impact (just the infrastructure changes to support the project alone would impact the area for likely several years.)
- Air pollution resulting from the construction and facility operations.
- Impact to the local communities (law enforcement, city services (water, trash, etc), transient population that will be attracted to these sites, all will be drains on services already strained.)

Please let me know how I can best keep informed of this project's status.

Thank you,

Jim Arwood - CCDP, CCNP, MCSE, CSE
Owner / Sr. Network Architect
Network Design Solutions
Office: (951) 750-1176
Cell: (951) 906-5593
www.nds-ca.net

Feb 17, 2014

Mr. Paul Rull
Project Planner
Riverside County
P.O. Box 1409
Riverside, Ca. 92502-1409

RECEIVED
FEB 20 2014
ADMINISTRATION
RIVERSIDE COUNTY
PLANNING DEPARTMENT

Re: I-10 Gateway
Center Project

Dear Sir:

I am writing to ask the above project be denied for the following reasons:

4,367 students within 2 miles of this project - 780 within 1 mile

2,000 plus 55+ Senior dwellings within 1 mile - not to mention 100's of family homes

Extreem danger to the Beaumont Basin due to a very high permeability area on that exact sight & surrounding area

I have already brought these concerns & others to the:

Beaumont Basin Watermaster
at their February 5th, 2014
meeting

Chairman Duane Burk
% BCVWD
560 Magnolia Ave
Beaumont, Ca 92223

I also spoke at the Beaumont Unified School District Board meeting on February 11, 2014 The School District needs to be notified for their comments

I found in talking to Groups and individuals no notifications were received from your office.

As Chairperson of the Cherry Valley Unincorporated Community I request to be notified of any actions on this project and a copy of the Draft E.I.R.

Very truly yours —

LUWANA M. RYAN
9574 MTN. View Ave.
Cherry Valley, CA 92223-3602
951-769-0074
email: tonylu2@verizon.net

Luwana M. Ryan

Liz Westmoreland

From: mmbigness [mmbigness@verizon.net]
Sent: Sunday, March 09, 2014 4:44 PM
To: Rull, Paul
Subject: Proposed Gateway Center Warehouse in Cherry Valley, CA.

Mr. Rull,

My name is Mary Bigness, and my Husband Michael and I moved to Cherry Valley/Beaumont in April 2013. One of the main reasons we moved to this area was due to the beautiful rolling hills and wide open spaces, not to mention the quaintness of the small ranches and farms where we can see Cows, Chickens, Goats, and all other sorts of animals on a daily basis, something you don't see in the City. Having been a "City Girl" all my life, it was a welcome change and one that I fell in love with immediately! So, as you might guess when I read about the proposed development of the Gateway Center Warehouse on Cherry Valley Boulevard, my hear sank! At 56 years of age, this is the first home I have ever purchased and I am so happy to be living in such a beautiful and rural area with beautiful rolling hills and a wonderful small town look and feel. I can't believe anyone in the Riverside County Planner's Office or anyone on the Beaumont City Council could even think to allow a huge warehouse such as this to be built in our area.

I don' know if anyone on the Beaumont City Council or in the Riverside County Planner's Office are aware, but there are many seniors (and others) who drive on Cherry Valley Boulevard on a daily basis, sometimes several times a day, because this is their ONLY route where they don't have to drive on the freeway to get to neighboring communities such as Calimesa and Yucaipa, because they are too afraid to drive on the freeway. If a huge warehouse with hundreds of semi-trucks traveling that same route everyday were to be built, this would close off an only viable route for these seniors and others who currently utilize this route to get to those neighboring communities and would basically cut them off from those communities they need to get to.

Another thing for consideration, if this huge warehouse was to be built and the business failed, which a lot of businesses in California seem to be doing, then we would be left with a HUGE and EMPTY "EYE-SORE" that would sit there for probably several or more years before anyone could even afford to do something with it, when instead we could have kept the beautiful rolling hills and wide open spaces that so many people cherish and love, and what my Husband and I fell in love with just about a year ago.

Please, I ask that you and all those individuals who have the power and ability to make the decisions on this project consider not only what I have pointed out in the paragraphs above, but also for the long term affects, and how a bad decision can last a lifetime.

Thank you for your time and consideration on this matter!

Respectfully,

Mary H. Bigness
10861 Bel Air Drive
Cherry Valley, CA. 92223

Liz Westmoreland

From: nancy carroll [warehouseupdate@gmail.com]
Sent: Friday, February 28, 2014 2:26 PM
To: Rull, Paul
Subject: Update on traffic issues regarding the Gateway project

Hi Paul,

Just a note to make sure you are in the loop on some of this. There was an accident on Cherry Valley Boulevard on Feb. 3 where a school bus was hit from behind by an automobile. There was personal injury, the driver of the Jeep was transported to the hospital I believe. No one in the school bus was transported (although I am not the authority on this I do not have the accident report, only eye witness who spoke to the police).

The school bus was stopped unloading/loading at the time. This is real concern on these rural streets and I am concerned about upping the traffic even on Brookside and Oak Valley as both a high number of students and seniors are driving on these main town routes.

Singleton Road in Calimesa and Cherry Valley are also feeds to a large number of seniors who are in the surrounding footprint of this project. As you recall, there are many new homes of young families as well as the four senior communities that are all within 1/2 mile of less of this project.

Thanks again for listening:) I have heard there is a transportation study underway, if this is separate from the EIR can I be on the distribution list for this also?

Nancy Carroll
NoWay Gateway

--
Replying "Unsubscribe" in the subject line will automatically send a request back to the sender so we'll stop emailing you.



Liz Westmoreland

From: Paula Rai Berger [prberger57@msn.com]
Sent: Wednesday, February 19, 2014 9:09 AM
To: Rull, Paul
Subject: DON'T BUILD IN MY BACK YARD!!!

I live in the Rancho Calimesa Mobile Home park. I wish you would reconsider building in my back yard. The trucks that already use the freeway outside my door are enough and then you want to add more? I'm afraid this site will bring in transitit and God only knows what else. It will rattle my trailer off its foundation. **please**, **Please, Please don't build here** .
Thank You,

Paula

Liz Westmoreland

From: Rita Shaw [rita@ritashaw.net]
Sent: Friday, February 28, 2014 10:32 AM
To: Rull, Paul
Subject: Gateway Center Warehouse project in Cherru Valley

Good morning Mr Prull,

I just want to go on record that I oppose the Gateway Center Warehouse Project in Cherry Valley. Please put me on the list for any hearings and eventually a copy of the EIR.

It will be an absolute eyesore to build a 57 acre warehouse off one of the last remaining scenic offramp views from. the I 10. Also I can't imagaine how the large trucks will be able to take the offramp obn the eastbound side of Cherry Valley Blvd and be able to make that sharp left turn.I already envision traffic jams at that tiny intersaction and little two lane country bridge.

Rita

Rita Shaw Broker, CRS
www.ritashaw.net
1107 Orange Street
Redlands, CA 92374

Office: 909-798-1000
Cell: 909-725-0321
FAX: 909-798-2973

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RITA SHAW BROKER & Associates

Riverside County
Waste Management Department
Hans W. Kernkamp, General Manager-Chief Engineer

February 27, 2014

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FEB 28 2014
ADMINISTRATION
RIVERSIDE COUNTY
PLANNING DEPARTMENT

Paul Rull, Project Planner
Riverside County Planning Department
4080 Lemon Street, 12th Floor
PO Box 1409
Riverside, CA 92502-1409

RE: Interstate 10 Gateway Center Project
Notice of Preparation (NOP) for an Environmental Impact Report (EIR)

Dear Mr. Rull:

The Riverside County Waste Management Department (RCWMD) has reviewed the NOP prepared for the Interstate 10 Gateway Center Project. The Project would construct an industrial distribution facility.

The RCWMD requests that the following potential project impact areas be analyzed and evaluated in the EIR:

1. Given its scale of development, the proposed project may have a significant solid waste impact. The RCWMD is particularly concerned about the quantity of construction and demolition (C&D) waste that could be generated by the project and how the waste will be disposed of. Should a large quantity of the projects' C&D waste be brought to a County landfill for disposal, it could exceed the landfill's daily permitted capacity, thus a violation of State regulations and an impact to County landfill operation. The projects' EIR should analyze this potential solid waste impact. RCWMD recommends that the following conditions be incorporated in the EIR as mitigation measures to ensure compliance with AB 939:

   a) **Prior to issuance of a building permit for EACH BUILDING**, a Waste Recycling Plan (WRP) shall be submitted to the Riverside County Waste Management Department for approval. At a minimum, the WRP must identify the materials (i.e., concrete, asphalt, wood, etc.) that will be generated by construction and development, the projected amounts, the measures/methods that will be taken to recycle, reuse, and/or reduce the amount of materials, the facilities and/or haulers that will be utilized, and the targeted recycling or reduction rate. During project construction, the project site shall have, at a minimum, two (2) bins: one for waste disposal and the other for the recycling of Construction and Demolition (C&D) materials. Additional bins are encouraged to be used for further source separation of C&D recyclable materials. Accurate record keeping (receipts) for recycling of C&D recyclable materials and solid waste disposal must be kept. Arrangements can be made through the franchise hauler.

   b) **Prior to issuance of occupancy permits,** evidence (i.e., receipts or other type of verification) to demonstrate project compliance with the approved WRP shall be presented by the project proponent to the Planning Division of the Riverside County Waste Management Department.

2. Build-out of the Project may have the potential to generate a substantial amount of waste that might adversely affect solid waste facilities. To assess waste impacts, the DEIR will need to include the projected maximum amount of waste generated at built-out of the Project, using appropriate waste generation factors for the proposed land uses. (Note: Consult the CalRecycle website to determine waste generation factors at: www.calrecycle.ca.gov/wastechar/wastegenrates)

   Furthermore, this project is subject to the State Model Ordinance, implemented 9/1/94 in accordance with AB 1327, Chapter 18, California Solid Waste Reuse and Recycling Access Act of 1991. The following are the Riverside County Waste Management Department's recommended conditions of approval for projects subject to AB 1327:

   a) **Prior to issuance of a building permit for EACH BUILDING,** the applicant shall submit three (3) copies of a Recyclables Collection and Loading Area plot plan to the Riverside County Waste Management Department for review and approval. The plot plan shall conform to ***Design Guidelines for Recyclables Collection and Loading Areas,*** provided by the Waste Management Department, and shall show the location of and access to the collection area for recyclable materials, along with its dimensions and construction detail, including elevation/façade, construction materials and signage. The plot plan shall clearly indicate how the trash and recycling enclosures shall be accessed by the hauler.

   b) **Prior to final building inspection,** the applicant shall construct the recyclables collection and loading area in compliance with the Recyclables Collection and Loading Area plot plan, as approved and stamped by the Riverside County Waste Management Department.

3. The project proponent is also encouraged to consider incorporating the following measures to help reduce the anticipated project's solid waste impacts and enhance the County's efforts to comply with the State's mandate of 50% solid waste diversion from landfilling.

   - The use of mulch and/or compost in the development and maintenance of landscaped areas within the project boundaries is recommended. Recycle green waste through either onsite composting of grass, i.e., leaving the grass clippings on the lawn, or sending separated green waste to a composting facility.

   - Consider xeriscaping and the use of drought tolerant low maintenance vegetation in all landscaped areas of the project.

   - Hazardous materials are not accepted at the Riverside County landfills. Any hazardous wastes, including paint, used during construction must be properly disposed of at a licensed facility in accordance with local, state and federal regulations.

4. The following information can also be useful in the analysis of solid waste impacts:

   a. The Lamb Canyon and Badlands landfills are the nearest landfills to the project site.

   Lamb Canyon Landfill

   The Lamb Canyon Landfill is located between the City of Beaumont and City of San Jacinto at 16411 Lamb Canyon Road (State Route 79), south of Interstate 10 and north of Highway 74. The landfill is owned and operated by Riverside County. The landfill property encompasses approximately 1,189 acres, of which 580.5 acres encompass the current landfill permit area. Of the 580.5-acre landfill permit area, approximately 144.6 acres are permitted for waste disposal. The landfill is currently permitted to receive 5,000 tons of refuse per day and had an estimated total disposal capacity of approximately 15.646 million tons.[1] As of January 1, 2013 (beginning of day), the landfill had a total remaining capacity of approximately 7.616 million tons[2]. The current landfill remaining disposal capacity is estimated to last, at a minimum, until approximately 2021.[3] During 2012, the Lamb Canyon Landfill accepted a daily average volume of 1,638 tons and a period total of approximately 504,388 tons. Landfill expansion potential exists at the Lamb Canyon Landfill site.

   Badlands Landfill:

   The Badlands Landfill is located northeast of the City of Moreno Valley at 31125 Ironwood Avenue and accessed from State Highway 60 at Theodore Avenue. The landfill is owned and operated by Riverside County. The existing landfill encompasses 1,168.3 acres, of which 150 acres are permitted for refuse disposal and another 96 acres are designated for existing and planned ancillary facilities and activities. The landfill is currently permitted to receive 4,000 tons per day and had an estimated total capacity of approximately 17.620 million tons4. As of January 1, 2013 (beginning of day), the landfill had a total remaining disposal capacity of approximately 7.930 million tons.5 The Badlands Landfill is projected to reach capacity, at the earliest time, in 2024.6 During 2012, the Badlands Landfill accepted a daily average volume of 1,757 tons and a period total of approximately 541,034 tons. Further landfill expansion potential exists at the Badlands Landfill site.

5. Since hazardous materials are not accepted at Riverside County landfills, the project proponent shall take any hazardous wastes, including paint used during construction, to facilities that are permitted to receive them, in accordance with local, state, and federal regulations. For further information, please contact the Household Hazardous Waste Collection Program at 1-800-304-2226.

---

[1] GASB 18_ 2012 – Engineering Estimate for total landfill capacity
[2] GASB 18_2012 & SiteInfo
[3] Lamb Canyon JTD, Addendum No. 13 – Updated RDSI, dated January 2009
[4] Badlands JTD, Addendum No. 5, dated June 2010.
[5] GASB_2012 & SiteInfo
[6] Badlands JTD, Addendum No. 5, dated June 2010.

6. AB 341 focuses on increased commercial waste recycling as a method to reduce greenhouse gas (GHG) emissions. The regulation requires businesses and organizations that generate four or more cubic yards of waste per week and multifamily units of 5 or more, to recycle. A business shall take at least one of the following actions in order to reuse, recycle, compost, or otherwise divert commercial solid waste from disposal:
   - Source separate recyclable and/or compostable material from solid waste and donate or self-haul the material to recycling facilities.
   - Subscribe to a recycling service with their waste hauler.
   - Provide recycling service to their tenants (if commercial or multi-family complex).
   - Demonstrate compliance with the requirements of California Code of Regulations Title 14.

   For more information, please visit:
   www.rivcowm.org/opencms/recycling/recycling_and_compost_business.html#mandatory

Thank you for the opportunity to review and comment on the Notice of Preparation. We would appreciate a copy of the EIR on CD for review and comment when available. I can be reached at (951) 486-3280 if you have any questions regarding the above comments.

Sincerely,

Ryan Ross
Principal Planner

PD#149761

Liz Westmoreland

From: Roger Thompson [1031roger@email.com]

Sent: Wednesday, March 05, 2014 1:19 PM

To: Rull, Paul

Subject: I-10 Gateway Center Industrial Buildings Cherry Valley CA

Mr. Rull:
Thank you very much for taking the time to speak with me this afternoon. Please forward my displeasure to any action taking by the Board of Supervisor for Riverside County as to the approval of the I-10 Gateway Center Industrial Complex in Cherry Valley. I work as a Commercial Real Estate broker, however this project makes no sense to approve a zoning change from residential to industrial for that area. My family home has a view of the affected area. My home will not only be affected by this project, but for the other projects that will then request zoning changes to industrial. That area should be developed for residential projects only. Thank you, Roger Thompson

Roger Thompson
1288 Santa Paula Court
Beaumont, CA. 92223
Phone: (909) 518-0343
Former: SB County Commissioner, 3rd District/ Equal Opportunity Commission / 2001-2009

Shirley

From: Shirley [77mimi@verizon.net]
Sent: Monday, April 22, 2013 1:54 PM
To: 'prull@rctlma.org.'
Subject: Riverside County Planning Department, attention Paul Rull

RECEIVED
APR 24 2013
RIVERSIDE COUNTY
ADMINISTRATION

I-10 Gateway Job Center

Dear Sirs,

I must express my concern over this project of warehouses you want to build in our small family community of Cherry Valley.

As of this time I do believe many families as well as our family have moved to this community for the rural flavor and home atmosphere that we all have here. To think that we will now be inundated with semi truck traffic in our rural community when we already have warehouse facilities by the number near the railroad and 1st St. as it is.

I for one oppose this project in our rural community as it will interfere with what is already just a small community of families that still want to raise their children with family values of having a good work ethic and concern for fellow neighbors and friends. The good values that our country was built upon and those that still long to fulfill that lifelong desire for their children as good citizens and love for God & country.

I believe that we should keep all Industrial facilities in the same area that already exists for this area and not co- mingle industrial warehouses with family residential areas.

Thank you for considering my concern and objection to this project.

Kindly,

Shirley Kramer
40675 Norman Rd.
Cherry Valley, CA 92223

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

RECEIVED
FEB 19 2014
ADMINISTRATION
RIVERSIDE COUNTY
PLANNING DEPARTMENT

February 14, 2014

Paul Rull, Project Planner
Riverside County Planning Department
4080 Lemon Street, 12th Floor
P.O. Box 1409
Riverside, CA 92502-1409

Notice of Preparation of a CEQA Document for the
I-10 Gateway Center Project

The South Coast Air Quality Management District (SCAQMD) staff appreciates the opportunity to comment on the above-mentioned document. The SCAQMD staff's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the draft CEQA document. Please send the SCAQMD a copy of the Draft EIR upon its completion. Note that copies of the Draft EIR that are submitted to the State Clearinghouse are not forwarded to the SCAQMD. Please forward a copy of the Draft EIR directly to SCAQMD at the address in our letterhead. **In addition, please send with the draft EIR all appendices or technical documents related to the air quality and greenhouse gas analyses and electronic versions of all air quality modeling and health risk assessment files. These include original emission calculation spreadsheets and modeling files (not Adobe PDF files). Without all files and supporting air quality documentation, the SCAQMD will be unable to complete its review of the air quality analysis in a timely manner. Any delays in providing all supporting air quality documentation will require additional time for review beyond the end of the comment period.**

Air Quality Analysis

The SCAQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The SCAQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the SCAQMD's Subscription Services Department by calling (909) 396-3720. More recent guidance developed since this Handbook was published is also available on SCAQMD's website here: www.aqmd.gov/ceqa/hdbk.html. SCAQMD staff also recommends that the lead agency use the CalEEMod land use emissions software. This software has recently been updated to incorporate up-to-date state and locally approved emission factors and methodologies for estimating pollutant emissions from typical land use development. CalEEMod is the only software model maintained by the California Air Pollution Control Officers Association (CAPCOA) and replaces the now outdated URBEMIS. This model is available free of charge at: www.caleemod.com.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project. Air quality impacts from both construction (including demolition, if any) and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, that is, sources that generate or attract vehicular trips should be included in the analysis.

The SCAQMD has also developed both regional and localized significance thresholds. The SCAQMD staff requests that the lead agency quantify criteria pollutant emissions and compare the results to the recommended regional significance thresholds found here: http://www.aqmd.gov/ceqa/handbook/signthres.pdf. In addition to analyzing regional air quality impacts, the SCAQMD staff recommends calculating localized air quality impacts and comparing the results to localized significance thresholds (LSTs). LST's can be used in addition to the recommended regional

significance thresholds as a second indication of air quality impacts when preparing a CEQA document. Therefore, when preparing the air quality analysis for the proposed project, it is recommended that the lead agency perform a localized analysis by either using the LSTs developed by the SCAQMD or performing dispersion modeling as necessary. Guidance for performing a localized air quality analysis can be found at: http://www.aqmd.gov/ceqa/handbook/LST/LST.html.

In the event that the proposed project generates or attracts vehicular trips, especially heavy-duty diesel-fueled vehicles, it is recommended that the lead agency perform a mobile source health risk assessment. Guidance for performing a mobile source health risk assessment ("*Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis*") can be found at: http://www.aqmd.gov/ceqa/handbook/mobile_toxic/mobile_toxic.html. An analysis of all toxic air contaminant impacts due to the use of equipment potentially generating such air pollutants should also be included.

In addition, guidance on siting incompatible land uses (such as placing homes near freeways) can be found in the California Air Resources Board's *Air Quality and Land Use Handbook: A Community Perspective*, which can be found at the following internet address: http://www.arb.ca.gov/ch/handbook.pdf. CARB's Land Use Handbook is a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process.

Mitigation Measures

In the event that the project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during project construction and operation to minimize or eliminate these impacts. Pursuant to state CEQA Guidelines §15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed. Several resources are available to assist the Lead Agency with identifying possible mitigation measures for the project, including:

- Chapter 11 of the SCAQMD *CEQA Air Quality Handbook*
- SCAQMD's CEQA web pages at: www.aqmd.gov/ceqa/handbook/mitigation/MM_intro.html
- CAPCOA's *Quantifying Greenhouse Gas Mitigation Measures* available here: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf.
- SCAQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook for controlling construction-related emissions
- Other measures to reduce air quality impacts from land use projects can be found in the SCAQMD's Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. This document can be found at the following internet address: http://www.aqmd.gov/prdas/aqguide/aqguide.html.

Data Sources

SCAQMD rules and relevant air quality reports and data are available by calling the SCAQMD's Public Information Center at (909) 396-2039. Much of the information available through the Public Information Center is also available via the SCAQMD's webpage (http://www.aqmd.gov).

The SCAQMD staff is available to work with the Lead Agency to ensure that project emissions are accurately evaluated and mitigated where feasible. If you have any questions regarding this letter, please contact me at imacmillan@aqmd.gov or call me at (909) 396-3244.

Sincerely,

Ian MacMillan
Program Supervisor, CEQA Inter-Governmental Review
Planning, Rule Development & Area Sources

RVC140107-03
Control Number

Liz Westmoreland

From: henstel@verizon.net
Sent: Wednesday, February 19, 2014 3:22 PM
To: Rull, Paul
Subject: Gateway Center Warehouse

Dear Mr. Rull:

As a resident of Solera Oak Valley Greens, I oppose the construction of the Gateway Center.

The location for this warehouse is not ideally suited for such a project. The area is heavily populated with single-family homes, the Beaumont High School and Brookside Elementary School. The onslaught of heavy 18-wheelers traveling to this location on a daily basis would create exhaust pollution affecting the air quality and high noise levels. The heavy traffic would interfere with workday business traffic, homeowner traffic, and be a danger and affect the health of the children attending these two schools. There would be long, long lines of these 18-wheelers exiting on Cherry Valley Boulevard thus slowing down the traffic which would then impact the off-ramp at Oak Valley Parkway as well. The I-10 freeway is an older freeway. The added strain to the pavement will deteriorate more quickly and will need constant repairs. More tax payer money down the drain. The I-10 is a heavily used freeway with many, many semi-trucks traveling east and west with commercial trade going to and from Arizona as well as west to Southern California's beach communities. The traffic commute especially to the eastern communities of Palm Springs, Indio, etc. could be heavily impacted and could impact on the tourist and tax revenues those cities now enjoy.

A large center such as the Gateway project would also impact the home prices of the housing developments of Tournament Hills, Sun Lakes, Solera Oak Valley Greens, and the Senior housing community of Four Seasons. It is also my understanding that there are plans for another housing development to be built on the vacant land along Brookhurst Avenue. Beaumont has become one of the loveliest and fasted growing areas for newer homes. Such a center as Gateway would be an ugly addition to this area. It's size and the projected traffic flow is just too great for this area. Huge warehouse centers belong in commercial zones such as the one where the current Sketchers Warehouse is now located. I can understand future development of smaller commercial businesses in this area of retail and small business offices that would not blight the Cherry Valley and Beaumont areas. Or even a development of townhouse dwellings.

This project should not be approved because the environmental impact on this area would be a definite negative impact. This land should be saved for another project which would be an asset to residents and businesses now located here.

Sincerely,

Stella Lucero

Liz Westmoreland

From: Steven Leach [stevenleach007@gmail.com]
Sent: Thursday, February 20, 2014 2:36 PM
To: Rull, Paul
Subject: Gateway Warehouse opposition

Mr Rull, I am a local Cherry Valley resident of 8 years this September and local business owner. I have moved my family from the community of Ontario, CA to live in a more rural, non-commercial area. I am very concerned about the prospect of a logistics warehouse being built on what I consider the most unique entry into a quiet community, Cherry Valley Boulevard. The prospect of building a large warehouse off of Cherry Valley Blvd appears to be a real threat to adjoining properties, where just across the way higher density housing was approved a few years ago but yet to be completed where the old egg ranch was dismantled. The offramp and adjoining property at the 10fwy/Tukwet/Cherry Valley Blvd offramp are Riverside County/CalTrans/City of Calimesa domains and one common undersized bridge.

Please put me on the notification list for upcoming hearings for this project.

Concerned,

Steven Leach

RECEIVED
FEB 20 2014
ADMINISTRATION
RIVERSIDE COUNTY
PLANNING DEPARTMENT

Terry and Debra Elliott
39623 Vineland St.
Cherry Valley, Calif. 92223
951-845-8816

Re: Gateway Center Warehouse

February 19, 2014

Dear Paul Rull,

We have lived in Beaumont and Cherry Valley since 1975 and have seen an unprecedented growth which has greatly affected our quality of life. We chose this area because of the ruralness of it and vowed never to live in a big city again. We moved to Cherry Valley in 2004, buying an acre with an old house, living as close to country as we could. Since then the new Beaumont High School was built right around the corner from us which has affected the traffic to an extreme. There is only one main street, that being Beaumont Ave., that takes us down into the town. During any school hours or activities the travel is slow and grueling. The school sits on the corner of Bmt. Ave. and Cherry Valley Blvd. Cherry Valley Blvd. is the only street leading to the freeway which is the way we take all the time.

Now there are plans to build the Gateway Center Warehouse on Cherry Valley Blvd. near the freeway entrance and exits. These are already overwhelmed ramps because of the new build west of the freeway and we know that adding this project will make it worse, not to mention having to deal with all the big rigs. It may be a good business to have but it is being placed in the wrong area. We do not want our countryside to be turned into a cement jungle, filled with trucks and cars.

If you, Mr. Rull, would come out here, park on the side of the road and look around you, pay attention to the country side, to the traffic (especially during school drop off and pick up hours) and to the fact that this is the only road coming off the freeway leading into the Cherry Valley area without having to go miles out of our way to find another already overused freeway entrance and exit, you would see firsthand why we, as voting constituents, stand against the building of this or any other facility like it in this portion of the Pass area.

There are other areas around where large businesses are filling in the land. Keep the industrial within that space and please don't take away that which all of us who live in this beautiful place, have chosen to spend our years enjoying.

Please keep us informed as to further hearings regarding this issue.

Thank you for listening,
Sincerely;
Terry & Debra Elliott
Terry and Debra Elliott

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Appendix B:
Air Quality and Greenhouse Gases

B.1 - AQ GHG Report

Air Quality, Health Risk, and Greenhouse Gas Analysis Report
San Gorgonio Crossing
Riverside County, California

Prepared for:
TSG-Cherry Valley L.P.
2 Park Plaza, Suite 700
Irvine, CA 92614
949.417.1396

Contact: Brian Rupp, Director Asset Management

Prepared by:
FirstCarbon Solutions
621 E. Carnegie Drive Suite 100
San Bernardino, CA 92408
909.884.2255

Contact: Frank Coyle, Director
Vince Mirabella, Senior Air Quality Scientist
Cori Wilson, Air Quality and Greenhouse Gas Scientist

Dave Mitchel, Senior Air Quality Greenhouse Gas Scientist

(Revised August 4, 2016)

January 10, 2015

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ACRONYMS AND ABBREVIATIONS

$\mu g/m^3$	micrograms per cubic meter
AAF	Age adjustment factors
AB	Assembly Bill
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
ASF	age sensitivity factor
CalEEMod	California Emissions Estimator Model
CEQA	California Environmental Quality Act
CO	carbon monoxide
CO_2	carbon dioxide
CPP	cancer potency factor
DBR	daily breathing rate
DPM	diesel particulate matter
ED	exposure duration
EF	exposure frequency
EIR	Environmental Impact Report
EJ	Environmental Justice
EMFAC	Emissions Factor Model
EPA	Environmental Protection Agency
GHG	greenhouse gas
HHD	heavy heavy-duty
HHDT	heavy-heavy duty truck
HI	hazard index
HQ	hazard quotient
HRA	health risk assessment
IPCC	United Nations Intergovernmental Panel on Climate Change
LDA	light duty automobile
LDT1	light duty truck
LDT2	light duty truck
LHDT1	light-heavy duty truck
LHDT2	light-heavy duty truck
LOS	level of service
LST	localized significance thresholds
MCY	motorcycle
MDV	medium duty vehicle

MH	motor home
MHDT	medium heavy-duty truck
$MMTCO_2e$	million metric tons of carbon dioxide equivalent
mph	miles per hour
$MTCO_2e$	metric tons of carbon dioxide equivalent
NMOG	non-methane organic gas
NO_x	nitrogen oxides
OBUS	other bus
OEHHA	State of California Office of Environmental Health Hazard Assessment
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
ppm	parts per million
ppt	parts per trillion
REL	Reference Exposure Level
ROG	reactive organic gases
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SB	Senate Bill
SBUS	school bus
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SIP	State Implementation Plan
SoCAB	South Coast Air Basin
SO_X	sulfur oxides
SRA	source receptor area
TAC	toxic air contaminant
TAH	time at home factor
UBUS	urban bus
UFP	ultrafine particles
VOC	volatile organic compounds
ZEV	zero emission vehicle

CVAR_08627

SECTION 1: EXECUTIVE SUMMARY

1.1 - Purpose and Methods of Analysis

The following air quality, health risk, and greenhouse gas analyses were prepared to evaluate whether the estimated criteria air pollutant, toxic air contaminant (TAC), and greenhouse gas (GHG) emissions generated from the San Gorgonio Crossing (project) would cause significant impacts to air resources in the project area. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000, et seq.). The methodology follows South Coast Air Quality Management District (SCAQMD) recommendations for quantification of emissions and evaluation of potential impacts to air resources.

1.2 - Project Summary

The San Gorgonio Crossing Project site totals approximately 229 gross acres, of which approximately 140 acres would be included within the developed portion of the project. The remaining 85 acres would remain as natural open space (approximately 32 percent of the project site). The project would consist of two non-refrigerated industrial buildings Building 1 would comprise approximately 737,480 square feet, and Building 2 approximately 1,123,280 square feet, for a total of approximately 1,860,760 square feet of floor area[1]. The 2 industrial buildings would also include 30,000 square feet of office space.

Exhibit 1 provides a regional viciniy map of the project location, while Exhibit 2 provides a local vicinity map of the project location. As shown in the exhibits, the project is located in the County of Riverside off Interstate 10 south of Calimesa and north of Beaumont. Exhibit 3 provides the project site plan.

The project has committed to installing solar capacity capable of providing 23 percent of the project's electrical requirements. In addition, the two buildings would be designed to be eligible for the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Silver Certification. The LEED rating system is intended to assess and promote sustainable design and operation, including reducing the energy use and water consumption, among other sustainable materials and indoor environmental quality parameters.

The project is estimated to generate 3,126 total daily vehicle trips, which would be comprised of 1,935 daily passenger car trips, and 1,191 daily truck trips. During the peak hour (afternoon peak), the project is estimated to generate 223 vehicle trips per hour, which would be comprised of 149 passenger cars and 74 trucks. The project would also require the use of support equipment such as electric forklifts and yard trucks. This support equipment would be electrically powered. Detailed project construction and operational parameters are provided in Section 5 of this report.

[1] This assessment report is based on a total building area of 1,860,760 square feet. The most current site plan calls for a reduced project size of 1,823,760 square feet. Therefore, the results contained in this report provide a conservative estimate of project impacts.

1.3 - Standard Conditions

During construction and operation, the project must comply with applicable rules and regulations. The following are rules and regulations the project may be required to comply with, either directly, or indirectly.

1.3.1 - South Coast Air Quality Management District Rules

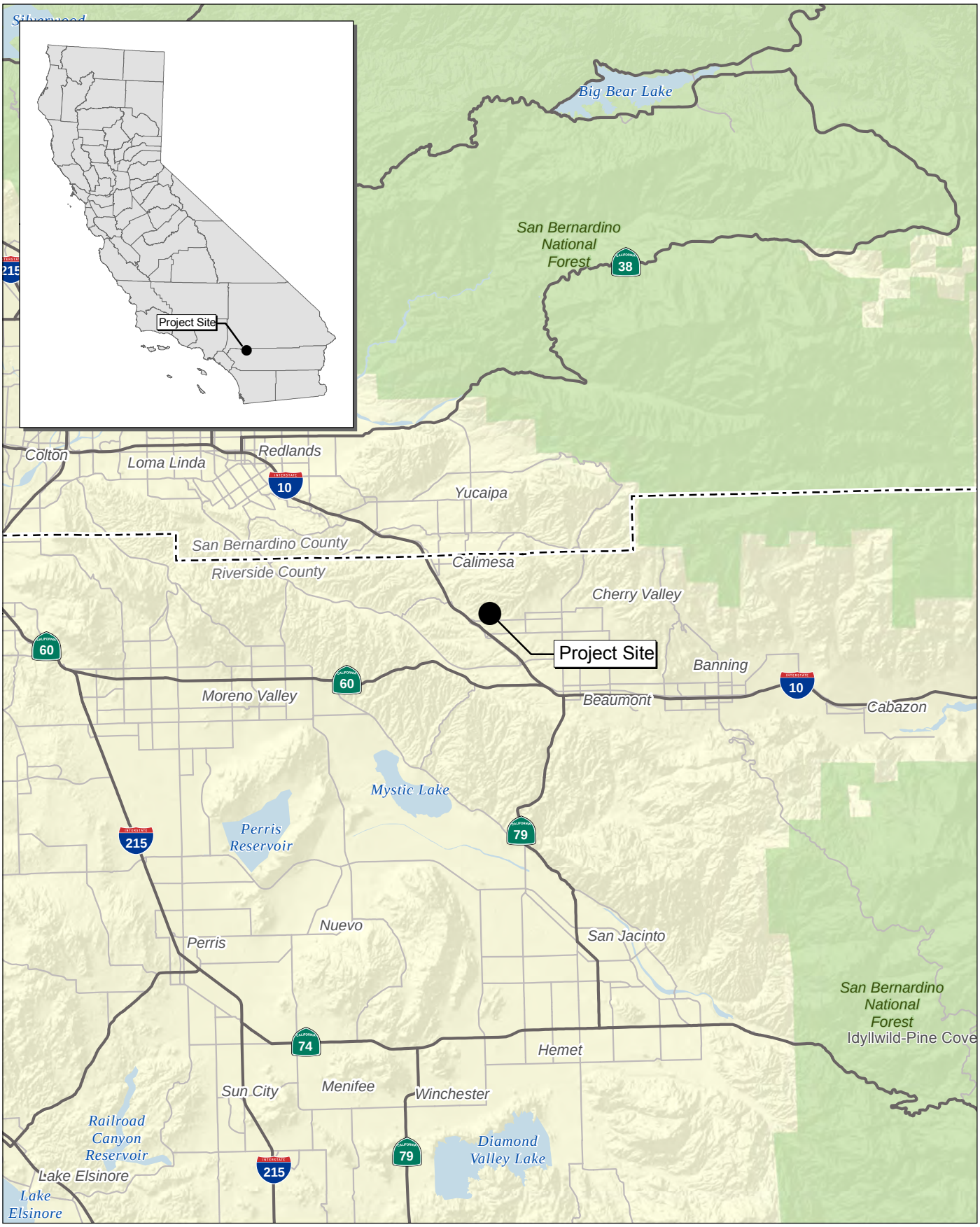
SCAQMD Rule 402 prohibits a person from discharging from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property.

SCAQMD Rule 403 governs emissions of fugitive dust during construction and operation activities. Compliance with this rule is achieved through the application of standard Best Management Practices, such as the application of water or chemical stabilizers to disturbed soils, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 mph, sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph, and establishing a permanent ground cover on finished sites.

Rule 403 requires that fugitive dust be controlled with the best available control measures, so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. In addition, SCAQMD Rule 403 requires implementation of dust suppression techniques to prevent fugitive dust from creating a nuisance offsite. Applicable dust suppression techniques from Rule 403 are summarized below. Implementation of these dust suppression techniques can reduce the fugitive dust generation (and thus the PM_{10} component). Compliance with these rules would reduce impacts on nearby sensitive receptors.

Rule 403 measures may include but are not limited to the following:

- Apply nontoxic chemical soil stabilizers according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for 10 days or more).
- Water active sites at least three times daily. (Locations where grading is to occur will be thoroughly watered prior to earthmoving.)
- Cover all trucks hauling dirt, sand, soil, or other loose materials, or maintain at least 0.6 meters (2 feet) of freeboard (vertical space between the top of the load and top of the trailer) in accordance with the requirements of California Vehicle Code section 23114.
- Reduce traffic speeds on all unpaved roads to 15 mph or less.
- Suspension of all grading activities when wind speeds (including instantaneous wind gusts) exceed 25 mph.



Source: Census 2000 Data, The CaSIL, MBA GIS 2013.

FirstCarbon® SOLUTIONS

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Exhibit 1
Regional Location Map

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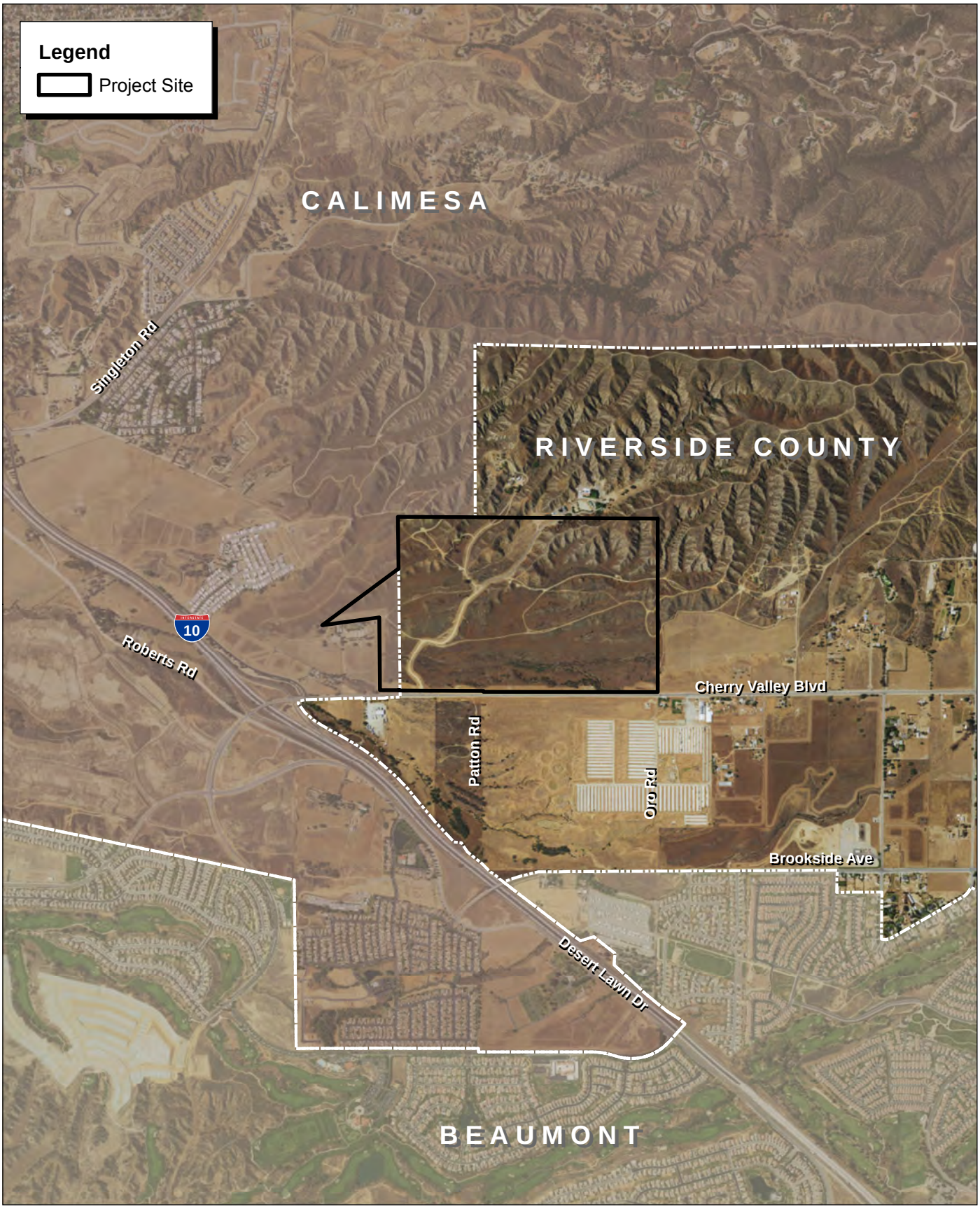

Source: ESRI Aerial Imagery.

FirstCarbon® SOLUTIONS

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Exhibit 2
Local Vicinity Map

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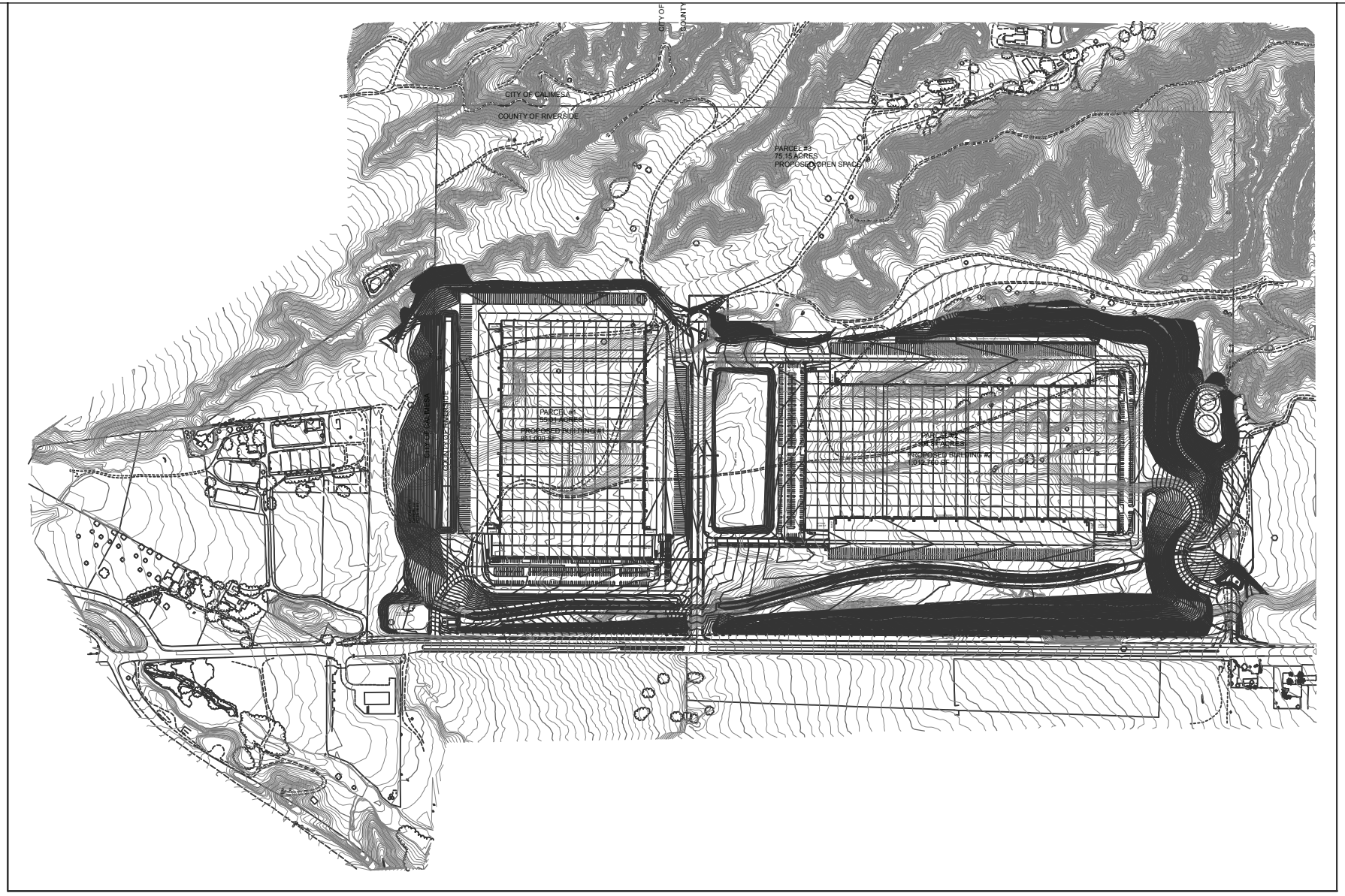

Source: Hunsaker & Associates Inc., October 2014.

FirstCarbon SOLUTIONS

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Feet

Exhibit 3
Site Plan

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- Bumper strips or similar best management practices shall be provided where vehicles enter and exit the construction site onto paved roads, or wash off trucks and any equipment leaving the site each trip.
- Replanting disturbed areas as soon as practical.
- During all construction activities, construction contractors shall sweep onsite and offsite streets if silt is carried to adjacent public thoroughfares, to reduce the amount of particulate matter on public streets. All sweepers shall be compliant with SCAQMD Rule 1186.1, Less Polluting Sweepers.

SCAQMD Rule 481 applies to all spray painting and spray coating operations and equipment. This rule would apply to the application of architectural coatings to the exterior and interior or of the building walls. The rule states that a person shall not use or operate any spray painting or spray coating equipment unless one of the following conditions is met:

(1) The spray coating equipment is operated inside a control enclosure, which is approved by the Executive Officer. Any control enclosure for which an application for permit for new construction, alteration, or change of ownership or location is submitted after the date of adoption of this rule, shall be exhausted only through filters at a design face velocity not less than 100 feet per minute, nor greater than 300 feet per minute, or through a water wash system designed to be equally effective for the purpose of air pollution control.

(2) Coatings are applied with high-volume low-pressure, electrostatic and/or airless spray equipment.

(3) An alternative method of coating application or control is used which, has effectiveness equal to or greater than the equipment specified in the rule.

SCAQMD Rule 1108 governs the sale, use, and manufacturing of asphalt and limits the volatile organic compound (VOC) content in asphalt used in the South Coast Air Basin. This rule would regulate the VOC content of asphalt used during construction. Therefore, all asphalt used during construction of the project must comply with SCAQMD Rule 1108.

SCAQMD Rule 1113 governs the sale, use, and manufacturing of architectural coating and limits the VOC content in paints and paint solvents. This rule regulates the VOC content of paints available during construction. Therefore, all paints and solvents used during construction and operation of the project must comply with SCAQMD Rule 1113.

SCAQMD Rule 1143 governs the manufacture, sale, and use of paint thinners and solvents used in thinning of coating materials, cleaning of coating application equipment and other solvent cleaning operations by limiting their VOC content. This rule regulates the VOC content of solvents used during construction. Solvents used during the construction phase must comply with this rule.

SCAQMD Rule 1186 limits the presence of fugitive dust on paved and unpaved roads and sets certification protocols and requirements for street sweepers that are under contract to provide

sweeping services to any federal, state, county, agency or special district such as water, air, sanitation, transit, or school district.

SCAQMD Rule 1303 governs the permitting of re-located or new major emission sources, requiring Best Available Control Measures and setting significance limits for PM_{10} among other pollutants.

SCAQMD Rule 1415, Reduction of Refrigerant Emissions from Stationary Air Conditioning Systems. The SCAQMD originally adopted Rule 1415 to reduce ozone-depleting refrigerant emissions from stationary, non-residential air conditioning (comfort cooling) and refrigeration systems with full charge capacity of greater than 50 pounds, and using Class I and Class II refrigerants. Recently, the SCAQMD amended Rule 1415 to include high-global warming potential refrigerants. Further, the rule now applies only to air conditioning systems with full charge capacity of greater than 50 pounds of refrigerant.

SCAQMD Rule 2202, On-Road Motor Vehicle Mitigation Options, is to provide employers with a menu of options to reduce mobile source emissions generated from employee commutes, to comply with federal and state Clean Air Act requirements, Health & Safety Code Section 40458, and Section 182(d)(1)(B) of the federal Clean Air Act. It applies to any employer who employs 250 or more employees on a full or part-time basis at a worksite for a consecutive six-month period calculated as a monthly average.

1.3.2 - State of California

Emission Reduction Funding

Carl Moyer Memorial Air Quality Standards Attainment Program. Since 1998, the Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) has provided funding to encourage the voluntary purchase of cleaner engines, equipment, and emission reduction technologies. The Carl Moyer Program plays a complementary role to California's regulatory program by funding emission reductions that are surplus, i.e., early and/or in excess of what is required by regulation. The Carl Moyer Program accelerates the turnover of old highly polluting engines, speeds the commercialization of advanced emission controls, and reduces air pollution impacts on environmental justice communities. Emission reductions achieved through the Carl Moyer Program are an important component of the California State Implementation Plan (SIP).

Regulation for Construction-Related Equipment

Airborne Toxic Control Measure for Diesel Particulate Matter from Portable Engines Rated at 50 horsepower and Greater. The purpose of this measure is to reduce diesel particulate matter (DPM) emissions from portable diesel-fueled engines with a horsepower of 50 or greater. Each fleet is required to comply with weighted reduced particulate matter emission fleet averages by compliance dates listed in 17 California Code of Regulations Section 93116. Portable equipment includes but is not limited to, air compressors, generators, concrete pumps, tub grinders, wood chippers, water pumps, drill rigs, pile drivers, rock drills, abrasive blasters, aggregate screening and crushing plants, concrete batch plants, and welders.

ARB Regulation for In-Use Off-Road Diesel Vehicles (Off-Road Regulation), Title 13, Article 4.8, Chapter 9, Section 2449 in the California Code of Regulations. On July 26, 2007, the ARB adopted a regulation to reduce particulate matter and NO_X emissions from in-use (existing) off-road heavy-duty diesel vehicles in California. All self-propelled off-road diesel vehicles over 25 horsepower (hp) used in California and most two-engine vehicles (except on-road two-engine sweepers) are subject to this regulation. This includes vehicles that are rented or leased (rental or leased fleets). Such vehicles are used in construction, mining, and industrial operations. The Off-Road regulation:

- Imposes limits on idling (no more than five consecutive minutes) and requires a written idling policy;
- Requires a disclosure when selling vehicles;
- Requires all vehicles to be reported to ARB (using the Diesel Off-Road Online Reporting System, DOORS) and labeled;
- Restricts adding older equipment into fleets; and
- Requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (i.e., exhaust retrofits).

Regulations for Heavy-Duty Vehicles/Trucks

ARB Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling adopts new section 2485 within Chapter 10, Article 1, Division 3, title 13 in the California Code of Regulations. The measure limits the idling of diesel vehicles (i.e., commercial trucks over 10,000 pounds) to reduce emissions of toxics and criteria pollutants. The driver of any vehicle subject to this section: (1) shall not idle the vehicle's primary diesel engine for greater than five minutes at any location; and (2) shall not idle a diesel-fueled auxiliary power system for more than five minutes to power a heater, air conditioner, or any ancillary equipment on the vehicle if it has a sleeper berth and the truck is located within 100 feet of a restricted area (homes and schools).

ARB Requirements to Reduce Idling Emissions from New and In-Use Trucks. Amendments were made to Title 13 in California Code of Regulations in Sections 1956.8, 2404, 2424, 2425, and 2485. The amendment states: "all new 2008 and subsequent model-year heavy-duty diesel engines shall be equipped with an engine shutdown system that automatically shuts down the engine after 300 seconds of continuous idling operation once the vehicle is stopped, the transmission is set to 'neutral' or 'park,' and the parking brake is engaged. If the parking brake is not engaged, then the engine shutdown system shall shut down the engine after 900 seconds of continuous idling operation once the vehicle is stopped and the transmission is set to 'neutral' or 'park.'" There are a few conditions where the engine shutdown system can be overridden to prevent engine damage. Any project trucks manufactured after 2008 would be consistent with this rule, which would ultimately reduce air emissions.

Statewide Truck and Bus Regulation (Regulation to Reduce Emissions of DPM, Oxides of Nitrogen and Other Criteria Pollutants, from In-Use Heavy-Duty Diesel-Fueled Vehicles, Title 13, California Code of Regulations, Section 2025). On December 12, 2008, the ARB approved this regulation to reduce

emissions from existing on-road diesel trucks and buses operating in California. This regulation applies to all on-road heavy-duty diesel-fueled vehicles with a gross vehicle weight rating greater than 14,000 pounds, agricultural yard trucks with off-road certified engines, and certain diesel fueled shuttle vehicles of any gross vehicle weight rating. Out-of-state trucks and buses that operate in California are also subject. Under the regulation, older, heavier trucks (i.e. those with pre-2000 year engines and a gross vehicle weight rating greater than 26,000 pounds), are required to have installed a particulate matter filter and must be replaced with a 2010 engine between 2015 and 2020, depending on the model year. By 2015, all heavier pre-1994 trucks must be upgraded to 2010 engines and newer trucks are thereafter required to be replaced over the next eight years. Older, more polluting trucks are required to be replaced first, while trucks that already have relatively clean 2007-2009 engines are not required to be replaced until 2023. Lighter trucks (14,001-26,000 pounds) must adhere to a similar schedule. Furthermore, nearly all trucks that are not required under the Truck and Bus Regulation to be replaced by 2015 are required to be upgraded with a particulate matter filter by that date.

During operation, the project is required to comply with Title 24 of the California Code of Regulations established by the Energy Commission regarding energy conservation standards. The project is also required to comply with the California Green Building Standards.

Title 24. California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. All buildings for which an application for a building permit is submitted on or after January 1, 2014 must follow the 2013 standards. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas emissions.

The California Green Building Standards Code (CALGreen) went into effect on January 1, 2011. It is Part 11 of the Title 24 California Code of Regulations. CALGreen is a comprehensive and uniform regulatory code for all residential, commercial and school buildings. CALGreen does not prevent a local jurisdiction from adopting a more stringent code as state law provides methods for local enhancements.

CALGreen (code section in parentheses) requires:

- **Short-term bicycle parking**. If the new project or an addition or alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5 percent of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack (5.106.4.1).
- **Long-term bicycle parking**. For buildings with over 10 tenant-occupants or alterations that add 10 or more tenant vehicular parking spaces, provide secure bicycle parking for 5 percent of tenant vehicular parking spaces being added, with a minimum of one space. Acceptable parking facilities shall be convenient from the street and shall meet the following: 1. Covered, lockable enclosures with permanently anchored racks for bicycles; 2. Lockable bicycle rooms with permanently anchored racks; or 3. Lockable, permanently anchored bicycle lockers (5.106.4.2).

- **Designated parking**. For new projects or additions or alterations that add 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles [201 spaces and over require at least 8 percent] (5.106.5.2).
- **Recycling by Occupants**. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of non-hazardous materials for recycling (5.410.1, 5.713.10).
- **Construction waste**. Recycle and/or salvage for reuse a minimum 50 percent of the nonhazardous construction and demolition waste (5.408.1). 100 percent of trees, stumps, rocks and associated vegetation and soils resulting from land clearing shall be reused or recycled (5.408.3).
- **Wastewater reduction.** Each building shall reduce by 20 percent wastewater by one of the following methods:
  - The installation of water-conserving fixtures or
  - Use of non-potable water systems (5.303.4).
- **Water use savings**. 20-percent mandatory reduction in indoor water use with voluntary goal standards for 30, 35, and 40-percent reductions (5.303.2).
- **Water meters**. Separate water meters for buildings in excess of 50,000 sq. ft., or buildings projected to consume more than 1,000 gallons per day (5.303.1).
- **Irrigation design**. Automatic irrigation system controllers installed at the time of final inspection shall be weather or soil moisture-based controllers that adjust irrigation in response to changes in plant needs, weather-based controllers (5.304.3).
- **Finish material pollution control**. Low-pollutant emitting interior finish materials such as adhesives, paints, carpet, and flooring (5.504.4).
- **Commissioning (5.410.2)**. For new buildings 10,000 square feet and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or, owner representative's project requirements.

1.4 - Summary of Analysis Results

The following is a summary of the analysis results:

- The project would exceed the SCAQMD regional emission significance threshold for ROG during construction. Mitigation Measures AQ-1 through AQ-5 are required to reduce the impact to less than significant.
- The project would not exceed the SCAQMD localized significance thresholds for NO_2, carbon monoxide (CO), and particulate matter during construction.
- The project would exceed the SCAQMD regional significance thresholds for ROG and NO_X during operation. Mitigation Measures AQ-6 through AQ-8 are applied to reduce the impact; however,

after application of mitigation, emissions of ROG and NOx would remain significant and unavoidable

- The project would not exceed the SCAQMD local significance thresholds during operation.
- The project generated construction and operational emissions would not exceed the current SCAQMD health risk significance thresholds at surrounding sensitive receptors.
- The project-generated traffic would not result in a carbon monoxide hot spot at project-impacted intersections.
- The construction and operation of the project would not exceed the SCAQMD health risk significance thresholds with the application of the new California Office of Environmental Health Hazards Assessment guidance that emphasizes the sensitivity and susceptibility of young children to exposures to carcinogenic substances
- The project's greenhouse gas emissions would be less than significant because the project will implement mitigation and project features that will achieve at least 100 points from the Riverside County Greenhouse Gas Emissions Screening Tables or achieve equivalent emission reductions from other measures approved by the County of Riverside

Impact AQ-1: The project would conflict with or obstruct implementation of the applicable air quality plan after incorporation of Mitigation Measures AQ-1 through AQ-8. **Significant and unavoidable impact.**

Impact AQ-2: The project would not violate air quality standards or contribute substantially to an existing or projected air quality violation. **Less than significant impact.**

Impact AQ-3: The project would result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors) after incorporation of Mitigation Measure AQ-1 through AQ-8. **Significant and unavoidable impact.**

Impact AQ-4: The project would not expose sensitive receptors to substantial pollutant concentrations. **Less than significant impact.**

Impact AQ-5: The project would not create objectionable odors affecting a substantial number of people. **Less than significant impact.**

Impact GHG-1: The project would generate direct and indirect greenhouse gas emissions that would result in a less than significant impact on the environment after incorporation of Mitigation Measures AQ-6, AQ-7, AQ-8, and GHG-1. **Less than significant impact.**

Impact GHG-2: The project would not conflict with any applicable plan, policy or regulation of an agency adopted to reduce the emissions of greenhouse gases after incorporation of Mitigation Measures AQ-6, AQ-7, AQ-8, and GHG-1. **Less than significant impact.**

1.5 - Mitigation Measures Applied to the Project

Construction

MM AQ-1 During mass grading and building construction, all off-road diesel-powered construction equipment greater than 50 horsepower shall meet or exceed United States Environmental Protection Agency (EPA) Tier 3 off-road emissions standards.

MM AQ-2 All Heavy-Heavy Duty Haul Trucks (HHD) accessing the project site shall use year 2007 or newer engines during all construction activities.

MM AQ-3 The following measures shall be applied to all projects during construction of the project:

a) Use paints with a volatile organic compound (VOC) content 100 grams per Liter or lower for both interior and exterior surfaces, if painted.
b) Recycle leftover paint. Take any leftover paint to a household hazardous waste center; do not mix leftover water-based and oil-based paints.
c) Keep lids closed on all paint containers when not in use to prevent VOC emissions and excessive odors.
d) For water-based paints, clean up with water only. Whenever possible, do not rinse the cleanup water down the drain or pour it directly into the ground or the storm drain. Set aside the can of clean up water and take it to the hazardous waste center (www.cleanup.org).
e) Use compliant low VOC cleaning solvents to clean paint application equipment.
f) Keep all paint and solvent laden rags in sealed containers to prevent VOC emissions.

MM AQ-4 Prior to issuance of any grading permits, the developer shall provide a traffic control plan to the County of Riverside that describes in detail the location of equipment staging areas, stockpiling/storage areas, construction parking areas, safe detours around the project construction site, as well as provide temporary traffic control (e.g., flag person) during construction-related truck hauling activities. The traffic control plan is intended to minimize traffic congestion and delays that increase idling and acceleration emissions. The applicant shall maintain one copy onsite in the construction trailer to the satisfaction of the County of Riverside

MM AQ-5 During project construction, the following measures shall be implemented to the satisfaction of the County of Riverside. Construction equipment maintenance records and data sheets of equipment design specifications (including the emission control tier of the equipment) shall be kept onsite during construction and subject to inspection by the County of Riverside.

a) Construction equipment shall be properly maintained according to manufacturer specifications.
b) All contractors shall turn off all construction equipment and delivery vehicles when not in use, or limit onsite idling for no more than 5 minutes in any one hour.

c) Onsite electrical hook ups to a power grid shall be provided for electric construction tools including saws, drills, and compressors, where feasible, to reduce the need for diesel powered electric generators.
d) The project shall demonstrate compliance with South Coast Air Quality Management District (SCAQMD) Rule 403 concerning fugitive dust and provide appropriate documentation to the County of Riverside.
e) Traffic speeds on all unpaved roads to be reduced to 15 mph or less.
f) Sweep streets at the end of the day if visible soil is carried onto adjacent public paved roads (recommend water sweepers with reclaimed water).
g) Use street sweepers that comply with SCAQMD Rules 1186 and 1186.1.

Operation

MM AQ-6 Prior to operation of each warehouse building, the applicant shall demonstrate to the County of Riverside that vehicles can access the building using paved roads and parking lots.

MM AQ-7 The project shall implement the following measures to reduce emissions from onsite heavy duty trucks within six months after operations commence:

a) Post signs informing truck drivers about the health effects of diesel particulates, the California Air Resources Board diesel idling regulations, and the importance of being a good neighbor by not parking in residential areas.
b) Post signs in all dock and delivery areas containing the following: truck drivers shall turn off engines when not in use; trucks shall not idle for more than five minutes; telephone numbers of the building facilities manager and the California Air Resources Board to report violations.
c) Tenants shall maintain records on its fleet equipment and vehicle engine maintenance to ensure that equipment and vehicles serving the warehouses within the project are in good condition, and in proper tune pursuant to manufacturer's specifications. Tenants shall maintain records on its fleet equipment and ensure that all Heavy-Heavy Duty Trucks (HHD) accessing the project site use year 2010 or newer engines. The records shall be maintained onsite and be made available for inspection by the County.
d) The facility operator will ensure that site enforcement staff in charge of keeping the daily log and monitoring for excess idling will be trained/certified in diesel health effects and technologies, for example, by requiring attendance at California Air Resources Board approved courses (such as the free, one-day Course #512).
e) Require facility operator to become a SmartWay Partner.
f) Require facility operator to incorporate incentives and requirements such that the maximum feasible number of truck trips will be carried by SmartWay 1.0 or greater carriers.
g) Prior to issuance of occupancy permits, signs shall be installed at each exit driveway, providing directional information to the County's truck route. Text on the sign shall read "To Truck Route" with a directional arrow. Truck routes shall be clearly marked pursuant to the Municipal code.

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MM AQ-8 The following measures shall be incorporated into each building to reduce motor vehicle emissions:

a) All tenants shall participate in Riverside County's Rideshare Program. The purpose of the program would be to discourage single-occupancy vehicle trips and encourage alternate modes of transportation such as carpooling, transit, walking, and biking. The program shall provide employees with assistance in using alternate modes of travel, including carpooling encouragement, ride-matching assistance, and vanpool assistance.
b) A minimum of two electric vehicle-charging stations for automobiles or light-duty trucks shall be provided at each building.
c) Each building shall provide secure bicycle storage space equivalent to two percent of the automobile parking spaces provided.
d) Each building shall provide a minimum of two shower and changing facilities within 200 yards of a building entrance.
e) Each building shall provide preferred parking for low-emitting and fuel-efficient vehicles equivalent to five percent of the required number of parking spaces.

MM GHG-1 Prior to issuance of building permits, the applicant shall provide documentation to the County of Riverside Building Department demonstrating that the project will implement the above described project features that will achieve at least 100 points from the Riverside County Greenhouse Gas Emissions Screening Tables or achieve equivalent emission reductions from other measures approved by the County of Riverside.

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SECTION 2: LOCAL AND REGIONAL ENVIRONMENTAL SETTING

2.1 - Existing Physical Setting

2.1.1 - Local Climate

The project is located in the County of Riverside and within the South Coast Air Basin (SoCAB). The San Gabriel, San Bernardino, and San Jacinto Mountains bound the SoCAB on the north and east and by the Pacific Ocean to the west. The southern limit of the SoCAB is the San Diego County line. The SoCAB consists of Orange County, Los Angeles County except for the Antelope Valley, the non-desert portion of western San Bernardino County, and the western and Coachella Valley portions of Riverside County.

The distinctive climate of the SoCAB is determined primarily by its terrain and geographical location. Regional meteorology is dominated by a persistent synoptic high-pressure area that commonly resides over the eastern Pacific Ocean. Seasonal variations in the strength and position of this pressure system cause changes in the regional weather patterns. Warm summers, mild winters, infrequent rainfall, moderate daytime onshore breezes, and moderate humidity characterize local climatic conditions. This normally mild climatic condition is occasionally interrupted by periods of hot easterly winds associated with Santa Ana winds, winter storms, and infrequent summer thunderstorms.

The annual average temperature varies little throughout much of the SoCAB, ranging from the low to middle 60s, measured in degrees Fahrenheit. With more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas where the project site is located. The climatological station closest to the project site is a National Weather Service Cooperative weather station located in Beaumont, about 3.5 miles east-northeast of the project site. Climatological data from the National Weather Service at this station spanning the period 1971-2000 indicates an annual average temperature of 63.6 Fahrenheit, with December the coldest month (mean minimum daily temperatures of 40° Fahrenheit) and July and August, the warmest months of the year (mean daily maximum temperatures of 96° Fahrenheit).

The majority of the annual rainfall in the SoCAB occurs between November and April. Summer rainfall is minimal and generally limited to scattered thunderstorms in the coastal regions and slightly heavier showers in the eastern portion of the SoCAB along the coastal side of the mountains. The climatological data from the Beaumont National Weather Service Cooperative station spanning the period 1971-2000 indicates an annual average precipitation of 19.28 inches. Eighty-five (85) percent of the annual rainfall occurs during the November to March rain season. Highest monthly average rainfall occurs during January. Year to year patterns in rainfall are unpredictable due to fluctuations in the weather. The dominant daily wind pattern across southern California is an onshore daytime breeze and an offshore nighttime breeze. The predominant wind direction in the project area is from the west-northwest during much of the year, with the exception of some of the days during the October to December period when the area experiences strong Santa Ana winds from the north and northeast directions. The Santa Ana winds are dry, sometimes hot and dusty winds in southern

California that blow westward through the canyons toward the coastal areas. The wind usually has its origin when cold air spills southward into the Great Basin, trapped between the Rockies to the east and the Sierras and Southern California coastal range to the west. This cold air mass is characterized by unusually high pressure near the land surface. Winds are driven into southern California when the pressure of this interior air mass exceeds the pressure along the California coast. Winds are often strongest in mountain passes that act as air ducts for the continental airflow. Because the air over the higher elevations of the Great Basin sinks as it flows into coastal California, it is heated adiabatically, and temperatures are often quite warm. This continental air mass is invariably dry, so the humidity in Santa Ana winds is low, often less than 25 percent relative humidity.

Exhibit 4 provides a wind rose[2] for the SCAQMD Banning air monitoring station located about eight miles southeast of the project site. As can be seen from Exhibit 4, the local dominant wind blows predominantly from the southwest quadrant. The annual average annual wind speed is about seven mph. These data are considered representative of meteorological conditions at the project site.

The SoCAB is located in an area of high air pollution potential, particularly from June through September due to the juxtaposition of the SoCAB's topography and synoptic weather influences. Even though the SoCAB has a semiarid climate, air near the surface is generally moist because of the presence of a shallow marine air layer. With very low average wind speeds and the inland mountains that act as a barrier, there is a limited capacity to disperse air pollutants horizontally. During spring and summer, air pollution created in the coastal areas and around the central Los Angeles area is transported inland until it reaches the mountains where the combination of mountains and inversion layers generally prevent further dispersion. This poor ventilation results in a gradual degradation of air quality from the coastal areas to inland areas. Air pollutants can be transported 60 miles or more inland by ocean air during the afternoons.

From early fall to winter, the transport is less pronounced because of slower average wind speed and the appearance of land breeze winds earlier in the day. During stagnant wind conditions, offshore land-breeze winds may begin by late afternoon. Pollutants remaining in the SoCAB are trapped and begin to accumulate during the night and the following morning. A low wind speed in pollutant source areas is an important indicator of air stagnation and the buildup potential for primary air pollutants. As indicated earlier, the region also experiences Santa Ana winds. If the Santa Ana winds are strong, they can surpass the sea breeze, and carry the suspended dust and pollutants out to the ocean. If they are weak, they cause stagnation, resulting in high pollution events.

Temperature inversions are another important feature that limits the vertical depth through which pollution can be mixed. During the summer, coastal areas are characterized by a sharp discontinuity between the cool marine air at the surface and the warm, sinking air aloft within the high-pressure cell over the ocean to the west. This marine/subsidence inversion allows for good local mixing, but acts like a giant lid over the SoCAB. The air remains stagnant, as the average wind speed in downtown Los Angeles becomes less than five mph. A second type of inversion forms on clear

[2] A wind rose is used to depict the frequency of wind directions and wind speed at a location. Air quality is often correlated with the dominant transport directions of the wind as depicted in the wind rose.

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winter nights when cold air off the mountains to the south sinks to the valley floor while the air aloft over the valley remains warm. This forms radiation inversions. These inversions, in conjunction with calm winds, trap pollutants such as those from automobile exhaust near their source. They lead to air pollution "hot spots" in heavily developed coastal areas of the SoCAB, but onshore breezes often push the pollutants along canyons into the inland valleys. Summers are often periods of hazy visibility and occasionally unhealthful air, while winter air quality impacts tend to be highly localized and can consist of elevated levels of nitrogen dioxide and fine particulate matter.

2.1.2 - Local Sources of Air Pollutants

The project site is currently vacant except for the private use of some unpaved roads. The only emissions expected from the current site are the occasional fugitive dust from exposed soil areas. Within a radius of about 3 miles from the project, there are numerous residential areas. Emissions from the surrounding residences include the following: space and water heating, landscape maintenance, consumer products, and motor vehicles. Two main freeways, Interstate-10 and State Route 60, with their associated traffic and emissions are within this 3-mile radius.

2.1.3 - Local Air Quality

Existing levels of ambient air quality, historical trends, and future projections of air quality in the project area are best documented from measurements made near the project site. The SCAQMD maintains an extensive air-monitoring network that measures levels of several air pollutants throughout the SoCAB. The SCAQMD has subdivided the SoCAB into 36 Source-Receptor Areas (SRA), many containing one or more monitoring stations. These SRAs are designated to provide a general representation of the local meteorology, terrain, and air quality conditions within the particular geographical area. The project is located within SRA 29 (Banning Airport). During the latest 3-year period (2011 to 2013), various air pollutants were measured within SRA 29 at the SCAQMD's Banning Airport air monitoring station. The pollutant levels from SRA 29 were used to comprise a "background" for the project location.

Table 1 summarizes the air monitoring data for SRA 29 covering the period 2012 to 2014, the most current published 3-year monitoring period. Where data for a pollutant was not measured at the Banning Airport air monitoring station, the data from the nearest air monitoring station within the SoCAB measuring that pollutant was used.

Table 1: Air Quality Monitoring Summary

Air Pollutant	Averaging Time	Item	2012	2013	2014
Ozone[a]	1 Hour	Max 1 Hour (ppm)	0.117	0.115	0.114
		Days > State Standard (0.09 ppm)	40	24	22
	8 Hour	Max 8 Hour (ppm)	0.098	0.103	0.097
		Days > State Standard (0.07 ppm)	71	66	58
		Days > National Standard (0.075 ppm)	53	41	38

Table 1 (cont.): Air Quality Monitoring Summary

Air Pollutant	Averaging Time	Item	2012	2013	2014
Carbon monoxide[b]	8 Hour	Max 8 Hour (ppm)	1.46	1.60	1.40
		Days > State Standard (9.0 ppm)	0	0	
		Days > National Standard (9 ppm)	0	0	
Nitrogen dioxide[a]	Annual	Annual Average (ppm)	ID	ID	0.008
	1 Hour	Max 1 Hour (ppm)	0.072	0.052	0.052
		Days > State Standard (0.18 ppm)	0	0	0
		98th Percentile	0.050	0.045	0.046
Inhalable coarse particles (PM_{10})[a]	Annual	Annual Average (µg/m^3)	17.7	18.9	ID
	24 hour	24 Hour (µg/m^3)	45.0	64.0	45.0
		Days > State Standard (50 µg/m^3)	0	1	0
		Days > National Standard (150 µg/m^3)	0	0	0
Fine particulate matter ($PM_{2.5}$)[b]	Annual	Annual Average (µg/m^3)	ID	16.4	16.5
	24 Hour	24 Hour (µg/m^3)	30.2	53.7	30.9
		Days > National Standard (35 µg/m^3)	0	1	0

Notes and Abbreviations:
> = exceed ppm = parts per million µg/m^3 = micrograms per cubic meter
ID = insufficient data ND = no data max = maximum
State Standard = California Ambient Air Quality Standard
National Standard = National Ambient Air Quality Standard
[a] Ozone, nitrogen dioxide (1 hour average), and PM_{10} data from Banning Airport station
[b] Carbon monoxide and $PM_{2.5}$ data from Riverside-Magnolia station, 21 miles west of the project site
Source: ARB 2014 and SCAQMD 2014

Attainment Status

The EPA and the ARB designate air basins where ambient air quality standards are exceeded as "nonattainment" areas. If standards are met, the area is designated as an "attainment" area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered "unclassified." National nonattainment areas are further designated as marginal, moderate, serious, severe, or extreme as a function of deviation from standards. Each standard has a different definition, or 'form' of what constitutes attainment, based on specific air quality statistics. For example, the Federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring values exceeds the threshold per year. In contrast, the Federal annual $PM_{2.5}$ standard is met if the three-year average of the annual average $PM_{2.5}$ concentration is less than or equal to the standard.

The current attainment designations for the basin are shown in Table 2.

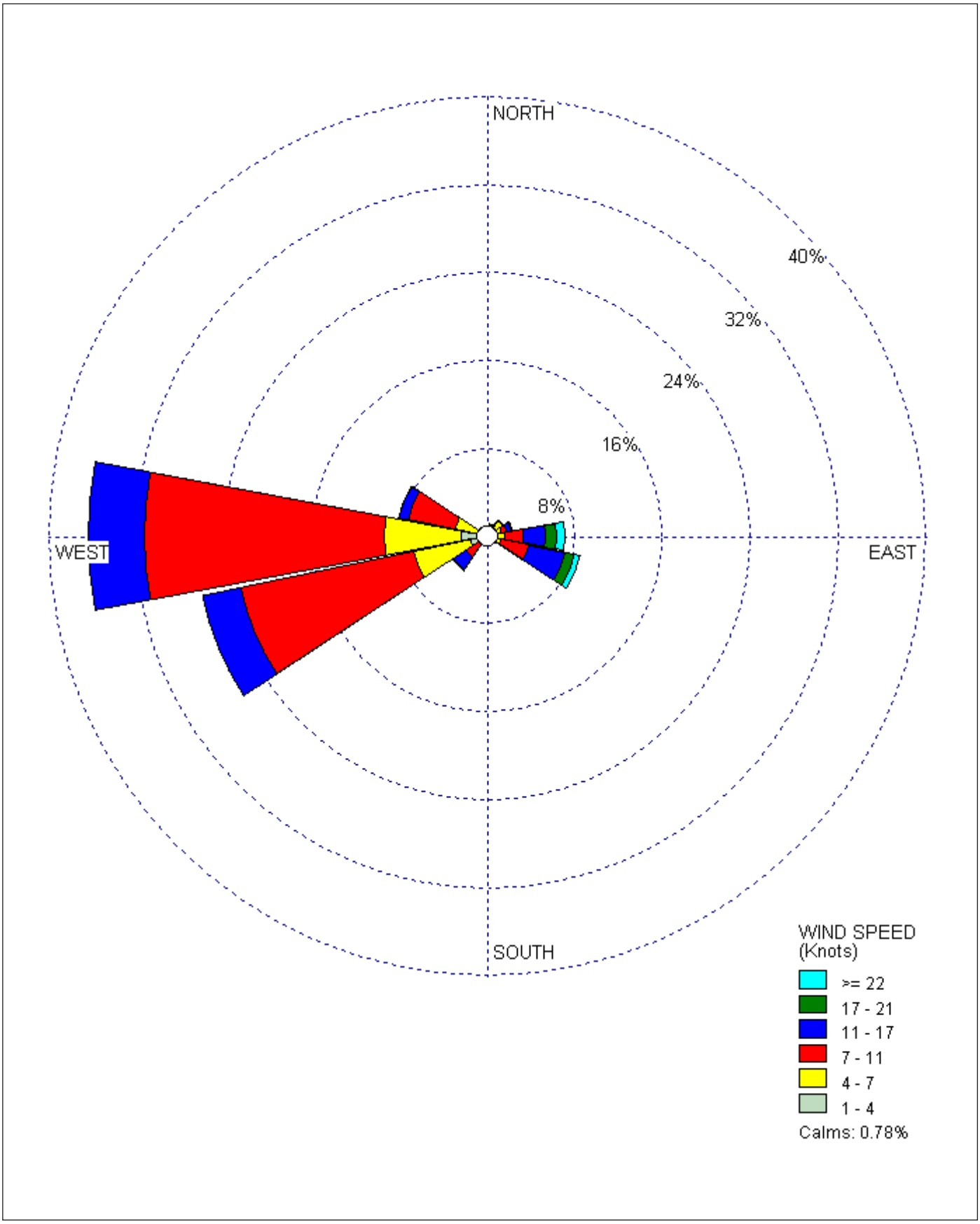

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Exhibit 4
Wind Rose for the SCAQMD Banning Airport

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Table 2: South Coast Air Basin Attainment Status

Pollutant	State Status	National Status
Ozone	Nonattainment	Nonattainment - Extreme
Carbon monoxide	Attainment	Unclassified/Attainment
Nitrogen dioxide	Attainment	Unclassified/Attainment
Sulfur dioxide	Attainment	Attainment
PM_{10}	Nonattainment	Attainment
$PM_{2.5}$	Nonattainment	Nonattainment
Lead	Attainment	Nonattainment (Los Angeles County Only)
Sulfates	Attainment	No national standard
Visibility Reducing Particles	Unclassified	No national standard
Hydrogen Sulfide	Unclassified	No national standard
Source of State status: California Air Resources Board 2014b. .		

2.1.4 - Toxic Air Contaminants

A toxic air contaminant (TAC) is defined as an air pollutant which may cause or contribute to an increase in mortality or serious illness, or which may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air. However, their high toxicity or health risk may pose a threat to public health even at very low concentrations. For those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse health impacts are not expected to occur. This contrasts with the criteria pollutants for which acceptable levels of exposure can be determined and for which the State and federal governments have set ambient air quality standards. The majority of the estimated health risk from TACs can be attributed to a relatively few compounds, the most important being PM from diesel-fueled engines and DPM. In addition to DPM, benzene and 1, 3-butadiene are also significant contributors to overall ambient public health risk in California.

Both SCAQMD and ARB have monitoring networks in the SoCAB that measure ambient concentrations of certain TACs that are associated with important health-related effects, and are present in appreciable concentrations in the SoCAB. The SCAQMD uses this information to determine health risks for a particular area. The ARB publishes annual Statewide, air basin, and location-specific summaries of the concentration levels of several TACs and their resulting cancer risks[3]. The most recent summary of TAC concentration levels and cancer risk is the ARB Air Quality Almanac for 2009 (ARB 2010a). The Almanac presents the relevant concentration and cancer risk data for the ten TACs that pose the most substantial health risk in California based on available data. These TACs are: acetaldehyde, benzene, 1, 3-butadiene, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene. DPM is not directly measured but is indirectly estimated based on fine

[3] Cancer risk is expressed as a probability of an individual out of a population of one million contracting cancer via a continuous exposure to TACs over a 70-year lifetime.

particulate matter measurements and special studies on the chemical speciation of ambient fine particulate data along with receptor modeling techniques. ARB estimates that 78 percent of the known statewide cancer risks are from the top 10 outdoor air toxics in addition to DPM.

Estimates of total cancer risk Statewide have shown a steady decline from the early 1990s when the cancer risk from DPM was estimated to be 1,696 in one million. By the year 2000, the cancer risk was estimated to be 1,005 in one million or a reduction of 41 percent. Reductions in cancer risk are expected to continue into the future as new emission controls are implemented that further reduce DPM emissions, the major component of the total airborne cancer risk. Table 3 provides this summary of TACs and health risk information from the ARB Annual Toxic Summary for the most recent three-year period, 2012-2014 for the Riverside-Rubidoux air monitoring station located approximately 23 miles west of the project site (ARB 2014a). The cancer risk attributable to the non-DPM chemicals (i.e., the 10 TACs measured by the ARB described above) have also shown significant reductions at the Rubidoux location declining from an estimated cancer risk of 429 in one million in 1990, to 121 in one million in 2011, a reduction of 72 percent.

Table 3: TAC Concentration Levels and Associated Health Risks - Riverside

TAC	Conc.[1]/Risk[2]	2012	2013	2014
Acetaldehyde	Annual Average Health Risk	1.39 7	1.27 6	1.17 6
Benzene	Annual Average Health Risk	0.32 30	0.31 28	0.29 27
1,3-Butadiene	Annual Average Health Risk	0.050 19	0.065 24	0.056 21
Carbon Tetrachloride	Annual Average Health Risk	0.084 22	0.082 22	0.097 26
Chromium, Hex	Annual Average Health Risk	0.030 5	0.58 9	0.070 6
Para-Dichlorobenzene	Annual Average Health Risk	ID ID	ID ID	ID ID
Formaldehyde	Annual Average Health Risk	3.70 27	3.57 26	3.56 26
Methylene Chloride	Annual Average Health Risk	2.41 8	1.33 5	1.49 5
Perchloroethylene	Annual Average Health Risk	0.020 0.8	0.022 0.9	0.026 1
Diesel PM	No monitoring data available			
	Total Health Risk (without DPM)	119	121	118

Notes:
[1] Concentrations for Hexavalent Chromium are expressed as ng/m^3, and concentrations for Diesel PM are expressed as µg/m^3. Concentrations for all other TACs are expressed as ppb.
[2] Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for the year. There may be other significant compounds for which monitoring and/or health risk information is not available.
ID = insufficient data
Source: ARB 2014a for the Riverside Rubidoux air monitoring station.

In addition to the measurements presented in the ARB almanac and the Annual Air Toxics Summary, the SCAQMD conducted a detailed TAC emission inventory, air sampling, and dispersion modeling study called the Multiple Air Toxics Exposure Study in the South Coast Air SoCAB (MATES-II) (SCAQMD 2000), (MATES-III) (SCAQMD 2008a), and MATES-IV (SCAQMD 2014). The MATES Studies provided information on the importance of various TACs in terms of their relative health risks as well as their spatial distribution across the SoCAB. The MATES-IV information can be used to characterize the "background" health risks from both regional and local TAC emission sources based on the available toxics emission inventory for the year 2012. The MATES-IV program results indicate that the cancer risks in the area where the project site is located are estimated to be 158 in one million, of which the DPM contributes approximately 68 percent of the total cancer risk. This cancer risk level is approximately 54 percent lower that the cancer risks estimated for the project site based on the MATES-III study that used the toxics emission inventory for the year 2005. Overall, the MATES IV study found that the population weighted cancer risk in the entire SoCAB was estimated to be 367 in one million. The MATES-IV population weighted cancer risk level represents a decrease of 57 percent from basin-wide the population weighted cancer risk of 853 in a million that was estimated in the MATES-III study. This sharp decline is attributable largely to emission reduction programs implemented by the SCAQMD, ARB, and USEPA particularly as regards DPM.

Some studies indicate that DPM poses the greatest health risk among the TACs listed above. A 10-year research program (ARB 1998) demonstrated that DPM from diesel-fueled engines is a human carcinogen and that chronic (long-term) inhalation exposure to DPM poses a chronic health risk. In addition to increasing the risk of lung cancer, exposure to diesel exhaust can have other health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. Diesel exhaust is a major source of ultrafine particulate pollution as well, and studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems.

Ultrafine particles are particulate matter that exists in the ambient air and are less than 0.1 micrometers (µm or microns) in diameter. Ultrafine particles (UFP or $PM_{0.1}$) are included in the group called $PM_{2.5}$, particulate matter less than 2.5 micrometers in diameter. The SCAQMD contains a detailed chapter on ultrafine particles in its 2012 Air Quality Management Plan (AQMP). The AQMP summarizes current health effect research. The potential health effects from ultrafine particle exposure are similar as with $PM_{2.5}$ and PM_{10}: adverse cardio-respiratory responses included elevated blood pressure, mild inflammatory and prothrombotic (obstruction of circulation) responses.

In its revisions to the national ambient air quality standards for particulate matter in January 2013, the United States Environmental Protection Agency (EPA) states that, "In considering both the currently available health effects evidence and the air quality data, the Policy Assessment concluded that this information was still too limited to provide support for consideration of a distinct PM standard for ultrafine particles."

The EPA indicates that evidence and research regarding health effects from short-term and long-term exposure to ultrafine particles are still too limited to establish a separate standard. In addition, the

EPA reports that the studies that do exist have reported inconsistent and mixed results. The following is an excerpt from the Federal Register in this regard:

> New evidence, primarily from controlled human exposure and toxicological studies, expands our understanding of cardiovascular and respiratory effects related to short-term ultrafine particle exposures. However, the Policy Assessment concluded that this evidence was still very limited and largely focused on exposure to diesel exhaust, for which the Integrated Science Assessment concluded it was unclear whether the effects observed are due to ultrafine particles, larger particles within the PM2.5 mixture, or the gaseous components of diesel exhaust. In addition, the Integrated Science Assessment noted uncertainties associated with the controlled human exposure studies using concentrated ambient particle systems, which have been shown to modify the composition of ultrafine particles.
>
> The Policy Assessment recognized that there are relatively few epidemiological studies that have examined potential cardiovascular and respiratory effects associated with short-term exposures to ultrafine particles. These studies have reported inconsistent and mixed results.
>
> Collectively, in considering the body of scientific evidence available in this review, the Integrated Science Assessment concluded that the currently available evidence was suggestive of a causal relationship between short-term exposures to ultrafine particles and cardiovascular and respiratory effects. Furthermore, the Integrated Science Assessment concluded that evidence was inadequate to infer a causal relationship between short-term exposure to ultrafine particles and mortality as well as long-term exposure to ultrafine particles and all outcomes evaluated. (EPA 2013)

The Integrated Science Assessment for Particulate Matter (EPA 2009a) summarized that evidence is inadequate to determine a causal relationship between short-term exposures of ultrafine particles to mortality or central nervous system effects, but that the evidence is suggestive of short-term exposures causing cardiovascular and respiratory effects. The Assessment also concluded that there is inadequate evidence linking long-term exposure of ultrafine particles to health effects, including respiratory, developmental, cancer, and mortality. Overall, epidemiological studies of atmospheric PM suggest that cardiovascular effects are associated with smaller particles, but there are few reports that make a clear link between ultrafine particulate exposures and increased mortality.

In its Quantitative Health Risk Assessment for Particulate Matter, the EPA did not assess ultrafine particles, stating “that there was insufficient data to support a quantitative risk assessment for other size fractions (e.g., ultrafine particles) (EPA 2010a).

The availability of measurements of ultrafine particles to support health studies is also limited as excerpted from the EPA discussion on the national ambient air quality standards for particulate matter (EPA 2013):

> With respect to our understanding of ambient ultrafine particle concentrations, at present, there is no national network of ultrafine particle samplers; thus, only episodic

> and/or site-specific data sets exist. Therefore, the Policy Assessment recognized a national characterization of concentrations, temporal and spatial patterns, and trends was not possible at this time, and the availability of ambient ultrafine measurements to support health studies was extremely limited. In general, measurements of ultrafine particles are highly dependent on monitor location and, therefore, more subject to exposure error than accumulation mode particles. Furthermore, the number of ultrafine particles generally decreases sharply downwind from sources, as ultrafine particles may grow into the accumulation mode by coagulation or condensation. Limited studies of ambient ultrafine particle measurements have suggested that these particles exhibit a high degree of spatial and temporal heterogeneity driven primarily by differences in nearby source characteristics. Internal combustion engines and, therefore, roadways are a notable source of ultrafine particles, so concentrations of these particles near roadways are generally expected to be elevated. Concentrations of ultrafine particles have been reported to drop off much more quickly with distance from roadways than fine particles. (EPA 2013).

In addition, it was hypothesized that chemical composition of PM may be a better predictor of health effects than particle size (EPA 2013):

> In addressing the issue of particle composition, the Integrated Science Assessment concluded that, ''[f]rom a mechanistic perspective, it is highly plausible that the chemical composition of PM would be a better predictor of health effects than particle size.'' Heterogeneity of ambient concentrations of $PM_{2.5}$ constituents (e.g., elemental carbon, organic carbon, sulfates, nitrates) observed in different geographical regions as well as regional heterogeneity in $PM_{2.5}$-related health effects reported in a number of epidemiological studies are consistent with this hypothesis. (EPA 2013).

However, some researchers have concluded that the risk from DPM is over exaggerated (Enstrom 2008). Moreover, the current methodological protocols required by SCAQMD and ARB when studying the health risk posed by DPM assume the following: (1) 24-hour constant exposure; (2) 350 days a year; (3) for a continuous period lasting 70 years. For example, most people are indoors for 18-20 hours a day (at their place of employment or home) and most people do not live in the same location for a 70-year period. Several studies have documented that less than 10 percent of households remain at the same location for more than 30 years (American Community Survey 2009, Israel and Nelson 1992, Johnson and Capel 1992, and USEPA 2011). Thus, the health risk assessments (HRA) prepared pursuant to these protocols overestimate the risk of cancer associated with DPM exposure.

DPM differs from other TACs in that it is not a single substance but a complex mixture of hundreds of substances. Although DPM is emitted by diesel-fueled, internal combustion engines, the composition of the emissions varies, depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. Unlike the other TACs, however, no ambient monitoring data are available for DPM because no routine measurement method currently exists. The ARB has made preliminary concentration estimates based on a DPM exposure method. This method uses the ARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of DPM. Within the

SoCAB, in addition to DPM, there are emissions of benzene, formaldehyde, acetaldehyde, naphthalene, ethylbenzene, acrolein, toluene, hexane, propylene, and xylene from a variety of sources located within the SoCAB that contribute to health.

2.2 - Regulatory Setting

Air pollutants are regulated at the national, state, and air basin level; each agency has a different level of regulatory responsibility. The United States EPA regulates at the national level, the ARB regulates at the state level, and the SCAQMD regulates at the air basin level.

2.2.1 - National and State

The EPA is responsible for national and interstate air pollution issues and policies. The EPA sets national vehicle and stationary source emission standards, oversees approval of all SIPs, provides research and guidance for air pollution programs, and sets National Ambient Air Quality Standards, also known as federal standards. There are federal standards for six common air pollutants, called criteria air pollutants, which were identified from provisions of the Clean Air Act of 1970. The criteria pollutants are:

- Ozone
- Nitrogen dioxide
- Lead
- Particulate matter (PM_{10} and $PM_{2.5}$)
- Carbon monoxide (CO)
- Sulfur dioxide

The federal standards were set to protect public health, including that of sensitive individuals; thus, the standards continue to change as more medical research is available regarding the health effects of the criteria pollutants. Primary federal standards are the levels of air quality necessary, with an adequate margin of safety, to protect the public health.

A SIP is a document prepared by each state describing existing air quality conditions and measures that will be followed to attain and maintain federal standards. The SIP for the State of California is administered by the ARB, which has overall responsibility for statewide air quality maintenance and air pollution prevention. California's SIP incorporates individual federal attainment plans for regional air districts. Each air district prepares their own federal attainment plan, which is then sent to ARB to be approved and incorporated into the California SIP. Federal attainment plans include the technical foundation for understanding air quality (e.g., emission inventories and air quality monitoring), control measures and strategies, and enforcement mechanisms.

The ARB also administers California Ambient Air Quality Standards (state standards) for the 10 air pollutants designated in the California Clean Air Act. The 10 state air pollutants are the six federal standards listed above as well visibility-reducing particulates, hydrogen sulfide, sulfates, and vinyl chloride.

The federal and State ambient air quality standards, relevant effects, properties, and sources of the pollutants are summarized in Table 4.

Table 4: Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Ozone	1 Hour	0.09 ppm	—	Irritate respiratory system; reduce lung function; breathing pattern changes; reduction of breathing capacity; inflame and damage cells that line the lungs; make lungs more susceptible to infection; aggravate asthma; aggravate other chronic lung diseases; cause permanent lung damage; some immunological changes; increased mortality risk; vegetation and property damage.	Ozone is a photochemical pollutant as it is not emitted directly into the atmosphere, but is formed by a complex series of chemical reactions between volatile organic compounds (VOC), NO_X, and sunlight. Ozone is a regional pollutant that is generated over a large area and is transported and spread by the wind.	Ozone is a secondary pollutant; thus, it is not emitted directly into the lower level of the atmosphere. The primary sources of ozone precursors (VOC and NO_X) are mobile sources (on-road and off-road vehicle exhaust).
	8 Hour	0.070 ppm	0.075 ppm			
Carbon monoxide (CO)	1 Hour	20 ppm	35 ppm	Ranges depending on exposure: slight headaches; nausea; aggravation of angina pectoris (chest pain) and other aspects of coronary heart disease; decreased exercise tolerance in persons with peripheral vascular disease and lung disease; impairment of central nervous system functions; possible increased risk to fetuses; death.	CO is a colorless, odorless, toxic gas. CO is somewhat soluble in water; therefore, rainfall and fog can suppress CO conditions. CO enters the body through the lungs, dissolves in the blood, replaces oxygen as an attachment to hemoglobin, and reduces available oxygen in the blood.	CO is produced by incomplete combustion of carbon-containing fuels (e.g., gasoline, diesel fuel, and biomass). Sources include motor vehicle exhaust, industrial processes (metals processing and chemical manufacturing), residential wood burning, and natural sources.
	8 Hour	9.0 ppm	9 ppm			
Nitrogen dioxide [b] (NO_2)	1 Hour	0.18 ppm	0.100 ppm	Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; contribution to atmospheric discoloration; increased visits to hospital for respiratory illnesses.	During combustion of fossil fuels, oxygen reacts with nitrogen to produce nitrogen oxides - NO_X (NO, NO_2, NO_3, N_2O, N_2O_3, N_2O_4, and N_2O_5). NO_X is a precursor to ozone, PM_{10}, and $PM_{2.5}$ formation. NO_X can react with compounds to form nitric acid and related small particles and result in PM related health effects.	NO_X is produced in motor vehicle internal combustion engines and fossil fuel-fired electric utility and industrial boilers. Nitrogen dioxide forms quickly from NOx emissions. NO_2 concentrations near major roads can be 30 to 100 percent higher than those at monitoring stations.
	Annual	0.030 ppm	0.053 ppm			

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Table 4 (cont.): Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Sulfur dioxide[c] (SO_2)	1 Hour	0.25 ppm	0.075 ppm	Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma. Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient sulfur dioxide levels. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.	Sulfur dioxide is a colorless, pungent gas. At levels greater than 0.5 ppm, the gas has a strong odor, similar to rotten eggs. Sulfur oxides (SO_X) include sulfur dioxide and sulfur trioxide. Sulfuric acid is formed from sulfur dioxide, which can lead to acid deposition and can harm natural resources and materials. Although sulfur dioxide concentrations have been reduced to levels well below state and federal standards, further reductions are desirable because sulfur dioxide is a precursor to sulfate and PM_{10}.	Human caused sources include fossil-fuel combustion, mineral ore processing, and chemical manufacturing. Volcanic emissions are a natural source of sulfur dioxide. The gas can also be produced in the air by dimethylsulfide and hydrogen sulfide. Sulfur dioxide is removed from the air by dissolution in water, chemical reactions, and transfer to soils and ice caps. The sulfur dioxide levels in the State are well below the maximum standards.
	3 Hour	—	0.5 ppm			
	24 Hour	0.04 ppm	0.14 (for certain areas)			
	Annual	—	0.030 ppm (for certain areas)			
Particulate matter (PM_{10})	24 hour	50 µg/m^3	150 µg/m^3	• Short-term exposure (hours/days): irritation of the eyes, nose, throat; coughing; phlegm; chest tightness; shortness of breath; aggravate existing lung disease, causing asthma attacks and acute bronchitis; those with heart disease can suffer heart attacks and arrhythmias. • Long-term exposure: reduced lung function; chronic bronchitis; changes in lung morphology; death.	Suspended particulate matter is a mixture of small particles that consist of dry solid fragments, droplets of water, or solid cores with liquid coatings. The particles vary in shape, size, and composition. PM_{10} refers to particulate matter that is between 2.5 and 10 microns in diameter, (1 micron is one-millionth of a meter). $PM_{2.5}$ refers to particulate matter that is 2.5 microns or less in diameter, about one-thirtieth the size of the average human hair.	Stationary sources include fuel or wood combustion for electrical utilities, residential space heating, and industrial processes; construction and demolition; metals, minerals, and petrochemicals; wood products processing; mills and elevators used in agriculture; erosion from tilled lands; waste disposal, and recycling. Mobile or transportation related sources are from vehicle exhaust and road dust. Secondary particles form from reactions in the atmosphere.
	Mean	20 µg/m^3	—			
Particulate matter ($PM_{2.5}$)	24 Hour	—	35 µg/m^3			
	Annual	12 µg/m^3	12 µg/m^3			
Visibility reducing particles	8 Hour	See note below [d]				

Table 4 (cont.): Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Sulfates	24 Hour	25 µg/m^3	—	(a) Decrease in ventilatory function; (b) aggravation of asthmatic symptoms; (c) aggravation of cardio-pulmonary disease; (d) vegetation damage; (e) degradation of visibility; (f) property damage.	The sulfate ion is a polyatomic anion with the empirical formula SO_4^{2-}. Sulfates occur in combination with metal and/or hydrogen ions. Many sulfates are soluble in water.	Sulfates are particulates formed through the photochemical oxidation of sulfur dioxide. In California, the main source of sulfur compounds is combustion of gasoline and diesel fuel.
Lead [e]	30-day	1.5 µg/m^3	—	Lead accumulates in bones, soft tissue, and blood and can affect the kidneys, liver, and nervous system. It can cause impairment of blood formation and nerve conduction, behavior disorders, mental retardation, neurological impairment, learning deficiencies, and low IQs.	Lead is a solid heavy metal that can exist in air pollution as an aerosol particle component. Leaded gasoline was used in motor vehicles until around 1970. Lead concentrations have not exceeded state or federal standards at any monitoring station since 1982.	Lead ore crushing, lead-ore smelting, and battery manufacturing are currently the largest sources of lead in the atmosphere in the United States. Other sources include dust from soils contaminated with lead-based paint, solid waste disposal, and crustal physical weathering.
	Quarter	—	1.5 µg/m^3			
	Rolling 3-month average	—	0.15 µg/m^3			
Vinyl chloride[e]	24 Hour	0.01 ppm	—	Short-term exposure to high levels of vinyl chloride in the air causes central nervous system effects, such as dizziness, drowsiness, and headaches. Epidemiological studies of occupationally exposed workers have linked vinyl chloride exposure to development of a rare cancer, liver angiosarcoma, and have suggested a relationship between exposure and lung and brain cancers.	Vinyl chloride, or chloroethene, is a chlorinated hydrocarbon and a colorless gas with a mild, sweet odor. In 1990, ARB identified vinyl chloride as a toxic air contaminant and estimated a cancer unit risk factor.	Most vinyl chloride is used to make polyvinyl chloride plastic and vinyl products, including pipes, wire and cable coatings, and packaging materials. It can be formed when plastics containing these substances are left to decompose in solid waste landfills. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites.
Hydrogen sulfide	1 Hour	0.03 ppm	—	High levels of hydrogen sulfide can cause immediate respiratory arrest. It can irritate the eyes and respiratory tract and cause headache, nausea, vomiting, and cough. Long exposure can cause pulmonary edema.	Hydrogen sulfide (H_2S) is a flammable, colorless, poisonous gas that smells like rotten eggs.	Manure, storage tanks, ponds, anaerobic lagoons, and land application sites are the primary sources of hydrogen sulfide. Anthropogenic sources include the combustion of sulfur containing fuels (oil and coal).

Table 4 (cont.): Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Volatile organic compounds (VOC)		There are no State or federal standards for VOCs because they are not classified as criteria pollutants.		Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations because of interference with oxygen uptake. In general, concentrations of VOCs are suspected to cause eye, nose, and throat irritation; headaches; loss of coordination; nausea; and damage to the liver, the kidneys, and the central nervous system. Many VOCs have been classified as toxic air contaminants.	Reactive organic gases (ROGs), or VOCs, are defined as any compound of carbon—excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate—that participates in atmospheric photochemical reactions. Although there are slight differences in the definition of ROGs and VOCs, the two terms are often used interchangeably.	Indoor sources of VOCs include paints, solvents, aerosol sprays, cleansers, tobacco smoke, etc. Outdoor sources of VOCs are from combustion and fuel evaporation. A reduction in VOC emissions reduces certain chemical reactions that contribute to the formulation of ozone. VOCs are transformed into organic aerosols in the atmosphere, which contribute to higher PM_{10} and lower visibility.
Diesel particulate matter (diesel PM)		There are no ambient air quality standards for diesel PM.		Some short-term (acute) effects of diesel PM exposure include eye, nose, throat, and lung irritation, coughs, headaches, light-headedness, and nausea. Studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems. Human studies on the carcinogenicity of diesel PM demonstrate an increased risk of lung cancer, although the increased risk cannot be clearly attributed to diesel exhaust exposure.	Diesel PM is a source of $PM_{2.5}$ - diesel particles are typically 2.5 microns and smaller. Diesel exhaust is a complex mixture of thousands of particles and gases that is produced when an engine burns diesel fuel. Organic compounds account for 80 percent of the total particulate matter mass, which consists of compounds such as hydrocarbons and their derivatives, and polycyclic aromatic hydrocarbons and their derivatives. Fifteen polycyclic aromatic hydrocarbons are confirmed carcinogens, a number of which are found in diesel exhaust.	Diesel exhaust is a major source of ambient particulate matter pollution in urban environments. Typically, the main source of diesel PM is from combustion of diesel fuel in diesel-powered engines. Such engines are in on-road vehicles such as diesel trucks, off-road construction vehicles, diesel electrical generators, and various pieces of stationary construction equipment.

Table 4 (cont.): Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources

Notes:
ppm = parts per million (concentration) µg/m^3 = micrograms per cubic meter Annual = Annual Arithmetic Mean 30-day = 30-day average Quarter = Calendar quarter

[a] Federal standard refers to the primary national ambient air quality standard, or the levels of air quality necessary, with an adequate margin of safety to protect the public health. All standards listed are primary standards except for 3 Hour SO_2, which is a secondary standard. A secondary standard is the level of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[b] To attain the 1-hour nitrogen dioxide national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 parts per billion (0.100 ppm).

[c] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

[d] Visibility reducing particles: In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

[e] The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Source of effects, properties, and sources: SCAQMD 2007a; California Environmental Protection Agency 2002; ARB 2013; U.S. EPA 2003, 2009b, 2009c, 2010b, 2011a, and 2012; National Toxicology Program 2011a and 2011b.

Several pollutants listed in Table 4 are not addressed in this analysis. Analysis of lead is not included in this report because the project is not anticipated to emit lead. Visibility-reducing particles are not explicitly addressed in this analysis because particulate matter is addressed. The project is not expected to generate or be exposed to vinyl chloride because proposed project uses do not utilize the chemical processes that create this pollutant, and there are no such uses in the project vicinity. The project is not expected to cause exposure to hydrogen sulfide because it would not generate hydrogen sulfide in any substantial quantity.

Asbestos

Asbestos is listed as a TAC by ARB and as a Hazardous Air Pollutant by the EPA. Asbestos occurs naturally in surface deposits of several types of rock formations. Asbestos most commonly occurs in ultramafic rock that has undergone partial or complete alteration to serpentine rock (serpentinite) and often contains chrysotile asbestos. In addition, another form of asbestos, tremolite can be found associated with ultramafic rock, particularly near faults. Crushing or breaking these rocks, through construction or other means, can release asbestiform fibers into the air. Asbestos emissions can result from the sale or use of asbestos-containing materials, road surfacing with such materials, grading activities, and surface mining. The risk of disease is dependent upon the intensity and duration of exposure. When inhaled, asbestos fibers may remain in the lungs and with time may be linked to such diseases as asbestosis, lung cancer, and mesothelioma.

There are no natural occurrences of asbestos in the project area (USGS 2011).

2.2.2 - South Coast Air Quality Management District

The agency for air pollution control for the SoCAB is the SCAQMD. The SCAQMD is responsible for controlling emissions primarily from stationary sources. The SCAQMD maintains air quality monitoring stations throughout the SoCAB. The SCAQMD is also responsible for developing, updating, and implementing the Air Quality Management Plan (AQMP) for the SoCAB, in coordination with the Southern California Association of Governments (SCAG). The SCAQMD also has roles under CEQA.

Air Quality Management Plans

An AQMP is a plan prepared and implemented by an air pollution district for a county or region designated as nonattainment of the federal and/or California ambient air quality standards. The term nonattainment area is used to refer to an air basin where one or more ambient air quality standards are exceeded.

2003 AQMP

One of the purposes of the 2003 AQMP is to lead the SoCAB and portions of the Salton Sea Air Basin under SCAQMD jurisdiction into compliance with the 1-hour ozone and PM_{10} federal standards (SCAQMD 2003). Another purpose of the 2003 AQMP is to lead the SoCAB into compliance of the federal 8-hour ozone and $PM_{2.5}$ standards.

The 2003 AQMP also replaced the 1997 attainment demonstration for the federal CO standard, provided a basis for a maintenance plan for CO for the future, and updated the maintenance plan for the federal nitrogen dioxide standard that the SoCAB has met since 1992 (2003 AQMP, page 1-1).

The 2003 AQMP also incorporated new scientific data in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The 2003 AQMP utilized complex modeling to show that with the control measures, the SoCAB would be in compliance with the federal and state standards for all pollutants by 2010, except for the state ozone and PM_{10} standards and the state ozone and PM_{10} standard after 2010 or by the earliest practicable date, as mandated by the California Health and Safety Code Section 40462. The ARB approved the 2003 AQMP on August 1, 2003. The EPA's adequacy finding on the emissions budgets for conformity determination in the SoCAB was published in the Federal Register (69 FR 15325-15326).

2007 AQMP

The 2007 AQMP was adopted by the SCAQMD on June 1, 2007 (SCAQMD 2007a). On July 13, 2007, the SCAQMD Board adopted the 2007 Final AQMP Transportation Conformity Budgets and directed the Executive Officer to forward them to ARB for its approval and subsequent submittal to the EPA. On September 27, 2007, ARB adopted the State Strategy for the 2007 SIP and the 2007 AQMP as part of the SIP. On January 15, 2009, the EPA's regional administrator signed a final rule to approve in part and disapprove in part the SCAQMD 2003 1-hour ozone plan, and the nitrogen dioxide maintenance plan. The parts of the plan that were approved strengthen the SIP. The Clean Air Act does not require the disapproved portions of the plan, and the disapprovals do not start sanctions clocks.

The 2007 AQMP outlines a detailed strategy for meeting the federal health-based standards for $PM_{2.5}$ by 2015, and 8-hour ozone by 2024 while accounting for and accommodating future expected growth. The 2007 AQMP incorporates significant new emissions inventories, ambient measurements, scientific data, control strategies, and air quality modeling. Most of the reductions will be from mobile sources, which are currently responsible for about 75 percent of all smog and particulate forming emissions. The 2007 AQMP includes 37 control measures proposed for adoption by the SCAQMD, including measures to reduce emissions from new commercial and residential developments, more reductions from industrial facilities, and reductions from wood burning fireplaces and restaurant charbroilers.

2012 AQMP

The 2012 AQMP was adopted December 7, 2012 (SCAQMD 2012a) and approved by the CARB on January 25, 2013. The purpose of the 2012 AQMP for the SoCAB is to set forth a comprehensive and integrated program that will lead the SoCAB into compliance with the federal 24-hour $PM_{2.5}$ air quality standard, and to provide an update of the SoCAB's projections in meeting the federal 8-hour ozone standards. On February 13, 2013, the AQMP was submitted to the U.S. EPA as the SIP for the federal 24-hour $PM_{2.5}$ standard and ozone standard. In addition, the AQMP will update specific elements of the previously approved 8-hour ozone SIP: 1) an updated emissions inventory and, 2) new control measures and commitments for emissions reductions to help fulfill the Section 182(e)(5) portion of the 8-hour

ozone SIP. The 2012 AQMP states, "The remarkable historical improvement in air quality since the 1970's is the direct result of Southern California's comprehensive, multiyear strategy of reducing air pollution from all sources as outlined in its AQMPs" (SCAQMD 2012, page ES-1).

The 2012 AQMP proposes Basin-wide $PM_{2.5}$ measures that will be implemented by the 2014 attainment date, episodic control measures to achieve air quality improvements (would only apply during high $PM_{2.5}$ days), Section 182(e)(5) implementation measures (to maintain progress towards meeting the 2023 8-hour ozone national standard), and transportation control measures. Most of the control measures focus on incentives, outreach, and education.

Proposed $PM_{2.5}$ reduction measures in the 2012 AQMP include the following:

- Further NOx reductions from RECLAIM
- Further reductions from residential wood burning devices
- Further reductions from open burning
- Emission reductions from under-fired charbroilers
- Further ammonia reductions from livestock waste
- Backstop measures for indirect sources of emissions from ports and port-related sources
- Further criteria pollutant reductions from education, outreach and incentives

There are multiple VOC and NOx reductions in the 2012 AQMP to attempt to reduce ozone formation, including further VOC reductions from architectural coatings, miscellaneous coatings, adhesives, solvents, lubricants, mold release products, and consumer products.

The 2012 AQMP also contains proposed mobile source implementation measures for the deployment of zero- and near-zero emission on-road heavy-duty vehicles, locomotives, and cargo handling equipment. There are measures for the deployment of cleaner commercial harborcraft, cleaner ocean-going marine vessels, cleaner off-road equipment, and cleaner aircraft engines.

The 2012 AQMP proposes the following mobile source implementation measures:

- On-road mobile sources:
  - Accelerated penetration of partial zero-emission and zero-emission vehicles. This measure proposes to continue incentives for the purchase of zero-emission vehicles and hybrid vehicles with a portion of their operation in an all-electric range mode. The state Clean Vehicle Rebate Pilot program is proposed to continue from 2015 to 2023 with a proposed funding for up to $5,000 per vehicle. The measure seeks to provide funding assistance for up to 1,000 zero-emission or partial-zero emission vehicles per year.
  - Accelerated penetration of partial zero-emission and zero-emission light-heavy and medium-heavy duty vehicles through funding assistance for purchasing the vehicles. The objective of the proposed action is to accelerate the introduction of advanced hybrid and zero-emission technologies for Class 4 through 6 heavy-duty vehicles. The state is currently implementing a Hybrid Vehicle Incentives Project program to promote zero-emission and hybrid heavy-duty vehicles. The proposed measure seeks to continue the program from 2015 to 2023, to deploy up to 1,000 zero- and partial-zero emission vehicles per year with up to $25,000

funding assistance per vehicle. Zero-emission vehicles and hybrid vehicles with a portion of their operation in an all-electric range mode would be given the highest priority.
- Accelerated retirement of older light-, medium-, and heavy-duty vehicles through funding incentives
- Further emission reductions from heavy-duty vehicles serving near-dock railyards through a proposed control measure that calls for a requirement that any cargo container moved between the Ports of Los Angeles and Long Beach to the nearby railyards by with zero-emission technologies

- Off-road mobile sources:
  - Extension of the SOON[4] provision for construction/industrial equipment, which provides funding to repower or replace older Tier 0 and Tier 1 equipment
  - Further emission reductions from freight and passenger locomotives calls for an accelerated use of Tier 4 locomotives in the SoCAB
  - Further emission reductions from ocean-going marine vessels while at berth
  - Emission reductions from ocean-going marine vessels

The 2012 AQMP also relies upon the SCAG regional transportation strategy, which is in its adopted 2012-2035 RTP/SCS and 2011 Federal Transportation Improvement Program, which contains the following sections:

1. Linking regional transportation planning to air quality planning: making sure that the regional transportation plan supports the goals and objectives of the AQMP/SIP.
2. Regional transportation strategy and transportation control measures: the RTP/SCS contains improvements to the regional multimodal transportation system including the following: active transportation (non-motorized transportation - biking and walking); transportation demand management; transportation system management; transit; passenger and high-speed rail; goods movement; aviation and airport ground access; highways; arterials; and operations and maintenance.
3. Reasonably available control measure analysis.

SCAQMD Rules

The AQMP for the SoCAB establishes a program of rules and regulations administered by SCAQMD to obtain attainment of the state and federal standards. The rules and regulations that apply to this project include, but are not limited to, the rules listed in the Standard Conditions section of this report.

CEQA

The SCAQMD has two roles under CEQA:

[4] The SCAQMD's Surplus Off-Road Opt-In for NOx (SOON) Program provides funding assistance to applicable fleets for the purchase of commercially available low-emission heavy-duty engines to achieve near-term reduction of NOx emissions from in-use off-road diesel vehicles. In 2008, the SCAQMD Board approved setting aside funding for this purpose. The SCAQMD is currently seeking off-road engine repower or vehicle replacement projects under the SOON Program.

1. Lead Agency: responsible for preparing environmental analyses for its own projects (adoption of rules, regulations, or plans) or permit projects filed with the SCAQMD where the SCAQMD has primary approval authority over the project.
2. Commenting Agency: the SCAQMD reviews and comments on air quality analyses prepared by other public agencies (such as the proposed project).

The SCAQMD also provides guidance and thresholds for CEQA air quality and greenhouse gas analyses. The result of this guidance as well as State regulations to control air pollution is an overall improvement in the SoCAB, as shown previously.

Local

In 2005, the Western Riverside Council of Governments published a guidance document referred to as the "Good Neighbor Guidelines for Siting New and/or Modified Warehouse/Distribution Facilities" (WRCOG 2005). This document recommends guidelines that provide local governments and developers with a menu of options or strategies that can reduce exposure to diesel particulate from new and/or modified warehouse or distribution centers. The Guidelines include seven goals, and a variety of strategies for each goal that can be implemented in whole or part. There are a variety of benefits associated with adopting the guidelines, such as reducing the exposure of residents and sensitive receptors to diesel emissions.

SECTION 3: CLIMATE CHANGE SETTING

3.1 - Climate Change

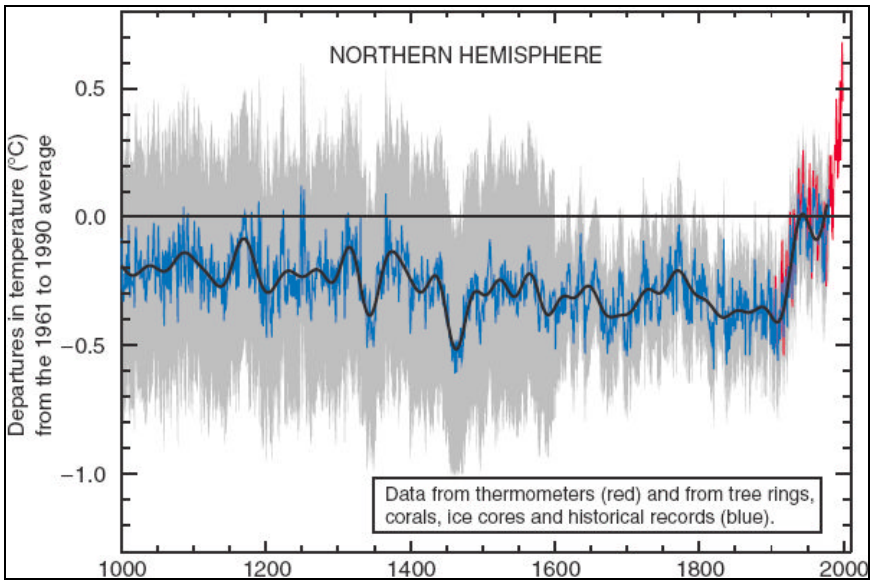
Climate change is a change in the average weather of the earth that is measured by alterations in wind patterns, storms, precipitation, and temperature. These changes are assessed using historical records of temperature changes occurring in the past, such as during previous ice ages. Many of the concerns regarding climate change use this data to extrapolate a level of statistical significance, specifically focusing on temperature records from the last 150 years (the Industrial Age) that differ from previous climate changes in rate and magnitude.

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of greenhouse gases needed to stabilize global temperatures and climate change impacts. In its Fourth Assessment Report, the IPCC predicted that the global mean temperature change from 1990 to 2100, given six scenarios, could range from 1.1 degrees Celsius (°C) to 6.4°C. Regardless of analytical methodology, global average temperatures and sea levels are expected to rise under all scenarios (IPCC 2007a). The report also concluded that "[w]arming of the climate system is unequivocal," and that "[m]ost of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations."

The IPCC published its Fifth Assessment Report, which states something similar: "Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased" (IPCC 2013, page 2). In addition, "Human influence on the climate system is clear. This is evident from the increasing greenhouse gas concentrations in the atmosphere, positive radiative forcing, observed warming, and understanding of the climate system" (IPCC 2013, page 13).

Some scientists disagree with the conclusions in the IPCC reports. There have been questions regarding the validity of the temperature graph used by the IPCC in some form in the Third and Fourth Assessment Reports. The graph is shown in Figure 1 (source IPCC 2001). The figure shows that temperatures were relatively stable until 1900, when temperatures increased rapidly. Some scientists have had trouble duplicating the data used for the graph (McIntyre and McKitrick 2003), and indicated when the data is correctly handled "shows the 20th century climate to be unexceptional compared to earlier centuries" (McKitrick 2005). Hans von Storch, a German climate scientist, claimed that the methods used by Mann et al. probably underestimated the temperature fluctuations in the past by a factor of two or more (Von Storch et al. 2004).

Figure 1: Historical Temperature Changes



Source: Intergovernmental Panel on Climate Change 2001.

3.1.1 - Consequences of Climate Change in California

In California, climate change may result in consequences such as the following (from California Climate Change Center 2006 and Moser et al. 2009).

- **A reduction in the quality and supply of water from the Sierra snowpack.** If heat-trapping emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. This can lead to challenges in securing adequate water supplies. It can also lead to a potential reduction in hydropower.
- **Increased risk of large wildfires.** If rain increases as temperatures rise, wildfires in the grasslands and chaparral ecosystems of southern California are estimated to increase by approximately 30 percent toward the end of the 21st century, because more winter rain will stimulate the growth of more plant "fuel" available to burn in the fall. In contrast, a hotter, drier climate could promote up to 90 percent more northern California fires by the end of the century by drying out and increasing the flammability of forest vegetation.
- **Reductions in the quality and quantity of certain agricultural products.** The crops and products likely to be adversely affected include wine grapes, fruit, nuts, and milk.
- **Exacerbation of air quality problems.** If temperatures rise to the medium warming range, there could be 75 to 85 percent more days with weather conducive to ozone formation in Los Angeles and the San Joaquin Valley, relative to today's conditions. This is more than twice the increase expected if rising temperatures remain in the lower warming range. This increase in air quality problems could result in an increase in asthma and other health-related problems.
- **A rise in sea levels resulting in the displacement of coastal businesses and residences.** During the past century, sea levels along California's coast have risen about seven inches. If

emissions continue unabated and temperatures rise into the higher anticipated warming range, sea level is expected to rise an additional 22 to 35 inches by the end of the century. Elevations of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats.

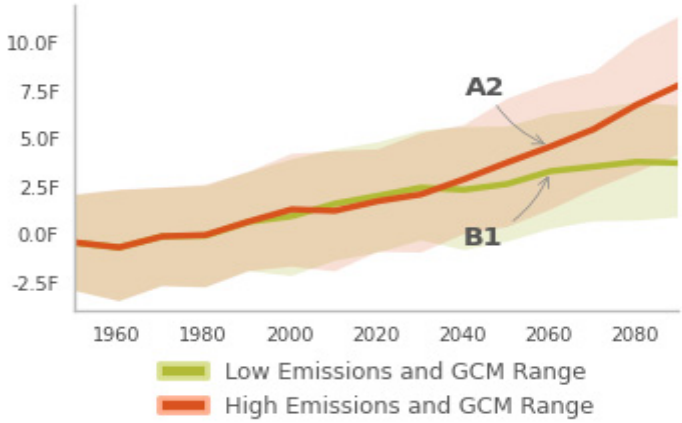
- **An increase temperature and extreme weather events.** Climate change is expected to lead to increases in the frequency, intensity, and duration of extreme heat events and heat waves in California. More heat waves can exacerbate chronic disease or heat-related illness.
- **A decrease in the health and productivity of California's forests.** Climate change can cause an increase in wildfires, an enhanced insect population, and establishment of non-native species.

Although some studies indicate that air quality will get worse with climate change, the IPCC's most recent report indicates that the range in projections of air quality (ozone and $PM_{2.5}$ in near-surface air) is driven primarily by emissions, rather than by physical climate change (IPCC 2013). In addition, the report indicates that there is high confidence that globally, warming decreases background surface ozone. However, locally higher surface temperatures in polluted regions can trigger regional feedbacks to increase levels of ozone and $PM_{2.5}$ (IPCC 2013).

3.1.2 - Consequences of Climate Change in Project Area

Climate change is predicted to impact geographical areas differently. The figure below displays a chart of measured historical and projected annual average temperatures in the project area. As shown in the figure, temperatures are expected to rise in the low and high greenhouse gas emissions scenarios.

Figure 2: Observed and Projected Temperature Changes



Source: CalAdapt 2014 for the Banning Area

3.2 - Greenhouse Gases

Gases that trap heat in the atmosphere are referred to as greenhouse gases. The effect is analogous to the way a greenhouse retains heat. Common greenhouse gases include water vapor, carbon dioxide, methane, nitrous oxides, chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, ozone, and aerosols. Natural processes and human activities emit greenhouse gases. The presence of greenhouse gases in the atmosphere affects the earth's temperature. It is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

Climate change is driven by forcings and feedbacks. Radiative forcing is the difference between the incoming energy and outgoing energy in the climate system. Positive forcing tends to warm the surface while negative forcing tends to cool it. Radiative forcing values are typically expressed in watts per square meter. A feedback is a climate process that can strengthen or weaken a forcing. For example, when ice or snow melts, it reveals darker land underneath which absorbs more radiation and causes more warming. The global warming potential is the potential of a gas or aerosol to trap heat in the atmosphere. The global warming potential of a gas is essentially a measurement of the radiative forcing of a greenhouse gas compared with the reference gas, carbon dioxide.

Individual greenhouse gas compounds have varying global warming potential and atmospheric lifetimes. Carbon dioxide, the reference gas for global warming potential, has a global warming potential of one. The global warming potential of a greenhouse gas is a measure of how much a given mass of a greenhouse gas is estimated to contribute to global warming. To describe how much global warming a given type and amount of greenhouse gas may cause, the carbon dioxide equivalent is used. The calculation of the carbon dioxide equivalent is a consistent methodology for comparing greenhouse gas emissions since it normalizes various greenhouse gas emissions to a consistent reference gas, carbon dioxide. For example, methane's warming potential of 21 indicates that methane has 21 times greater warming affect than carbon dioxide on a molecule per molecule basis. A carbon dioxide equivalent is the mass emissions of an individual greenhouse gas multiplied by its global warming potential. Greenhouse gases defined by Assembly Bill (AB) 32 (see Section 3.3, Regulatory Environment for a description) include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. They are described in Table 5.

Table 5: Description of Greenhouse Gases

Greenhouse Gas	Description and Physical Properties	Sources
Nitrous oxide	Nitrous oxide (laughing gas) is a colorless greenhouse gas. It has a lifetime of 114 years. Its global warming potential is 310.	Microbial processes in soil and water, fuel combustion, and industrial processes.
Methane	Methane is a flammable gas and is the main component of natural gas. It has a lifetime of 12 years. Its global warming potential is 21.	Methane is extracted from geological deposits (natural gas fields). Other sources are landfills, fermentation of manure, and decay of organic matter.

Table 5 (cont.): Description of Greenhouse Gases

Greenhouse Gas	Description and Physical Properties	Sources
Carbon dioxide	Carbon dioxide (CO_2) is an odorless, colorless, natural greenhouse gas. Carbon dioxide's global warming potential is 1. The concentration in 2005 was 379 parts per million (ppm), which is an increase of about 1.4 ppm per year since 1960.	Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood.
Chloro-fluorocarbons	These are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). Global warming potentials range from 3,800 to 8,100.	Chlorofluorocarbons were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone. The Montreal Protocol on Substances that Deplete the Ozone Layer prohibited their production in 1987.
Hydro-fluorocarbons	Hydrofluorocarbons are a group of greenhouse gases containing carbon, chlorine, and at least one hydrogen atom. Global warming potentials range from 140 to 11,700.	Hydrofluorocarbons are synthetic manmade chemicals used as a substitute for chlorofluorocarbons in applications such as automobile air conditioners and refrigerants.
Perfluorocarbons	Perfluorocarbons have stable molecular structures and only break down by ultraviolet rays about 60 kilometers above Earth's surface. Because of this, they have long lifetimes, between 10,000 and 50,000 years. Global warming potentials range from 6,500 to 9,200.	Two main sources of perfluorocarbons are primary aluminum production and semiconductor manufacturing.
Sulfur hexafluoride	Sulfur hexafluoride is an inorganic, odorless, colorless, and nontoxic, nonflammable gas. It has a lifetime of 3,200 years. It has a high global warming potential, 23,900.	This gas is manmade and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas.
Sources: Compiled from a variety of sources, primarily Intergovernmental Panel on Climate Change 2007a and Intergovernmental Panel on Climate Change 2007b.		

The State has begun the process of addressing pollutants referred to as short-lived climate pollutants. Senate Bill 605, approved by the Governor on September 14, 2014 requires the ARB to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants by January 1, 2016. ARB will complete an emission inventory of these pollutants, identify research needs, identify existing and potential new control measures that offer co-benefits, and coordinate with other state agencies and districts to develop measures. The draft emission inventory and strategy were released on September 30, 2015. No date for final adoption was located.

The short-lived climate pollutants include three main components: black carbon, fluorinated gases, and CH_4. Fluorinated gases and CH_4 are described in Table 3.7-1 and are already included in the

California GHG inventory. Black carbon has not been included in past GHG inventories; however, ARB will include it in its comprehensive strategy (ARB 2015c).

Ozone is another short-lived climate pollutant that will be part of the strategy. Ozone affects evaporation rates, cloud formation, and precipitation levels. Ozone is not directly emitted, so its precursor emissions, volatile organic compounds (VOC) and oxides of nitrogen (NO_x) on a regional scale and CH_4 on a hemispheric scale will be subject of the strategy (ARB 2015c).

Black carbon is a component of fine particulate matter. Black carbon is formed by incomplete combustion of fossil fuels, biofuels, and biomass. Sources of black carbon within a jurisdiction may include exhaust from diesel trucks, vehicles, and equipment, as well as smoke from biogenic combustion. Biogenic combustion sources of black carbon include the burning of biofuels used for transportation, the burning of biomass for electricity generation and heating, prescribed burning of agricultural residue, and natural and unnatural wildfires. Black carbon is not a gas but an aerosol—particles or liquid droplets suspended in air. Black carbon only remains in the atmosphere for days to weeks, whereas other GHGs that can remain in the atmosphere for years. Black carbon can be deposited on snow, where it absorbs sunlight, reduces sunlight reflectivity, and hastens snowmelt. Direct effects include absorbing incoming and outgoing radiation; indirectly, black carbon can also affect cloud reflectivity, precipitation, and surface dimming (cooling).

Global warming potentials for black carbon were not defined by the IPCC in its Fourth Assessment Report. The ARB has identified a global warming potential of 3,200 using a 20-year time horizon and 900 using a 100-year time horizon from the IPCC Fifth Assessment. Sources of black carbon are already regulated by ARB, and air district criteria pollutant and toxic regulations that control fine particulate emissions from diesel engines and other combustion sources (ARB 2015c). Additional controls on the sources of black carbon specifically for their GHG impacts beyond those required for toxic and fine particulates are not likely to be needed.

The project would emit black carbon through emissions of diesel PM during construction and operation. The South Coast Air Quality Management District does not currently recommend analyzing the effects of black carbon in California Environmental Quality Act documents based on limited data availability. This analysis does not estimate the emissions of black carbon.

Water vapor is also considered a GHG. Water vapor is an important component of our climate system and is not regulated. Increasing water vapor leads to warmer temperatures, which causes more water vapor to be absorbed into the air. Warming and water absorption increase in a spiraling cycle. Water vapor feedback can also amplify the warming effect of other greenhouse gases, such that the warming brought about by increased CO_2 allows more water vapor to enter the atmosphere (NASA 2015b).

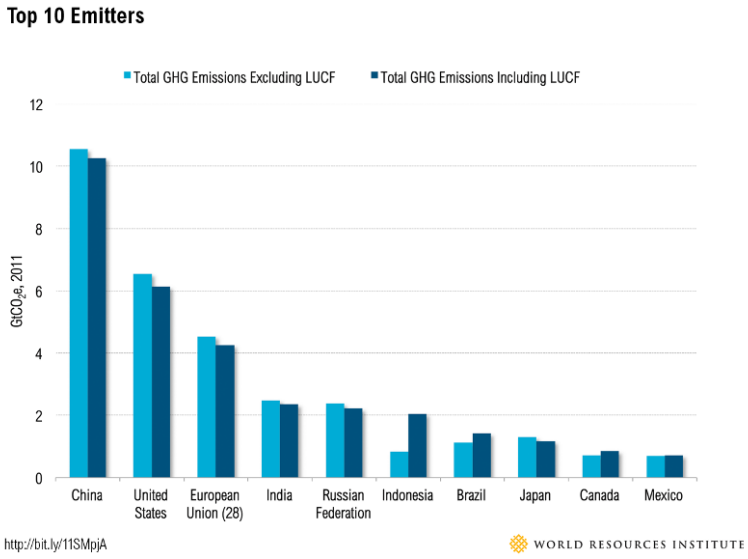
Although there could be health effects resulting from changes in the climate and the consequences that can bring about, inhalation of greenhouse gases at levels currently in the atmosphere would not result in adverse health effects, with the exception of ozone and aerosols (particulate matter). The potential health effects of ozone and particulate matter are discussed in criteria pollutant analyses. At very high indoor concentrations (not at levels existing outside), carbon dioxide, methane, sulfur

hexafluoride, and some chlorofluorocarbons can cause suffocation as the gases can displace oxygen (Centers for Disease Control and Prevention 2010, Occupational Safety and Health Administration 2003).

Emissions Inventories

An emissions inventory is a database that lists, by source, the amount of air pollutants discharged into the atmosphere of a geographic area during a given time period. Emissions worldwide were approximately 43,286 million metric tons of carbon dioxide equivalents (MMTCO2e) in 2012. As shown in Figure 3, China was the largest GHG emitter with over 10 billion metric tons of CO2e, and the United States was the second largest GHG emitter with over 6 billion metric tons of CO2e (WRI 2014).

Figure 3: Greenhouse Gas Emissions Trends



Source: WRI 2014

Figure 4 shows the contributors of GHG emissions in California between years 2000 and 2012 by economic sector. The main contributor was transportation. The second highest sector was industrial, which includes sources from refineries, general fuel use, oil and gas extraction, cement plants, and cogeneration heat output. ARB reported that California's GHG emissions inventory was 459 MMTCO2e in 2012 (ARB 2014a). .

Consequences of Climate Change in California

In California, climate change may result in consequences such as the following (from California

Climate Change Center 2006 and Moser et al. 2009):

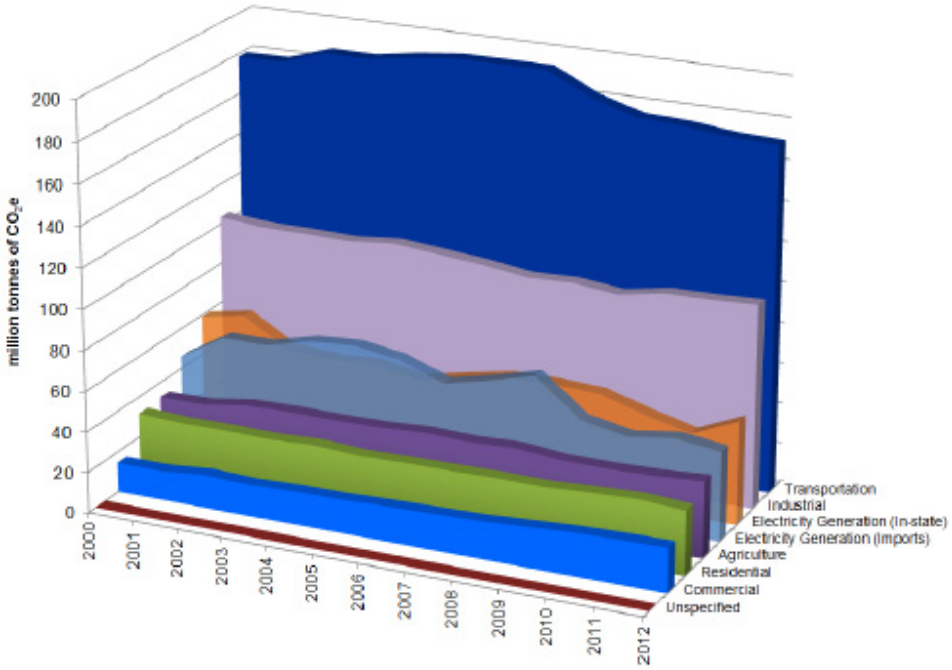
- **A reduction in the quality and supply of water from the Sierra snowpack.** If heat-trapping emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. This can lead to challenges in securing adequate water supplies. It can also lead to a potential reduction in hydropower.

- **Increased risk of large wildfires.** If rain increases as temperatures rise, wildfires in the grasslands and chaparral ecosystems of southern California are estimated to increase by approximately 30 percent toward the end of the 21st century because more winter rain will stimulate the growth of more plant "fuel" available to burn in the fall. In contrast, a hotter, drier climate could promote up to 90 percent more northern California fires by the end of the century by drying out and increasing the flammability of forest vegetation.
- **Reductions in the quality and quantity of certain agricultural products.** The crops and products likely to be adversely affected include wine grapes, fruit, nuts, and milk.
- **Exacerbation of air quality problems.** If temperatures rise to the medium warming range, there could be 75 to 85 percent more days with weather conducive to ozone formation in Los Angeles and the San Joaquin Valley, relative to today's conditions. This is more than twice the increase that would be expected if rising temperatures remain in the lower warming range. This increase in ozone formation could result in an increase in asthma and other health-related problems.
- **A rise in sea levels resulting in the displacement of coastal businesses and residences.** During the past century, sea levels along California's coast have risen about seven inches. If emissions continue unabated and temperatures rise into the higher anticipated warming range, sea level is expected to rise an additional 22 to 35 inches by the end of the century. Elevations of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats.
- **An increase temperature and extreme weather events.** Climate change is expected to lead to increases in the frequency, intensity, and duration of extreme heat events and heat waves in California. More heat waves can exacerbate chronic disease or heat-related illness.
- **A decrease in the health and productivity of California's forests.** Climate change can cause an increase in wildfires, an enhanced insect population, and establishment of non-native species.

Human Health Effects of GHG Emissions

The cumulative effects to global climate change of GHG emissions have the potential to cause adverse effects to human health. Increases in Earth's ambient temperatures would result in more intense heat waves, causing more heat-related deaths. Scientists also purport that higher ambient temperatures would increase disease survival rates and result in more widespread disease. Climate change will likely cause shifts in weather patterns, potentially resulting in devastating droughts and food shortages in some areas. Although there could be health effects resulting from changes in the climate and the consequences that can occur, inhalation of GHGs at levels currently in the atmosphere would not result in adverse health effects, with the exception of ozone and aerosols (particulate matter). The potential health effects of ozone and particulate matter are discussed in criteria pollutant analyses. At very high indoor concentrations (not at levels existing outside), carbon dioxide, methane, sulfur hexafluoride, and some chlorofluorocarbons can cause suffocation as the gases can displace oxygen (CDC 2010 and OSHA 2003).

Figure 4: Greenhouse Gas Emission Trends by Sector in California



Source: ARB 2014a

3.3 - Regulatory Environment

3.3.1 - International

Climate change is a global issue involving greenhouse gas emissions from all around the world; therefore, countries such as the ones discussed below have made an effort to reduce greenhouse gases.

Intergovernmental Panel on Climate Change. In 1988, the United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change to assess the scientific, technical and socio economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation.

United Nations Framework Convention on Climate Change (Convention). On March 21, 1994, the United States joined a number of countries around the world in signing the Convention. Under the Convention, governments gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change.

Kyoto Protocol. The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing GHG emissions at average of five per cent against 1990 levels over the five-year period 2008–2012. The Convention (as discussed above) encouraged industrialized countries to stabilize emissions; however,

the Protocol commits them to do so. Developed countries have contributed more emissions over the last 150 years; therefore, the Protocol places a heavier burden on developed nations under the principle of "common but differentiated responsibilities."

In 2001, President George W. Bush indicated that he would not submit the treaty to the U.S. Senate for ratification, which effectively ended American involvement in the Kyoto Protocol. In December 2009, international leaders met in Copenhagen to address the future of international climate change commitments post-Kyoto. No binding agreement was reached in Copenhagen; however, the Committee identified the long-term goal of limiting the maximum global average temperature increase to no more than 2°C above pre-industrial levels, subject to a review in 2015. .The UN Climate Change Committee held additional meetings in Durban, South Africa in November 2011; Doha, Qatar in November 2012; and Warsaw, Poland in November 2013. The meetings are gradually gaining consensus among participants on individual climate change issues.

On September 23, 2014 more than 100 Heads of State and Government and leaders from the private sector and civil society met at the Climate Summit in New York hosted by the United Nations. At the Summit, heads of government, business and civil society announced actions in areas that would have the greatest impact on reducing emissions, including climate finance, energy, transport, industry, agriculture, cities, forests, and building resilience.

Parties to the U.N. Framework Convention on Climate Change (UNFCCC) reached a landmark agreement on December 12 in Paris, charting a fundamentally new course in the two-decade-old global climate effort. Culminating a four-year negotiating round, the new treaty ends the strict differentiation between developed and developing countries that characterized earlier efforts, replacing it with a common framework that commits all countries to put forward their best efforts and to strengthen them in the years ahead. . This includes, for the first time, requirements that all parties report regularly on their emissions and implementation efforts, and undergo international review.

The agreement and a companion decision by parties were the key outcomes of the conference, known as the 21st session of the UNFCCC Conference of the Parties, or COP 21. Together, the Paris Agreement and the accompanying COP decision:

- Reaffirm the goal of limiting global temperature increase well below 2 degrees Celsius, while urging efforts to limit the increase to 1.5 degrees;
- Establish binding commitments by all parties to make "nationally determined contributions" (NDCs), and to pursue domestic measures aimed at achieving them;
- Commit all countries to report regularly on their emissions and "progress made in implementing and achieving" their NDCs, and to undergo international review;
- Commit all countries to submit new NDCs every five years, with the clear expectation that they will "represent a progression" beyond previous ones;

- Reaffirm the binding obligations of developed countries under the UNFCCC to support the efforts of developing countries, while for the first time encouraging voluntary contributions by developing countries too;
- Extend the current goal of mobilizing $100 billion a year in support by 2020 through 2025, with a new, higher goal to be set for the period after 2025;
- Extend a mechanism to address "loss and damage" resulting from climate change, which explicitly will not "involve or provide a basis for any liability or compensation;"
- Require parties engaging in international emissions trading to avoid "double counting;" and
- Call for a new mechanism, similar to the Clean Development Mechanism under the Kyoto Protocol, enabling emission reductions in one country to be counted toward another country's NDC (C2ES 2015a).

National

Prior to the last decade, there have been no concrete federal regulations of GHGs or major planning for climate change adaptation. The following are actions regarding the federal government, GHGs, and fuel efficiency.

Greenhouse Gas Endangerment. Massachusetts v. EPA (Supreme Court Case 05-1120) decided on April 2, 2007, the Supreme Court found that four GHGs, including carbon dioxide, are air pollutants subject to regulation under Section 202(a)(1) of the Clean Air Act. The Court held that the Administrator must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the Clean Air Act:

- Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed greenhouse gases—carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride—in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution, which threatens public health and welfare.

These findings do not impose requirements on industry or other entities. However, this was a prerequisite for implementing GHG emissions standards for vehicles, as discussed in the section "Clean Vehicles" below. After a lengthy legal challenge, the United States Supreme Court declined to review an Appeals Court ruling that upheld the EPA Administrator findings (EPA 2009b).

Clean Vehicles. Congress first passed the Corporate Average Fuel Economy law in 1975 to increase the fuel economy of cars and light duty trucks. The law has become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all

new cars and trucks sold in the United States. On April 1, 2010, the EPA and the Department of Transportation's National Highway Safety Administration announced a joint final rule establishing a national program that would reduce GHG emissions and improve fuel economy for new cars and trucks sold in the United States.

The first phase of the national program applies to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of carbon dioxide per mile, equivalent to 35.5 miles per gallon if the automobile industry were to meet this carbon dioxide level solely through fuel economy improvements. Together, these standards would cut carbon dioxide emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012–2016). The EPA and the National Highway Safety Administration issued final rules on a second-phase joint rulemaking establishing national standards for light-duty vehicles for model years 2017 through 2025 in August 2012 (EPA 2012c). The new standards for model years 2017 through 2025 apply to passenger cars, light-duty trucks, and medium duty passenger vehicles. The final standards are projected to result in an average industry fleetwide level of 163 grams/mile of carbon dioxide (CO_2) in model year 2025, which is equivalent to 54.5 miles per gallon (mpg) if achieved exclusively through fuel economy improvements.

The EPA and the U.S. Department of Transportation issued final rules for the first national standards to reduce GHG emissions and improve fuel efficiency of heavy-duty trucks and buses on September 15, 2011, effective November 14, 2011. For combination tractors, the agencies are proposing engine and vehicle standards that begin in the 2014 model year and achieve up to a 20-percent reduction in carbon dioxide emissions and fuel consumption by the 2018 model year. For heavy-duty pickup trucks and vans, the agencies are proposing separate gasoline and diesel truck standards, which phase in starting in the 2014 model year and achieve up to a 10-percent reduction for gasoline vehicles and a 15-percent reduction for diesel vehicles by 2018 model year (12 and 17 percent respectively if accounting for air conditioning leakage). Lastly, for vocational vehicles, the engine and vehicle standards would achieve up to a 10-percent reduction in fuel consumption and carbon dioxide emissions from the 2014 to 2018 model years.

Mandatory Reporting of Greenhouse Gases. The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory GHG reporting requirements. On September 22, 2009, the EPA issued the Final Mandatory Reporting of Greenhouse Gases Rule, which became effective January 1, 2010. The rule requires reporting of GHG emissions from large sources and suppliers in the United States, and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to the EPA.

New Source Review. The EPA issued a final rule on May 13, 2010 that establishes thresholds for GHGs that define when permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule "tailors" the requirements of these Clean Air Act permitting programs to

limit which facilities will be required to obtain Prevention of Significant Deterioration and Title V permits. In the preamble to the revisions to the federal code of regulations, the EPA states:

> This rulemaking is necessary because without it the Prevention of Significant Deterioration and Title V requirements would apply, as of January 2, 2011, at the 100 or 250 tons per year levels provided under the Clean Air Act, greatly increasing the number of required permits, imposing undue costs on small sources, overwhelming the resources of permitting authorities, and severely impairing the functioning of the programs. EPA is relieving these resource burdens by phasing in the applicability of these programs to greenhouse gas sources, starting with the largest greenhouse gas emitters. This rule establishes two initial steps of the phase-in. The rule also commits the agency to take certain actions on future steps addressing smaller sources, but excludes certain smaller sources from Prevention of Significant Deterioration and Title V permitting for greenhouse gas emissions until at least April 30, 2016.

The EPA estimates that facilities responsible for nearly 70 percent of the national GHG emissions from stationary sources will be subject to permitting requirements under this rule. This includes the nation's largest GHG emitters—power plants, refineries, and cement production facilities.

Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units. As required by a settlement agreement, the EPA proposed new performance standards for emissions of carbon dioxide for new, affected, fossil fuel-fired electric utility generating units on March 27, 2012. New sources greater than 25 megawatt would be required to meet an output based standard of 1,000 pounds of carbon dioxide per megawatt-hour, based on the performance of widely used natural gas combined cycle technology.

Cap and Trade. Cap and trade refers to a policy tool where emissions are limited to a certain amount and can be traded, or provides flexibility on how the emitter can comply. Successful examples in the United States include the Acid Rain Program and the NO_x Budget Trading Program and Clean Air Interstate Rule in the northeast. There is no federal GHG cap-and-trade program currently; however, some states have joined to create initiatives to provide a mechanism for cap and trade.

The Regional Greenhouse Gas Initiative is an effort to reduce GHGs among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. Each state caps carbon dioxide emissions from power plants, auctions carbon dioxide emission allowances, and invests the proceeds in strategic energy programs that further reduce emissions, save consumers money, create jobs, and build a clean energy economy. The Initiative began in 2008.

The Western Climate Initiative partner jurisdictions have developed a comprehensive initiative to reduce regional GHG emissions to 15 percent below 2005 levels by 2020. The partners were originally California, British Columbia, Manitoba, Ontario, and Quebec. However, Manitoba and Ontario are not currently participating. California linked with Quebec's cap and trade system January 1, 2014 and joint offset auctions have taken place in 2015 (C2ES 2015).

SmartWay Program. The SmartWay Program is a public-private initiative between the EPA, large and small trucking companies, rail carriers, logistics companies, commercial manufacturers, retailers, and other federal and state agencies. Its purpose is to improve fuel efficiency and the environmental performance (reduction of both greenhouse gas emissions and air pollution) of the goods movement supply chains. SmartWay is comprised of four components (EPA 2014):

1. SmartWay Transport Partnership: A partnership in which freight carriers and shippers commit to benchmark operations, track fuel consumption, and improve performance annually.
2. SmartWay Technology Program: A testing, verification, and designation program to help freight companies identify equipment, technologies, and strategies that save fuel and lower emissions.
3. SmartWay Vehicles: A program that ranks light-duty cars and small trucks and identifies superior environmental performers with the SmartWay logo.
4. SmartWay International Interests: Guidance and resources for countries seeking to develop freight sustainability programs modeled after SmartWay.

SmartWay effectively refers to requirements geared towards reducing fuel consumption. Most large trucking fleets driving newer vehicles are compliant with SmartWay design requirements. Moreover, over time, all heavy-duty trucks will have to comply with the ARB Greenhouse Gas Regulation that is designed with the SmartWay Program in mind, to reduce greenhouse gas emissions by making them more fuel-efficient. For instance, in 2015, 53 foot or longer dry vans or refrigerated trailers equipped with a combination of SmartWay-verified low-rolling resistance tires and SmartWay-verified aerodynamic devices would obtain a total of 10 percent or more fuel savings over traditional trailers.

Through the SmartWay Technology Program, the EPA has evaluated the fuel saving benefits of various devices through grants, cooperative agreements, emissions and fuel economy testing, demonstration projects and technical literature review. As a result, the EPA has determined the following types of technologies provide fuel saving and/or emission reducing benefits when used properly in their designed applications, and has verified certain products:

- Idle reduction technologies – less idling of the engine when it is not needed would reduce fuel consumption.
- Aerodynamic technologies minimize drag and improve airflow over the entire tractor-trailer vehicle. Aerodynamic technologies include gap fairings that reduce turbulence between the tractor and trailer, side skirts that minimize wind under the trailer, and rear fairings that reduce turbulence and pressure drop at the rear of the trailer.
- Low rolling resistance tires can roll longer without slowing down, thereby reducing the amount of fuel used. Rolling resistance (or rolling friction or rolling drag) is the force resisting the motion when a tire rolls on a surface. The wheel will eventually slow down because of this resistance.
- Retrofit technologies include things such as diesel particulate filters, emissions upgrades (to a higher tier), etc., which would reduce emissions.
- Federal excise tax exemptions.

California

Legislative Actions to Reduce GHGs

The State of California legislature has enacted a series of bills that constitute the most aggressive program to reduce GHGs of any state in the nation. Some legislation such as the landmark AB 32 California Global Warming Solutions Act of 2006 was specifically enacted to address GHG emissions. Other legislation such as Title 24 and Title 20 energy standards were originally adopted for other purposes such as energy and water conservation, but also provide GHG reductions. This section describes the major provisions of the legislation.

AB 32. The California State Legislature enacted AB 32, the California Global Warming Solutions Act of 2006. AB 32 requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. "Greenhouse gases" as defined under AB 32 include carbon dioxide, methane, NO_x, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Since AB 32 was enacted, a seventh chemical, nitrogen trifluoride, has also been added to the list of GHGs. The California Air Resources Board (ARB) is the state agency charged with monitoring and regulating sources of GHGs. AB 32 states the following:

> Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.

The ARB approved the 1990 GHG emissions level of 427 $MMTCO_2e$ on December 6, 2007 (ARB 2007). Therefore, emissions generated in California in 2020 are required to be equal to or less than 427 $MMTCO_2e$. Emissions in 2020 in a "business as usual"(BAU) scenario were estimated to be 596 $MMTCO_2e$, which do not account for reductions from AB 32 regulations (ARB 2008). At that level, a 28.4 percent reduction was required to achieve the 427 million $MTCO_2e$ 1990 inventory. In October 2010, ARB prepared an updated 2020 forecast to account for the recession and slower forecasted growth. The forecasted inventory without the benefits of adopted regulation is now estimated at 545 million $MTCO_2e$. Therefore, under the updated forecast, a 21.7 percent reduction from BAU is required to achieve 1990 levels (ARB 2010).

Progress in Achieving AB 32 Targets and Remaining Reductions Required

The State has made steady progress in implementing AB 32 and achieving targets included in Executive Order S-3-05. The progress is shown in updated emission inventories prepared by ARB for 2000 through 2012 (ARB 2014a). The State has achieved the Executive Order S-3-05 target for 2010 of reducing GHG emissions to 2000 levels. As shown below, the 2010 emission inventory achieved this target.

- 1990: 427 million $MTCO_2e$ (AB 32 2020 target)

- 2000: 463 million $MTCO_2e$ (an average 8-percent reduction needed to achieve 1990 base)
- 2010: 450 million $MTCO_2e$ (an average 5-percent reduction needed to achieve 1990 base)

The ARB has also made substantial progress in achieving its goal of achieving 1990 emissions levels by 2020. As described earlier in this section, ARB revised the 2020 BAU inventory forecast to account for new lower growth projections, which resulted in a new lower reduction from BAU to achieve the 1990 base. The previous reduction from 2020 BAU needed to achieve 1990 levels was 28.4 percent and the latest reduction from 2020 BAU is 21.7 percent.

- 2020: 545 million $MTCO_2e$ BAU (an average 21.7-percent reduction from BAU needed to achieve 1990 base)

ARB Scoping Plan. The ARB's Climate Change Scoping Plan (Scoping Plan) contains measures designed to reduce the State's emissions to 1990 levels by the year 2020 to comply with AB 32 (ARB 2008). The Scoping Plan identifies recommended measures for multiple GHG emission sectors and the associated emission reductions needed to achieve the year 2020 emissions target—each sector has a different emission reduction target. Most of the measures target the transportation and electricity sectors. As stated in the Scoping Plan, the key elements of the strategy for achieving the 2020 GHG target include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewables energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related GHG emissions for regions throughout California and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation.

The ARB approved the First Update to the Scoping Plan (Update) on May 22, 2014. The Update identifies the next steps for California's climate change strategy. The Update shows how California continues on its path to meet the near-term 2020 GHG limit, but also sets a path toward long-term, deep GHG emission reductions. The report establishes a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050. The Update identifies progress made to meet the near-term objectives of AB 32 and defines California's climate change priorities and activities Climate for the next several years. The Update does not set new

targets for the State, but describes a path that would achieve the long term 2050 goal of Executive Order S-05-03 for emissions to decline to 80 percent below 1990 levels by 2050 (ARB 2014).

The ARB has no legislative mandate to set a target beyond the 2020 target from AB 32 or to adopt additional regulations to achieve a post-2020 target. The Update estimates that reductions averaging 5.2 percent per year would be required after 2020 to achieve the 2050 goal. The State Legislature is currently considering legislation (SB 32) that would set a target of a 40 percent reduction below 1990 levels by 2030. Until the legislation is enacted, no post-2020 mandate currently exists. With no estimate of future reduction commitments from the State, identifying a feasible strategy including plans and measures to be adopted by local agencies is not currently possible. The ARB has initiated preparation of a second update to the Scoping Plan to reflect the 2030 target established in Executive Order B-30-15 that should provide more details of the State's post-2020 reduction strategy, but would still require legislation to require actions beyond those by State agencies subject to the Executive Order.

Forecasting the amount of emissions that would occur in 2020 if no actions are taken was necessary to assess the amount of reductions California must achieve to return to the 1990 emissions level by 2020 as required by AB 32. The no-action scenario is known as "business-as-usual" or BAU. The ARB originally defined the BAU scenario as emissions in the absence of any GHG emission reduction measures discussed in the Scoping Plan.

As part of CEQA compliance for the Scoping Plan, ARB prepared a Supplemental Functional Equivalent Document (FED) in 2011. The FED included an updated 2020 BAU emissions inventory projection based on current economic forecasts (i.e., as influenced by the economic downturn) and emission reduction measures already in place, replacing its prior 2020 BAU emissions inventory. ARB staff derived the updated emissions estimates by projecting emissions growth, by sector, from the state's average emissions from 2006–2008. The new BAU estimate includes emission reductions for the million-solar-roofs program, the AB 1493 (Pavley I) motor vehicle GHG emission standards, and the Low Carbon Fuels Standard. In addition, ARB factored into the 2020 BAU inventory emissions reductions associated with 33-percent Renewable Energy Portfolio Standard (RPS) for electricity generation. The updated BAU estimate of 507 $MMTCO_2e$ by 2020 requires a reduction of 80 $MMTCO_2e$, or a 16-percent reduction below the estimated BAU levels to return to 1990 levels (i.e., 427 $MMTCO_2e$) by 2020.

In order to provide a BAU reduction that is consistent with the original definition in the Scoping Plan and with threshold definitions used in thresholds adopted by lead agencies for CEQA purposes and many climate action plans, the updated inventory without regulations was also included in the Supplemental FED. The ARB 2020 BAU projection for GHG emissions in California was originally estimated to be 596 $MMTCO_2e$. The updated ARB 2020 BAU projection in the Supplemental FED is 545 $MMTCO_2e$. Considering the updated BAU estimate of 545 $MMTCO_2e$ by 2020, ARB estimates a 21.7-percent reduction below the estimated statewide BAU levels is necessary to return to 1990 emission levels (i.e., 427 $MMTCO_2e$) by 2020, instead of the approximate 28.4-percent BAU reduction previously reported under the original Climate Change Scoping Plan (2008).

Cap and Trade Program. The Scoping Plan identifies a Cap-and-Trade Program as one of the key strategies for California to reduce GHG emissions. According to ARB, a cap-and-trade program will help put California on the path to meet its goal of reducing GHG emissions to 1990 levels by the year 2020 and ultimately achieving an 80-percent reduction from 1990 levels by 2050. Under cap-and-trade, an overall limit on GHG emissions from capped sectors is established, and facilities subject to the cap will be able to trade permits to emit GHGs within the overall limit.

ARB adopted a California Cap-and-Trade Program pursuant to its authority under AB 32. See 17 CCR §§ 95800 to 96023. The Cap-and-Trade Program is designed to reduce GHG emissions from major sources (deemed "covered entities") by setting a firm cap on statewide GHG emissions and employing market mechanisms to achieve AB 32's emission-reduction mandate of returning to 1990 levels of emissions by 2020. The statewide cap for GHG emissions from the capped sectors (e.g., electricity generation, petroleum refining, and cement production) commenced in 2013 and will decline over time, achieving GHG emission reductions throughout the program's duration.

Covered entities that emit more than 25.000 $MTCO_2e$ per year must comply with the Cap-and-Trade Program. Triggering of the 25.000 $MTCO_2e$ per year "inclusion threshold" is measured against a subset of emissions reported and verified under the California Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (Mandatory Reporting Rule or "MRR").

Under the Cap-and-Trade Program, ARB issues allowances equal to the total amount of allowable emissions over a given compliance period and distributes these to regulated entities. Covered entities are allocated free allowances in whole or part (if eligible), and may buy allowances at auction, purchase allowances from others, or purchase offset credits. Each covered entity with a compliance obligation is required to surrender "compliance instruments" 30 for each $MTCO_2e$ of GHG they emit. There also are requirements to surrender compliance instruments covering 30 percent of the prior year's compliance obligation by November of each year. For example. in November 2014, a covered entity was required to submit compliance instruments to cover 30 percent of its 2013 GHG emissions.

The Cap-and-Trade Program provides a firm cap, ensuring that the 2020 statewide emission limit will not be exceeded. An inherent feature of the Cap-and-Trade program is that it does not guarantee GHG emissions reductions in any discrete location or by any particular source. Rather, GHG emissions reductions are only guaranteed on an accumulative basis. As summarized by ARB in the First Update:

> The Cap-and-Trade Regulation gives companies the flexibility to trade allowances with others or take steps to cost-effectively reduce emissions at their own facilities. Companies that emit more have to turn in more allowances or other compliance instruments. Companies that can cut their GHG emissions have to turn in fewer allowances. But as the cap declines, aggregate emissions must be reduced. In other words, a covered entity theoretically could increase its GHG emissions every year and still comply with the Cap-and-Trade Program if there is a reduction in GHG emissions from other covered entities. Such a focus on aggregate GHG emissions is

> considered appropriate because climate change is a global phenomenon, and the effects of GHG emissions are considered cumulative (ARB 2014).

The Cap-and-Trade Program works with other direct regulatory measures and provides an economic incentive to reduce emissions. If California's direct regulatory measures reduce GHG emissions more than expected, then the Cap-and-Trade Program will be responsible for relatively fewer emissions reductions. If California's direct regulatory measures reduce GHG emissions less than expected, then the Cap-and-Trade Program will be responsible for relatively more emissions reductions. Thus. the Cap-and-Trade Program assures that California will meet its 2020 GHG emissions reduction mandate:

> The Cap-and-Trade Program establishes an overall limit on GHG emissions from most of the California economy—the "capped sectors." Within the capped sectors, some of the reductions are being accomplished through direct regulations, such as improved building and appliance efficiency standards, the [Low Carbon Fuel Standard] LCFS, and the 33 percent [Renewables Portfolio Standard] RPS. Whatever additional reductions are needed to bring emissions within the cap is accomplished through price incentives posed by emissions allowance prices. Together, direct regulation and price incentives assure that emissions are brought down cost-effectively to the level of the overall cap. The Cap-and-Trade Regulation provides assurance that California's 2020 limit will be met because the regulation sets a firm limit on 85 percent of California's GHG emissions. In sum, the Cap-and-Trade Program will achieve aggregate, rather than site specific or project-level, GHG emissions reductions. Also, due to the regulatory architecture adopted by ARB in AB 32, the reductions attributed to the Cap-and-Trade Program can change over time depending on the State's emissions forecasts and the effectiveness of direct regulatory measures (ARB 2014).

As of January 1, 2015, the Cap-and-Trade Program covered approximately 85 percent of California's GHG emissions. The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. Accordingly, GHG emissions associated with CEQA projects' electricity usage are covered by the Cap-and-Trade Program.

The Cap-and-Trade Program also covers fuel suppliers (natural gas and propane fuel providers and transportation fuel providers) to address emissions from such fuels and from combustion of other fossil fuels not directly covered at large sources in the Program's first compliance period. While the Cap-and-Trade Program technically covered fuel suppliers as early as 2012, they did not have a compliance obligation (i.e., they were not fully regulated) until 2015. The Cap-and-Trade Program covers the GHG emissions associated with the combustion of transportation fuels in California, whether refined in-state or imported. The point of regulation for transportation fuels is when they are "supplied" (i.e., delivered into commerce). Accordingly, as with stationary source GHG emissions and GHG emissions attributable to electricity use, virtually all, if not all, of GHG emissions from CEQA projects associated with vehicle-miles traveled (VMT) are covered by the Cap-and-Trade Program (ARB 2015).

In addition, the Scoping Plan differentiates between "capped" and "uncapped" strategies. "Capped" strategies are subject to the proposed cap-and-trade program. The Scoping Plan states that the inclusion of these emissions within the cap-and trade program will help ensure that the year 2020 emission targets are met despite some degree of uncertainty in the emission reduction estimates for any individual measure. Implementation of the capped strategies is calculated to achieve a sufficient amount of reductions by 2020 to achieve the emission target contained in AB 32. "Uncapped" strategies that will not be subject to the cap-and-trade emissions caps and requirements are provided as a margin of safety by accounting for additional greenhouse gas emission reductions.[5]

SB 375 - the Sustainable Communities and Climate Protection Act of 2008. Passing the Senate on August 30, 2008, Senate Bill (SB) 375 was signed by the Governor on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions, which emits over 40 percent of the total GHG emissions in California. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: it (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

Concerning CEQA, SB 375, as codified in Public Resources Code Section 21159.28 states that CEQA findings determinations for certain projects are not required to reference, describe, or discuss (1) growth inducing impacts or (2) any project-specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network if the project:

1. Is in an area with an approved sustainable communities strategy or an alternative planning strategy that the ARB accepts as achieving the greenhouse gas emission reduction targets.
2. Is consistent with that strategy (in designation, density, building intensity, and applicable policies).
3. Incorporates the mitigation measures required by an applicable prior environmental document.

AB 1493 Pavley Regulations and Fuel Efficiency Standards. California AB 1493, enacted on July 22, 2002, required the ARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by the EPA's denial of an implementation waiver. The EPA subsequently granted the requested waiver in 2009, which was upheld by the U.S. District Court for the District of Columbia in 2011.

[5] On March 17, 2011, the San Francisco Superior Court issued a final decision in *Association of Irritated Residents v. California Air Resources Board* (Case No. CPF-09-509562). While the Court upheld the validity of the ARB Scoping Plan for the implementation of AB 32, the Court enjoined ARB from further rulemaking under AB 32 until ARB amends its CEQA environmental review of the Scoping Plan to address the flaws identified by the Court. On May 23, 2011, ARB filed an appeal. On June 24, 2011, the Court of Appeal granted ARB's petition staying the trail court's order pending consideration of the appeal. In the interest of informed decision-making, on June 13, 2011, ARB released the expanded alternatives analysis in a draft Supplement to the AB 32 Scoping Plan Functional Equivalent Document. The ARB Board approved the Scoping Plan and the CEQA document on August 24, 2011.

The standards phase in during the 2009 through 2016 model years. When fully phased in, the near-term (2009–2012) standards will result in about a 22-percent reduction compared with the 2002 fleet, and the mid-term (2013–2016) standards will result in about a 30-percent reduction. Several technologies stand out as providing significant reductions in emissions at favorable costs. These include discrete variable valve lift or camless valve actuation to optimize valve operation rather than relying on fixed valve timing and lift as has historically been done; turbocharging to boost power and allow for engine downsizing; improved multi-speed transmissions; and improved air conditioning systems that operate optimally, leak less, and/or use an alternative refrigerant.

The second phase of the implementation for the Pavley bill was incorporated into Amendments to the Low-Emission Vehicle Program referred to as LEV III or the Advanced Clean Cars program. The Advanced Clean Car program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for model years 2017 through 2025. The regulation will reduce GHGs from new cars by 34 percent from 2016 levels by 2025. The new rules will clean up gasoline and diesel-powered cars, and deliver increasing numbers of zero-emission technologies, such as full battery electric cars, newly emerging plug-in hybrid electric vehicles and hydrogen fuel cell cars. The package will also ensure adequate fueling infrastructure is available for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California.

SB 1368 – Emission Performance Standards. In 2006, the State Legislature adopted SB 1368, which was subsequently signed into law by the Governor. SB 1368 directs the California Public Utilities Commission to adopt a performance standard for GHG emissions for the future power purchases of California utilities. SB 1368 seeks to limit carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than 5 years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant. Because of the carbon content of its fuel source, a coal-fired plant cannot meet this standard because such plants emit roughly twice as much carbon as natural gas, combined cycle plants. Accordingly, the new law will effectively prevent California's utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of the State. Thus, SB 1368 will lead to dramatically lower GHG emissions associated with California's energy demand, as SB 1368 will effectively prohibit California utilities from purchasing power from out-of-state producers that cannot satisfy the performance standard for GHG emissions required by SB 1368. The California Public Utilities Commission adopted the regulations required by SB 1368 on August 29, 2007. The regulations implementing SB 1368 establish a standard for baseload generation owned by, or under long-term contract to publicly owned utilities, of 1,100 lbs CO_2 per megawatt-hour (MWh).

SB 1078 – Renewable Electricity Standards. On September 12, 2002, Governor Gray Davis signed SB 1078 requiring California to generate 20 percent of its electricity from renewable energy by 2017. SB 1078 changed the due date to 2010 instead of 2017. On November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order S-14-08, which established a Renewable Portfolio Standard target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020. Governor Schwarzenegger also directed the ARB (Executive Order S-21-09) to adopt a regulation by July 31, 2010, requiring the State's load serving entities to meet a 33

percent renewable energy target by 2020. The ARB Board approved the Renewable Electricity Standard on September 23, 2010 by Resolution 10-23.

SBX 7-7 – The Water Conservation Act of 2009. The legislation directs urban retail water suppliers to set individual 2020 per capita water use targets and begin implementing conservation measures to achieve those goals. Meeting this statewide goal of 20 percent decrease in demand will result in a reduction of almost 2 million acre-feet in urban water use in 2020 and related reduction in energy use for transporting and treating water.

SB 350— Clean Energy and Pollution Reduction Act of 2015. The legislature recently approved and the Governor signed SB 350, which reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the renewables portfolio standard (RPS), higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for electric vehicle charging stations. Provisions for a 50 percent reduction in the use of petroleum statewide were removed from the Bill because of opposition and concern that it would prevent the Bill's passage. Specifically, SB 350 requires the following to reduce statewide GHG emissions:

- Increase the amount of electricity procured from renewable energy sources from 33 percent to 50 percent by 2030, with interim targets of 40 percent by 2024, and 25 percent by 2027.
- Double the energy efficiency in existing buildings by 2030. This target will be achieved through the California Public Utility Commission (CPUC), the California Energy Commission (CEC), and local publicly owned utilities.
- Reorganize the Independent System Operator (ISO) to develop more regional electrify transmission markets and to improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States (California Leginfo 2015).

Executive Orders Related to GHG Emissions

California's Executive Branch has taken several actions to reduce GHGs through the use of Executive Orders. Although not regulatory, they set the tone for the state and guide the actions of state agencies.

Executive Order S-3-05. Former California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S 3-05, the following reduction targets for GHG emissions:

- By 2010, reduce greenhouse gas emissions to 2000 levels.
- By 2020, reduce greenhouse gas emissions to 1990 levels.
- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.

The 2050 reduction goal represents what some scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be a mid-term target. Because this is an executive order, the goals are not legally enforceable for local governments or the private sector.

Executive Order S-01-07 – Low Carbon Fuel Standard. The Governor signed Executive Order S 01-07 on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the

carbon intensity of California's transportation fuels by at least 10 percent by 2020. In particular, the executive order established a Low Carbon Fuel Standard and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, the ARB, the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. This analysis supporting development of the protocols was included in the State Implementation Plan for alternative fuels (State Alternative Fuels Plan adopted by California Energy Commission on December 24, 2007) and was submitted to ARB for consideration as an "early action" item under AB 32. The ARB adopted the Low Carbon Fuel Standard on April 23, 2009.

The Low Carbon Fuel Standard was challenged in the United States District Court in Fresno in 2011. The court's ruling issued on December 29, 2011 included a preliminary injunction against ARB's implementation of the rule. The Ninth Circuit Court of Appeals stayed the injunction on April 23, 2012 pending final ruling on appeal, allowing the ARB to continue to implement and enforce the regulation. The Ninth Circuit Court's decision filed September 18, 2013, vacated the preliminary injunction. In essence, the court held that Low Carbon Fuel Standards adopted by ARB were not in conflict with federal law. On August 8, 2013, the Fifth District Court of Appeal (California) ruled ARB failed to comply with CEQA and the Administrative Procedure Act (APA) when adopting regulations for Low Carbon Fuel Standards. In a partially published opinion, the Court of Appeal reversed the trial court's judgment and directed issuance of a writ of mandate setting aside Resolution 09-31 and two executive orders of ARB approving Low Carbon Fuel Standards (LCFS) regulations promulgated to reduce GHG emissions. However, the court tailored its remedy to protect the public interest by allowing the LCFS regulations to remain operative while ARB complies with the procedural requirements it failed to satisfy.

To address the Court ruling, ARB was required to bring a new LCFS regulation to the Board for consideration in February 2015. The proposed LCFS regulation was required to contain revisions to the 2010 LCFS as well as new provisions designed to foster investments in the production of the low-CI fuels, offer additional flexibility to regulated parties, update critical technical information, simplify and streamline program operations, and enhance enforcement. The second public hearing was held on September 24, 2015 and September 25, 2015 where the LCFS Regulation was adopted. The Final Rulemaking Package adopting the regulation was filed with Office of Administrative Law (OAL) on October 2, 2015. OAL has until November 16, 2015 to make a determination (ARB 2015d).

Executive Order S-13-08. Executive Order S-13-08 states that "climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of its population and to its natural resources." Pursuant to the requirements in the order, the 2009 California Climate Adaptation Strategy (California Natural Resources Agency 2009) was adopted, which is the ". . . first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States." Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

Executive Order B-30-15. On April 29, 2015, Governor Edmund G. Brown Jr. issued an executive order to establish a California greenhouse gas reduction target of 40 percent below 1990 levels by 2030. The Governor's executive order aligns California's greenhouse gas reduction targets with those of leading international governments ahead of the United Nations Climate Change Conference in Paris late 2015. The executive order sets a new interim statewide greenhouse gas emission reduction target to reduce greenhouse gas emissions to 40 percent below 1990 levels by 2030 in order to ensure California meets its target of reducing greenhouse gas emissions to 80 percent below 1990 levels by 2050 and directs the ARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of CO_2 equivalent ($MMCO_2e$). The executive order also requires the state's climate adaptation plan to be updated every three years and for the state to continue its climate change research program, among other provisions. As with Executive Order S-3-05, this executive order is not legally enforceable for local governments and the private sector. Legislation that would update AB 32 to make post 2020 targets and requirements a mandate is in process in the State Legislature.

California Regulations and Building Codes

California has a long history of adopting regulations to improve energy efficiency in new and remodeled buildings. These regulations have kept California's energy consumption relatively flat even with rapid population growth.

Title 20 Appliance Efficiency Standards. California Code of Regulations, Title 20: Division 2, Chapter 4, Article 4, Sections 1601-1608: Appliance Efficiency Regulations regulates the sale of appliances in California. The Appliance Efficiency Regulations include standards for both federally regulated appliances and non-federally regulated appliances. Twenty-three categories of appliances are included in the scope of these regulations. The standards within these regulations apply to appliances that are sold or offered for sale in California, except those sold wholesale in California for final retail sale outside the state and those designed and sold exclusively for use in recreational vehicles or other mobile equipment (CEC 2012).

Title 24 Energy Efficiency Standards and California Green Building Standards. California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The newest version of Title 24 was adopted by the California Energy Commission (CEC) on May 31, 2012 and became effective on July 1, 2014.

The California Energy Commission (CEC) indicates that the 2013 Title 24 standards will reduce energy consumption by 30 percent above that achieved by 2008 Title 24 (CEC 2012). More specifically, based on a comparison of 2008 to 2013 Title 24 reductions required, newly constructed non-residential buildings result in an overall reduction of approximately 22 percent energy demand, while non-residential redevelopment (which would apply to existing buildings) results in an overall reduction of only approximately 10 percent energy demand. Additionally, the 2013 Title 24

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standards currently in effect yield an approximately 68 percent energy savings when compared with the 2005 Title 24 standards (in place pre-AB 32)[6].

At this time, the 2013 Title 24 standards are currently in effect; notwithstanding, it is likely that by the time the building permits are processed for this Project, the 2016 Title 24 standards will be in effect (the 2016 Title 24 standards take effect on January 1, 2017). The analysis did not take any credit for implementation of the more restrictive 2016 Title 24 standards for which the CEC estimates will provide 5 percent electric energy savings from non-residential buildings compared to 2013 Title 24.[7]

California Code of Regulations, Title 24, Part 11: California Green Building Standards Code (CALGreen) is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect January 1, 2011 administered by the California Building Standards Commission. The code is updated on a regular basis, with the most recent update consisting of the 2013 California Green Building Code Standards that became effective January 1, 2014. Local jurisdictions are permitted to adopt more stringent requirements, as state law provides methods for local enhancements. The Code recognizes that many jurisdictions have developed existing construction and demolition ordinances, and defers to them as the ruling guidance provided they establish a minimum 50-percent diversion requirement. The code also provides exemptions for areas not served by construction and demolition recycling infrastructure. The State Building Code provides the minimum standard that buildings must meet in order to be certified for occupancy, which is generally enforced by the local building official. The California Green Building Standards Code requires:

- Short-term bicycle parking. If a commercial project is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5 percent of visitor motorized vehicle parking capacity, with a minimum of one two-bike capacity rack (5.106.4.1.1).
- Long-term bicycle parking. For buildings with over 10 tenant-occupants, provide secure bicycle parking for 5 percent of tenant-occupied motorized vehicle parking capacity, with a minimum of one space (5.106.4.1.2).
- Designated parking. Provide designated parking in commercial projects for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).
- Recycling by Occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of nonhazardous materials for recycling (5.410.1).
- Construction waste. A minimum 50-percent diversion of construction and demolition waste from landfills, increasing voluntarily to 65 and 80 percent for new homes and 80-percent for

[6] See Table 2: Summary of First-Year-Electricity Savings in the Impact Analysis *2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings, November 2007. See Table 2: Summary of First-Year-Electricity Savings in the California Energy Commission's Consultant Report: Impact Analysis California's 2013 Building Energy Efficiency Standards, July 2013.*

[7] See CEC 2015. 2016 Building Energy Efficiency Standards Adoption Hearing Presentation. Website: http://www.energy.ca.gov /title24/2016standards/rulemaking/documents/2015-06-10_hearing/2015-06-10_Adoption_Hearing_Presentation.pdf. Accessed May 11, 2016.

commercial projects (5.408.1, A5.408.3.1 [nonresidential], A5.408.3.1 [residential]). All (100 percent) of trees, stumps, rocks and associated vegetation and soils resulting from land clearing shall be reused or recycled (5.408.3).

- Wastewater reduction. Each building shall reduce the generation of wastewater by one of the following methods:
  - The installation of water-conserving fixtures or
  - Using nonpotable water systems (5.303.4).
- Water use savings. 20-percent mandatory reduction in indoor water use with voluntary goal standards for 30, 35 and 40-percent reductions (5.303.2, A5303.2.3 [nonresidential]).
- Water meters. Separate water meters for buildings in excess of 50,000 square feet or buildings projected to consume more than 1,000 gallons per day (5.303.1).
- Irrigation efficiency. Moisture-sensing irrigation systems for larger landscaped areas (5.304.3).
- Materials pollution control. Low-pollutant emitting interior finish materials such as paints, carpet, vinyl flooring, and particleboard (5.404).
- Building commissioning. Mandatory inspections of energy systems (i.e., heat furnace, air conditioner, mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity according to their design efficiencies (5.410.2).

Model Water Efficient Landscape Ordinance. The Model Water Efficient Landscape Ordinance (Ordinance) was required by AB 1881, the Water Conservation Act. The bill required local agencies to adopt a local landscape ordinance at least as effective in conserving water as the Model Ordinance by January 1, 2010. Reductions in water use of 20 percent consistent with (SBX-7-7) 2020 mandate are expected upon compliance with the ordinance. Governor Brown's Drought Executive Order of April 1, 2015 (EO B-29-15) directed DWR to update the Ordinance through expedited regulation. The California Water Commission approved the revised Ordinance on July 15, 2015 effective December 15, 2015. New development projects that include landscape areas of 500 square feet or more are subject to the Ordinance. The update requires:

- More efficient irrigation systems
- Incentives for graywater usage
- Improvements in on-site stormwater capture
- Limiting the portion of landscapes that can be planted with high water use plants
- Reporting requirements for local agencies.

ARB Refrigerant Management Program. The ARB adopted a regulation in 2009 to reduce refrigerant GHG emissions from stationary sources through refrigerant leak detection and monitoring, leak repair, system retirement and retrofitting, reporting and recordkeeping, and proper refrigerant cylinder use, sale, and disposal. The regulation is set forth in sections 95380 to 95398 of Title 17, California Code of Regulations. The rules implementing the regulation establish a limit on statewide GHG emissions from stationary facilities with refrigeration systems with more than 50 pounds of a high GWP refrigerant. The refrigerant management program is designed to (1) reduce emissions of

high-GWP GHG refrigerants from leaky stationary, non-residential refrigeration equipment; (2) reduce emissions from the installation and servicing of refrigeration and air-conditioning appliances using high-GWP refrigerants; and (3) verify GHG emission reductions.

Tractor-Trailer Greenhouse Gas Regulation. The tractors and trailers subject to this regulation must either use EPA SmartWay certified tractors and trailers, or retrofit their existing fleet with SmartWay verified technologies. The regulation applies primarily to owners of 53-foot or longer box-type trailers, including both dry-van and refrigerated-van trailers, and owners of the heavy-duty tractors that pull them on California highways. These owners are responsible for replacing or retrofitting their affected vehicles with compliant aerodynamic technologies and low rolling resistance tires. Sleeper cab tractors model year 2011 and later must be SmartWay certified. All other tractors must use SmartWay verified low rolling resistance tires. There are also requirements for trailers to have low rolling resistance tires and aerodynamic devices.

SB 97 and the CEQA Guidelines Update. Passed in August 2007, SB 97 added Section 21083.05 to the Public Resources Code. The code states "(a) On or before July 1, 2009, the Office of Planning and Research shall prepare, develop, and transmit to the Resources Agency guidelines for the mitigation of GHG emissions or the effects of GHG emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption. (b) On or before January 1, 2010, the Resources Agency shall certify and adopt guidelines prepared and developed by the Office of Planning and Research pursuant to subdivision (a)." Section 21097 was also added to the Public Resources Code. It provided CEQA protection until January 1, 2010 for transportation projects funded by the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006 or projects funded by the Disaster Preparedness and Flood Prevention Bond Act of 2006, in stating that the failure to analyze adequately the effects of GHGs would not violate CEQA.

On April 13, 2009, the Office of Planning and Research submitted to the Secretary for Natural Resources its recommended amendments to the CEQA Guidelines for addressing GHG emissions. On July 3, 2009, the Natural Resources Agency commenced the Administrative Procedure Act rulemaking process for certifying and adopting these amendments pursuant to Public Resources Code section 21083.05. Following a 55-day public comment period and two public hearings, the Natural Resources Agency proposed revisions to the text of the proposed Guidelines amendments. The Natural Resources Agency transmitted the adopted amendments and the entire rulemaking file to the Office of Administrative Law on December 31, 2009. On February 16, 2010, the Office of Administrative Law approved the Amendments, and filed them with the Secretary of State for inclusion in the California Code of Regulations. The Amendments became effective on March 18, 2010.

The CEQA Amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. The CEQA Amendments fit within the existing CEQA framework by amending existing CEQA Guidelines to reference climate change.

A new section, CEQA Guidelines Section 15064.4, was added to assist agencies in determining the significance of GHG emissions. The new section allows agencies the discretion to determine whether a quantitative or qualitative analysis is best for a particular project. However, little guidance

is offered on the crucial next step in this assessment process—how to determine whether the project's estimated GHG emissions are significant or cumulatively considerable.

Also amended were CEQA Guidelines Sections 15126.4 and 15130, which address mitigation measures and cumulative impacts respectively. GHG mitigation measures are referenced in general terms, but no specific measures are championed. The revision to the cumulative impact discussion requirement (Section 15130) simply directs agencies to analyze GHG emissions in an EIR when a project's incremental contribution of emissions may be cumulatively considerable, however it does not answer the question of when emissions are cumulatively considerable.

Section 15183.5 permits programmatic GHG analysis and later project-specific tiering, as well as the preparation of Greenhouse Gas Reduction Plans. Compliance with such plans can support a determination that a project's cumulative effect is not cumulatively considerable, according to proposed Section 15183.5(b).

In addition, the amendments revised Appendix F of the CEQA Guidelines, which focuses on Energy Conservation. The sample environmental checklist in Appendix G was amended to include GHG questions.

Regional

The project is within the SoCAB, which is under the jurisdiction of the SCAQMD.

South Coast Air Quality Management District

The SCAQMD is the agency responsible for air quality planning and regulation in the SoCAB. For greenhouse gases, the agency addresses the impacts to climate change of projects subject to SCAQMD permit as a lead agency if they are the only agency having discretionary approval for the project and a responsible agency when a land use agency must also approve discretionary permits for the project. The SCAQMD acts as an expert commenting agency for impacts to air quality. This expertise carries over to GHG emissions, so the agency helps local land use agencies through the development of models and emission thresholds that can be used to address GHG emissions.

The SCAQMD formed a working group to identify greenhouse gas emissions thresholds for land use projects that could be used by local lead agencies in the air basin in 2008. The working group developed several different options that are contained in the SCAQMD Draft Guidance Document – Interim CEQA Greenhouse Gas Significance Threshold, that could be applied by lead agencies. The working group has not provided additional guidance since release of the interim guidance in 2008. The SCAQMD Board has not approved the thresholds; however, the Guidance Document provides substantial evidence supporting the approaches to significance of GHG emissions that can be considered by the lead agency in adopting its own threshold. The current interim thresholds consist of the following tiered approach:

- Tier 1 consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA.

- Tier 2 consists of determining whether the project is consistent with a greenhouse gas reduction plan. If a project is consistent with a qualifying local greenhouse gas reduction plan, it does not have significant greenhouse gas emissions.
- Tier 3 consists of screening values, which the lead agency can choose, but must be consistent with all projects within its jurisdiction. A project's construction emissions are averaged over 30 years and are added to the project's operational emissions. If a project's emissions are below one of the following screening thresholds, then the project is less than significant:
  - All land use types: 3,000 $MTCO_2e$ per year
  - Based on land use type: residential: 3,500 $MTCO_2e$ per year; commercial: 1,400 $MTCO_2e$ per year; or mixed use: 3,000 $MTCO_2e$ per year
- Tier 4 has the following options:
  - Option 1: Reduce BAU emissions by a certain percentage; this percentage is currently undefined.
  - Option 2: Early implementation of applicable AB 32 Scoping Plan measures
  - Option 3, 2020 target for service populations (SP), which includes residents and employees: 4.8 $MTCO_2e$/SP/year for projects and 6.6 $MTCO_2e$/SP/year for plans;
  - Option 3, 2035 target: 3.0 $MTCO_2e$/SP/year for projects and 4.1 $MTCO_2e$/SP/year for plans
- Tier 5 involves mitigation offsets to achieve target significance threshold.

The SCAQMD's draft threshold uses the Executive Order S-3-05 year 2050 goal as the basis for the Tier 3 screening level. Achieving the Executive Order's objective would contribute to worldwide efforts to cap carbon dioxide concentrations at 450 ppm, thus stabilizing global climate.

The SCAQMD only has authority over GHG emissions from development projects that include air quality permits. The project does not include stationary sources of emissions subject to SCAQMD permit; however, the SCAQMD has adopted a regulation that includes voluntary programs that are available for use in CEQA compliance.

SCAQMD Regulation XXVII, adopted in 2009 includes the following rules:

- Rule 2700 defines terms and post global warming potentials.
- Rule 2701, SoCal Climate Solutions Exchange, establishes a voluntary program to encourage, quantify, and certify voluntary, high quality certified greenhouse gas emission reductions in the SCAQMD.
- Rule 2702, Greenhouse Gas Reduction Programcreated a program to produce GHG emission reductions within the SCAQMD. The SCAQMD will fund projects through contracts in response to requests for proposals or purchase reductions from other parties.

Local

The County of Riverside adopted a Climate Action Plan (CAP) on December 8, 2015. The CAP was part of the County's General Plan and contains further guidance on Riverside County's GHG Inventory reduction goals, policies, guidelines, and implementation programs. In particular, the CAP

elaborates on the General Plan goals and policies relative to GHG emissions and provides a specific implementation tool to guide future decisions of the County.

As part of the CAP, the County of Riverside published a guidance document titled "Greenhouse Gas Emissions, Screening Tables, County of Riverside, California" (December 2015). As part of this guidance, the County determined the size of development that is too small to be able to provide the level of GHG emission reductions expected from the Screening Tables or alternate emissions analysis method. The County's analysis determined that the 3,000 $MTCO_2e$ per year value be used in defining small projects that, when combined with modest energy efficiency measures shown in the bullet points below are considered less than significant and do not need to use the Screening Tables or alternative calculations. The efficiency measures required of small projects are summarized below:

- Energy efficiency at least five percent greater than 2010 Title 24 requirements, and
- Water conservation measures that matches the California Green Building Code in effect as of January 2011.

If the project exceeds the 3,000 $MTCO_2e$ per year threshold, then project emissions would need to be reduced by 25 percent from year 2011 emissions levels or alternatively the Project would need to achieve a minimum of 100 points pursuant to the CAP Screening Tables. The screening tables also allow developers to tailor their mitigation measures to the project's needs, rather than have them be subject to one-size fits all mitigation measures that may be too stringent for them.

The CAP Screening Table (CAP Appendix F) includes a discussion of how the 100 point minimum relates to the County's emission reduction target. In order to correctly allocate the emission reductions within the Screening Table, the amount of emission reductions afforded new development was segregated out of the aggregate total. Once the process of segregating new development out of the aggregate reduction totals was completed, the points were then proportioned by residential unit or square feet of commercial/industrial uses. This was accomplished by taking the predicted growth in households and commercial/industrial uses by the year 2020 and proportioning the appropriate Implementation Measure reduction quantities for new development to the residential and commercial/industrial land use sectors within the Screening Table. These calculations result in point values that are allocated by residential unit or commercial/industrial square footage (measured in 1000 sq.ft.). Because of this, the size of the project is not relevant to the Screening Table. Regardless of size, each project needs to garnish 100 points to demonstrate consistency with the Technical Report. Efficiency, not size of the Project is critical.

Therefore, projects that achieve at least 100 points are determined to be consistent with the reduction quantities anticipated in the County's GHG Technical Report. As such, further project-specific GHG quantification is not required. Consistent with CEQA guidelines, such projects would be determined to have a less than significant individual and cumulative impact for GHG emissions.

SECTION 4: AIR QUALITY AND HEALTH RISK SIGNIFICANCE THRESHOLDS

4.1 - CEQA Guidelines

The basic purposes of CEQA are to:

- Inform governmental decision makers and the public about the potential significant environmental effects of proposed activities;
- Identify ways that environmental damage can be avoided or significantly reduced;
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds changes to be feasible; and
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

The following significance thresholds were derived from Appendix G of the CEQA guidelines. A significant impact would occur if the proposed project would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or protected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

CEQA guidelines define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in the environment." To determine if a proposed project would have a significant impact on air quality, the type, level, and impact of emissions generated by the proposed project must be evaluated. CEQA Guidelines Section 15064.7 provides that lead agencies are encouraged to adopt and/or apply "thresholds of significance." For this purpose, the significance thresholds recommended by the SCAQMD as the expert commenting agency were applied to this project and are discussed below.

4.2 - SCAQMD Significance Thresholds

To assist in the establishment of a quantitative determination of what is considered "significant," the SCAQMD has published a number of significance thresholds that apply to new projects constructed or operated within the SCAQMD. The SCAQMD recommends that lead agencies apply these

thresholds in determining whether a proposed project would result in a significant air quality impact. If the lead agency finds that a proposed project has the potential to exceed these air pollution thresholds, the project would be considered significant. These thresholds have been defined by SCAQMD for the SoCAB, based on scientific data the SCAQMD has obtained and factual data within the federal and State Clean Air Acts. Since the project is located within the SoCAB, these thresholds are applicable to this project. The SCAQMD has defined thresholds for NO_2, VOC, Oxides of Sulfur (SO_x), CO, PM_{10}, and $PM_{2.5}$, hereinafter referred to as "criteria" pollutants, and for health risk in terms of cancer and non-cancer risk.

From the perspective of this analysis, four types of significance thresholds were evaluated in terms of impacts on air quality from the construction and operation of the project. These thresholds are the Regional Significance Thresholds, Local Significance Thresholds, Health Risk Significance Thresholds, and CO "Hot Spot" Thresholds, which are discussed below.

4.2.1 - Regional Significance Thresholds

The SCAQMD has regional significance thresholds for VOC, NO_x, SO_x, CO, PM_{10}, and $PM_{2.5}$. Projects located within the SoCAB with construction or operational-related emissions in excess of any of the thresholds presented in Table 6 would be considered significant.

Table 6: SCAQMD Regional Thresholds

Pollutant	Construction (pounds per day)	Operation (pounds per day)
Oxides of Nitrogen (NO_x)	100	55
Reactive Organic Gases (VOC)	75	55
Particulate Matter (PM_{10})	150	150
Particulate Matter ($PM_{2.5}$)	55	55
Oxides of Sulfur (SO_x)	150	150
Carbon Monoxide (CO)	550	550
Source: South Coast Air Quality Management District, SCAQMD 2012b.		

4.2.2 - Local Significance Thresholds (LSTs)

Local Significance Thresholds (LSTs) were developed in response to the SCAQMD Governing Board's environmental justice (EJ) initiatives (EJ initiative I-4) in recognition of the fact that criteria pollutants such as CO, NO_x, and PM_{10} and $PM_{2.5}$ in particular, can have local impacts as well as regional impacts. The goal of significance thresholds is to ensure that no source creates, or receptor endures, a significant adverse impact from any project. The evaluation of localized air quality impacts determines the potential of the project to violate any air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations. LSTs represent the maximum emissions or air concentrations from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or State ambient

air quality standard, at any nearby sensitive or worker receptor. LSTs are defined separately for construction and operational activities.

The SCAQMD LST methodology provides two approaches for performing the LST analysis. For projects of 5 acres or less where emissions would occur, the SCAQMD has developed a series of look up tables that provide estimates of daily construction or operational emissions above which a project's emissions are determined to have a significant air quality impact. These emission LSTs are provided for each combination of pollutants (CO, NO_2, PM_{10}, and $PM_{2.5}$), Source-Receptor Area (SRA), size of the project emission area, and distance to the nearest sensitive receptor. Projects where emissions occur over an area larger than 5 acres, the localized significance impacts for construction and operation emissions can be derived by either applying the LSTs for a 5-acre area, or by performing air dispersion modeling. Thus, the primary determinants for the LST assessment, therefore, are the SRA where the project is located, the size of the emission area, and distance to the nearest sensitive receptor.

The project is located in SRA 29 (Banning Airport). Therefore, the LSTs for this SRA were selected for the LST assessment. The project size is generally represented as the maximum area disturbed during a day from which emissions are calculated.

Construction

For construction activities, the highest level of onsite emissions generally occurs during the mass grading activities. The CalEEMod manual identifies various equipment and the acreage disturbed in an 8-hour day. Based on the construction equipment inventory to be provided in Table 11 below, a maximum area of six acres would be disturbed in a day based on the use of six scrapers that disturb an area of one acre each in an 8-hour day. For purposes of this LST assessment and to provide a conservative estimate of construction emissions, the emissions from the project's 6 acres were compared to the LST emission significance thresholds for a 5-acre area, the largest area contained in the SCAQMD lookup tables.

There are a number of existing residences in close proximity to the project. The closest existing residences are located near the southeast corner of the project along Cherry Valley Boulevard and are included in Table 7.

Table 7: Locations of Sensitive Receptors

Receptor Address	Location Relative to Project[1]	Type of Receptor
36240 Cherry Valley Boulevard	0.40 mile northwest	Existing Residential
37101 Cherry Valley Boulevard	0.51 mile east	Existing Residential
37251 Cherry Valley Boulevard	0.55 mile east	Existing Residential
37255 Cherry Valley Boulevard	0.66 mile east	Existing Residential
37275 Cherry Valley Boulevard	0.69 mile east	Existing Residential

Table 7 (cont.): Locations of Sensitive Receptors

Receptor Address	Location Relative to Project[1]	Type of Receptor
37303 Cherry Valley Boulevard	0.73 mile east	Existing Residential
37345 Cherry Valley Boulevard	0.84 miles east	Existing Residential
37321 Cherry Valley Boulevard	0.75 mile east	Existing Residential
9865 Roberts Street	0.57 mile northeast	Existing Residential
9975 Roberts Street	0.64 mile northeast	Existing Residential
Sunny Cal Specific Plan	0.02 mile south	Future Residential (457 single-family units)
Holbert Ranch	0.34 mile north	Future Residential (131 single-family units)
Tournament Hills Elementary School	1.1 miles south	School
Brookside Elementary School	2.30 miles southeast	School
Beaumont High School	2.51 miles southeast	School
Bornstine Property	0.02 miles east	Future Residential (209 single family units)
Sunset Ranch	0.4 miles northwest	Future Residential (231 single family units)

Note:
[1] Relative to the intersection of Street 2 and Cherry Valley Boulevard.

Based on a review of the existing and proposed sensitive receptors, the shortest distances to any existing or proposed sensitive receptor is 25 meters as the distance to the future residences located within the proposed Sunny Cal Specific Plan are directly across Cherry Valley Boulevard south from the project site.

The SCAQMD has issued guidance on applying CalEEMod to LSTs. Since CalEEMod calculates construction emissions based on the number of equipment hours and the maximum daily soil disturbance activity possible for each piece of equipment, the information in Table 11 below is used to determine the maximum daily disturbed-acreage for comparison to LSTs. To ensure consistency with LST modeling of construction-source emissions provided herein, maximum use of Project construction equipment types and their hours of operation (during grading activity) are limited as follows:

- **Grading:** Scrapers 6 pieces of equipment each disturbing 1 acre per 8-hour day

Based on the above disturbance rate, the project would result in a maximum of 6 acres disturbed during peak construction activity on any given day. The SCAQMD LST mass emission tables do not provide construction emission significance thresholds for a disturbed area of greater than 5 acres. Therefore, to provide a conservative estimate of construction emission significance thresholds, the emission thresholds for a 5 acre disturbed area were used in the assessment. This estimate is based

on the construction equipment assumptions embedded in the CalEEMod defaults and represent a reasonable approximation of the expected construction fleet as required per CEQA guidelines. Site specific construction fleet may vary due to specific project needs at the time of construction.

Based on the project's location, daily construction emission area, and distance to nearest sensitive receptor, the relevant construction significance thresholds for the project are summarized in Table 8.

Table 8: SCAQMD Localized Significance Thresholds - Construction

Pollutant[1]	Daily Emission Limit (pounds per day)[2]
CO	2,817
NO_x	236
PM_{10}	21
$PM_{2.5}$	11

Notes:
[1] The SCAQMD has defined LSTs only for these pollutants
[2] LSTs defined for SRA 29, 5 acre area and a 25 meter distance to the nearest sensitive receptor
Source: SCAQMD 2009.

Operation

For project operations, since the daily emission area covering the buildings and associated parking lots and driveways is much greater than 5 acres, the LST operational assessment was accomplished using air dispersion modeling. In this approach, the air quality impact from the operation of the project is determined using an air dispersion model for NO_2 and CO, is added to the highest ambient air quality levels in a project area (i.e., the background air quality), and the total impact is then compared to the most restrictive ambient air quality standard for NO_2 and CO. If the total air quality impact exceeds the most stringent ambient air quality standard for these pollutants, then the project would be considered to have a significant air quality impact. Thus, the LST concentration thresholds for a project are derived by ensuring that the total concentrations (background plus project contributions) are less than the most stringent standards. For PM_{10} and $PM_{2.5}$, since the SCAQMD currently exceeds the state or federal ambient air quality standards for these pollutants, the relevant LSTs prescribed by the SCAQMD are based on the allowable change in concentration thresholds contained in SCAQMD Rule 1303. Table 9 provides a summary of the project's operational LSTs.

Table 9: SCAQMD Localized Significance Thresholds - Operations

Pollutant	Averaging Time	Significance Threshold
Nitrogen Dioxide (NO_2)	1-hour (State) 1-hour (National)[1] Annual	0.18 ppm 0.10 ppm 0.03 ppm
Carbon Monoxide (CO)	1-hour 8 hour	20 ppm 9 ppm

Table 9 (cont.): SCAQMD Localized Significance Thresholds - Operations

Pollutant	Averaging Time	Significance Threshold
PM_{10} - Operations	24-hour Annual	2.5 μg/m^3 1.0 μg/m3
$PM_{2.5}$ - Operations	24-hour	2.5 μg/m3

Note:
[1] The SCAQMD has not included the federal NO_2 standard in its listing of LSTs; however, this standard has been included in the assessment.
Source: South Coast Air Quality Management District, 2012b.

The SCAQMD has also defined localized significance thresholds for sulfur dioxide, sulfate, and lead. The project, however, is expected to emit insignificant amounts of these pollutants.

4.2.3 - Health Risk Significant Thresholds

In addition to the thresholds established above for pollutants, the SCAQMD has also defined health risk thresholds. These thresholds are represented as a cancer risk to the public and a non-cancer hazard from exposures to TACs. Cancer risk represents the probability (in terms of risk per million individuals) that an individual would contract cancer resulting from exposure to TACs continuously over a period of 70 years for sensitive receptors. Thus, an individual located in an area with a cancer risk of one would experience a one chance out of a population of one million of contracting cancer over a 70-year time period, assuming that individual lives in that area continuously for the entire 70-year time period.

TACs can also cause chronic (long-term) related non-cancer illnesses such as reproductive effects, respiratory effects, eye sensitivity, immune effects, kidney effects, blood effects, central nervous system effects, birth defects, or other adverse environmental effects. Risk characterization for non-cancer health hazards from TACs is expressed as a hazard index (HI). The HI is a ratio of the predicted concentration of the project's emissions to a concentration considered acceptable to public health professionals, termed the Reference Exposure Level (REL). The SCAQMD has established the following health risk thresholds.

Project-Specific Health Risk Significance Thresholds

The SCAQMD has established the following project-specific health risk significance thresholds (SCAQMD 2015b):

Maximum Incremental Cancer Risk: >=10 in 1 million.

1.

Hazard Index (project increment) >=1.0.

A significant impact would occur if a project's impacts exceeded any of these thresholds.

Cumulative Health Risk Significance Thresholds

The AQMD has published a report on how to address cumulative impacts from air pollution: White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution (SCAQMD 2003c). In this report the AQMD clearly states (Page D-3):

> …the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR. The only case where the significance thresholds for project specific and cumulative impacts differ is the Hazard Index (HI) significance threshold for toxic air contaminant (TAC) emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility-wide) is HI > 3.0. It should be noted that the HI is only one of three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts.
>
> Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant.

4.2.4 - CO "Hotspot" Thresholds

The largest contributor of CO emissions during project operations is typically from motor vehicles. A CO hotspot represents a condition wherein high concentrations of CO may be produced by motor vehicles accessing a congested traffic intersection under heavy traffic volume conditions. The CO hotspot thresholds are represented by the most restricted state or federal CO ambient air quality standards:

- 1-hour CO standard: 20 ppm; and
- 8-hour CO standard: 9 ppm.

If the CO contributed by the project in combination with CO produced by non-project traffic exceeds the above standards, then the project would have a significant impact.

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SECTION 5: AIR QUALITY AND HEALTH RISK MODELING PARAMETERS AND ASSUMPTIONS

5.1 - Model Selection

Air pollutant emissions can be estimated by using emission factors and a level of activity. Emission factors represent the emission rate of a pollutant given the activity over time, for example, grams of NO_X per horsepower per hour or grams of NOx per vehicle mile traveled. The ARB has published emission factors for on-road mobile vehicles/trucks in the emission factors (EMFAC) mobile source emissions model, and emission factors for off-road equipment and vehicles in the OFFROAD emissions model. An air emissions model (or calculator) combines the emission factors and the various levels of activity, and outputs the emissions for the various pieces of equipment.

The California Emissions Estimator Model (CalEEMod) version 2013.2.2 was developed in cooperation with the SCAQMD and other air districts throughout the State. CalEEMod is designed as a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas emissions associated with construction and operation from a variety of land uses.

Emission factors are often updated and there is a normal lag time between the development of new emission factors and the integration of the new emissions factors into the appropriate models. The current version of CalEEMod uses OFFROAD2011 and EMFAC2011[8] emission factors.

The models used in this analysis are summarized as follows:

- Construction emissions: CalEEMod, version 2013.2.2.
- Operational regional emissions: CalEEMod, version 2013.2.2 (with EMFAC2011).
- Operational localized emissions: EMFAC2014 and methods described below.
- Operational air quality and health risk impacts: USEPA AERMOD air dispersion model (Version 15181)

5.2 - Construction

5.2.1 - Emission Assumptions

Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and prevailing weather conditions. Construction emissions result from onsite and offsite activities. Onsite emissions principally consist of exhaust emissions from the activity levels of heavy-duty construction equipment, motor vehicle operation, and fugitive dust (mainly PM_{10}) from disturbed soil. Additionally, paving operations and application of architectural coatings would release VOC emissions. Offsite emissions are caused by motor vehicle exhaust from delivery vehicles, worker traffic, and road dust (PM_{10} and $PM_{2.5}$).

[8] Note that the ARB has released an update to the EMFAC2011 model, the EMFAC2014 model; however, the EMFAC2014 model has not yet been integrated into the CalEEMod land use emission model

The construction equipment list is shown in Table 11 and was derived from the default equipment assumptions contained in the CalEEMod model for a warehouse project and construction schedule estimates provided by the applicant. The activity for construction equipment is based on the horsepower and load factors of the equipment. In general, the horsepower is the power of an engine - the greater the horsepower, the greater the power. The load factor is the average power of a given piece of equipment while in operation compared with its maximum rated horsepower. A load factor of 1.0 indicates that a piece of equipment continually operates at its maximum operating capacity. This analysis uses the CalEEMod default load factors for off-road equipment.

For the building construction phase, construction equipment operating hours and numbers represent the average equipment activity over the phase. Most equipment is not expected to operate throughout the entire building construction phase, therefore, activity has been assumed to be evenly distributed over the entire phase in this analysis. Portions of the site would be paved to provide 1,237 total parking spaces. A conceptual construction schedule is provided in Table 10. Table 11 provides a listing of construction equipment based on the default information contained in the CalEEMod for the project land use and development size.

Table 10: Conceptual Construction Schedule

Construction Phase	Start Date	End Date	Duration (days)
Site Preparation	1/2/2016	6/17/2016	120
Mass Grading	6/18/2016	9/16/2016	65
Building Construction	9/17/2016	9/19/2017	262
Tenant Improvements (Architectural Coating)	1/2/2017	6/3/2017	60
Paving	6/1/2017	6/28/2017	20
Source: site preparation schedule provided by the CalEEMod model default estimate; remainder of the schedule based on information provided by the project applicant based on a start year of 2016; see Appendix A			

Table 11: Construction Equipment Assumptions

Activity	Equipment	Number	Hours per day	Horse-power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8	255	0.40
	Tractors/Loaders/Backhoes	4	8	97	0.37
Mass Grading	Excavators	2	8	162	0.38
	Scrapers	6	8	361	0.48
	Tractors/Loaders/Backhoes	2	8	97	0.37
	Off-highway trucks	2	4	174	0.41
Building Construction	Cranes	1	7	226	0.29
	Generator Sets	1	8	84	0.74

Table 11 (cont.): Construction Equipment Assumptions

Activity	Equipment	Number	Hours per day	Horse-power	Load Factor
	Forklifts	2	8	89	0.20
	Trencher	1	8	80	0.50
	Tractors/Loaders/Backhoes	2	7	97	0.37
	Welders	1	8	46	0.45
Tenant Improvements (Architectural Coatings)	Air Compressors	5	8	78	0.48
Paving	Pavers	2	8	125	0.42
	Paving Equipment	2	8	130	0.36
	Rollers	2	8	80	0.38
Source: see Appendix A, The equipment inventory for site preparation and paving construction activities were taken from the CalEEMod default equipment inventory for these construction activities; the equipment inventory for the grading, building construction, and tenant improvements was derived from information provided by the project applicant; equipment hours, horsepower, and load factors for all equipment were taken from the CalEEMod model					

Equipment Tiers and Emission Factors

Equipment tiers refer to a generation of emission standards established by the US EPA and ARB that apply to diesel engines in off-road equipment. The "tier" of an engine depends on the model year and horsepower rating; generally, the newer a piece of equipment is, the greater the tier it is likely to have. Excluding engines greater than 750 horsepower, Tier 1 engines were manufactured generally between 1996 and 2003. Tier 2 engines were manufactured between 2001 and 2007. Tier 3 engines were manufactured between 2006 and 2011. Tier 4 engines are the newest and some incorporate hybrid electric technology; they were manufactured after 2007 (SCAQMD 2011).

CalEEMod contains an inventory of construction equipment that incorporates estimates of the number of equipment, their age, their horsepower, and equipment tier from which rates of emissions are developed. The CalEEMod default tier mix was used in this analysis for the estimation of emissions from onsite construction equipment for the unmitigated scenario.

CalEEMod's off-road emission factors are based on the equipment populations from the OFFROAD2011 model. For the unmitigated scenario, emission factors for the applicable year of each construction phase were used.

Fugitive Dust

SCAQMD Rule 403 requires fugitive dust generating activities follow best available control measures to reduce emissions of fugitive dust. These measures are accounted for in CalEEMod as "mitigation" because the model categorizes the measures as "mitigation," even though they are technically not

mitigation. The best available control measures and the associated measure in CalEEMod are displayed in Table 12.

Table 12: Best Available Control Measures

Best Available Control Measure[1]	Associated Measure in CalEEMod [2]
Clearing and Grubbing 02-1 Maintain stability of soil through pre-watering of site prior to clearing and grubbing. 02-2 Stabilize soil during clearing and grubbing activities. 02-3 Stabilize soil immediately after clearing and grubbing activities. **Earth Moving Activities** 08-1 Pre-apply water to depth of proposed cuts 08-2 Re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction 08-3 Stabilize soils once earth-moving activities are complete	Water exposed surfaces three times per day Pre-water to 12 percent
Import/Export of Bulk Materials 09-1 Stabilize material while loading to reduce fugitive dust emissions. 09-2 Maintain at least six inches of freeboard on haul vehicles. 09-3 Stabilize material while transporting to reduce fugitive dust emissions. 09-4 Stabilize material while unloading to reduce fugitive dust emissions. 09-5 Comply with Vehicle Code Section 23114.	Water exposed surfaces three times per day
Landscaping 10-1 Stabilize soils, materials, slopes Guidance: Apply water to materials to stabilize; maintain materials in a crusted condition; maintain effective cover over materials; stabilize sloping surfaces using soil until vegetation or ground cover can effectively stabilize the slopes; hydroseed prior to rain season.	Water exposed surfaces three times per day
Staging Areas 13-1 Stabilize staging areas during use by limiting vehicle speeds to 15 miles per hour.	Reduce speed on unpaved roads to 15 miles per hour.
Traffic Areas for Construction Activities 15-1 Stabilize all off-road traffic and parking areas. 15-2 Stabilize all haul routes. 15-3 Direct construction traffic over established haul routes. Guidance: Apply gravel/paving to all haul routes as soon as possible to all future roadway areas; barriers can be used to ensure vehicles are only used on established parking areas/haul routes.	Water exposed surfaces three times per day

Sources:
[1] SCAQMD Rule 403
[2] Applied in CalEEMod - output in Appendix A

Construction Offsite Trips

CalEEMod default values for worker trip generation, trip length, and vehicle fleet were used in this analysis. Vendor trips were also calculated using CalEEMod default values. The CalEEMod default vehicle type (Heavy Heavy-Duty Truck) was used for haul trips; the soil would be balanced onsite.

A summary of the construction related trips is shown in Table 13. The total number of offsite construction trips would not necessarily occur on the same day since the various construction activities would vary each day.

Table 13: Construction Offsite Trips

Activity	Construction Trips		
	Worker (trips per day)	Vendor (trips per day)	Haul (trips per day)
Site Preparation	18	0	0
Mass Grading	30	0	0
Building Construction	882	344	0
Tenant Improvements	176	0	0
Paving	15	0	0
Source: CalEEMod, Appendix A			

5.2.2 - Localized Analysis Methodology

As noted in Section 4.2.2 above, the assessment of localized air quality impacts during construction employed the SCAQMD's daily emission LST tables based on the location of the project, the construction area where the emissions would be generated, and the distance to the nearest sensitive receptor.

5.3 - Operation

Operational emissions are those emissions that occur during operation of the project. The major sources are summarized below.

5.3.1 - Emission Assumptions – Regional Emissions

Motor Vehicles

Motor vehicle emissions refer to exhaust and road dust emissions from the motor vehicles that would travel to and from the project site. Mobile emissions from passenger vehicles and heavy-duty trucks were modeled separately using different CalEEMod runs since each vehicle class is assumed to have a different trip length. The emissions from both sources were estimated using CalEEMod model for estimating of regional emissions. Daily and peak hour vehicle trips, trip generation rates, and fleet mix assumptions from the project traffic study (Urban Crossroads 2014) were used in this analysis. The total daily trip generation for the project was calculated as 3,126 trips (overall trip rate

of 1.68 trips per thousand square feet of building space), while the total peak hour (PM peak) trips were calculated as 223 trips (overall trip rate of 0.12 trips/thousand square feet of building space).

Motor Vehicles - Passenger Vehicle Fleet

The trip generation rates for passenger vehicles are shown in Table 14. The trip generation rates are from the project specific traffic study (Urban Crossroads 2014). Passenger vehicles comprise 1,935 daily trips, and 149 peak hour trips.

Table 14: Passenger Vehicle Trip Generation Rates

Land Use	Quantity	Units	Daily Trip Generation Rate (trips/unit/day)		
			Weekday	Saturday	Sunday
Warehouse	1,860.76	ksf	1.040	1.040	1.040
Land Use	**Quantity**	**Units**	**Peak Hour Trip Generation Rate (trips/unit/hour)**		
			Weekday	**Saturday**	**Sunday**
Warehouse	1,860.76	Ksf	0.080	0.080	0.080

Notes:
ksf = 1,000 square feet
Saturday and Sunday trip rate assumed to be the same as weekday trip rate.
Source: Urban Crossroads 2014.

The CalEEMod default trip percentages for an unrefrigerated warehouse were used. In addition, the CalEEMod default round trip lengths for an urban setting (SoCAB portion of Riverside County) were used in this analysis of passenger vehicles.

The vehicle fleet mix is defined as the mix of motor vehicle classes active during the operation of the project. Emission factors are assigned to the expected vehicle mix as a function of vehicle class, speed, and fuel use (gasoline and diesel-powered vehicles). The passenger vehicle fleet mix used in this analysis is assumed to include only light duty automobiles, light duty trucks, and medium duty trucks. The passenger vehicle fleet mix is shown in Table 15. The CalEEMod default vehicle fleet was changed based on the data in the traffic study, which indicates that there would be 1,079 LDA, 153 LDT1, 481 LDT2, and 222 MDV daily trips.

Table 15: Passenger Vehicle Fleet Mix

Type of Vehicle	Fleet Mix (%)
Light duty automobile (LDA)	55.8
Light duty truck (LDT1)	7.9
Light duty truck (LDT2)	24.9
Medium duty vehicle (MDV)	11.4
Light-heavy duty truck (LHDT1)	0.0

Table 15 (cont.): Passenger Vehicle Fleet Mix

Type of Vehicle	Fleet Mix (%)
Light-heavy duty truck (LHDT2)	0.0
Medium-heavy duty truck (MHDT)	0.0
Heavy-heavy duty truck (HHDT)	0.0
Other bus (OBUS)	0.0
Urban bus (UBUS)	0.0
Motorcycle (MCY)	0.0
School bus (SBUS)	0.0
Motor home (MH)	0.0
Source of Project Analysis: FirstCarbon Solutions based on the CalEEMod default and the traffic study.	

Motor Vehicles - Heavy Duty Truck Fleet

The trip generation rates for heavy-duty trucks are shown in Table 16. The trip generation rates are from the project specific traffic study (Urban Crossroads 2014). Heavy-duty trucks comprise 38.1 percent of the daily vehicle fleet or 1,191 trips per day, and 33.3 percent of the peak hour (PM) trips or 74 peak hour trips.

Table 16: Heavy Duty Truck Trip Generation Rates

Land Use	Quantity	Units	Daily Trip Generation Rate (trips/unit/day)		
			Weekday	Saturday	Sunday
Warehouse	1,860.76	ksf	0.64	0.64	0.64
Land Use	**Quantity**	**Units**	**Peak Hour Trip Generation Rate (trips/unit/hour)**		
			Weekday	**Saturday**	**Sunday**
Warehouse	1,860.76	ksf	0.04	0.04	0.04
Notes: ksf = 1,000 square feet Saturday and Sunday trip rate assumed to be the same as weekday trip rate. Source: Urban Crossroads 2014.					

The CalEEMod default pass-by rate was used in this analysis. The CalEEMod default trip length values are not appropriate for these types of heavy-duty truck trips associated with warehouse land uses. For unspecified warehouse projects, SCAQMD recommends a default trip length of 40 miles. This trip length was used in the analysis of the heavy-duty truck fleet.

The heavy-duty truck fleet mix used in this analysis is assumed to consist of light heavy-duty trucks (LHDT1, LHDT2), medium heavy-duty trucks (MHDT), and heavy heavy-duty trucks (HHDT). The heavy-duty truck fleet mix is shown in Table 17, and is based on the project traffic study.

Table 17: Heavy Duty Truck Fleet Mix

Type of Vehicle	Project Daily Truck Fleet (%)	Percentage of Peak Hour (PM) Truck Fleet (%)
Light-heavy duty truck (LHDT1)	16.8	16.2
Light-heavy duty truck (LHDT2)	5.2	5.9
Medium-heavy duty truck (MHDT)	17.7	17.7
Heavy-heavy duty truck (HHDT)	60.3	60.2
Source: Urban Crossroads 2014.		

Daily pollutant emissions from the various mobile sources were calculated using information derived from the project description, project traffic study, and mobile source emission factors from the ARB EMFAC2011 mobile source emissions factor model that is embedded in the CalEEMod land use emission model.

Other Emission Sources

Architectural Coatings (Painting)

Paints release VOC emissions. The buildings in the project would be repainted on occasion. CalEEMod defaults were used for this purpose.

Consumer Products

Consumer products are various solvents used in non-industrial applications, which emit VOCs during their product use. "Consumer Product" means a chemically formulated product used by household and institutional consumers including, but not limited to, detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn, and garden products; disinfectants; sanitizers; aerosol paints; and automotive specialty products; but does not include other paint products, furniture coatings, or architectural coatings (ARB 2011c).

The default emission factor developed for CalEEMod of 0.0000198 pounds VOC per day, per square foot is based on a statewide factor and was used for the project.

Landscape Equipment

CalEEMod estimated the landscaping equipment using the default assumptions in the model.

Electricity

There would be emissions from the power plants that would generate electricity to be used by the project (for lighting, etc.). CalEEMod defaults were used to estimate these emissions from the project.

The default CalEEMod emission factors for Southern California Edison (which are from the year 2007) are as follows:

- Carbon dioxide: 630.89 pound per megawatt hour (lb/MWh)
- Methane: 0.029 lb/MWh
- Nitrous oxide: 0.006 lb/MWh

Electricity consumption for the project is shown in Table 18. The CalEEMod default electricity consumption rate was used. This is because the project's anticipated electricity consumption assumes LEED compliance and other energy features.

Table 18: Project Electricity Consumption

Scenario	Electrical Consumption (kWh/sq ft/year)			Total (MWh/year)
	Title 24	Non-Title 24	Lighting	
Default CalEEMod factors for unrefrigerated warehouse	0.45	0.82	Parking: 0.88 Buildings: 1.75	5,860
Project with Reductions: applies LEED and energy efficient features	0.11	0.12	Parking: 1.43 Buildings: 0.39	1,555

Notes:
sq ft = square feet MWh = megawatt hours KWh = kilowatt hours
Source of Project with Reductions: RPM Engineers (2014) Estimated Annual Energy Use, linearly scaled downward from the original project size of 2,560,000 square feet to 1,860,760 square feet
Source of Total: Electrical Consumption multiplied by 1,860,760 square feet of buildings and 275,200 square feet of parking and divided by 1,000

CalEEMod has three categories for electricity consumption: electricity that is impacted by title-24 regulations, non-title-24 electricity, and lighting. The Title 24 uses are defined as the major building envelope systems covered by California's Building Code, Title 24 Part 6, such as space heating, space cooling, water heating, and ventilation. Lighting is separate since it can be both part and not part of Title-24. Since lighting is not considered as part of the building envelope energy budget, CalEEMod does not consider lighting to have any further association with Title 24 references in the program. Non-Title 24 includes everything else such as appliances, break room equipment, computer servers, forklift chargers, and other electronics. Electricity consumption was subdivided into categories based on the estimated electricity consumption report provided by the applicant (RPM Engineers 2014).

Natural Gas

There would be emissions from the combustion of natural gas used for the project (water heaters, heat, etc.). The project's natural gas consumption is shown in Table 19 based on the default values contained in the CalEEMod model.

Table 19: Project Natural Gas Consumption

Land Use	Building Area (sq ft)	Consumption (kBtu/year)	Consumption (kBtu/sq ft/year)
Warehouse	1,876,760	3,982,300	2.14

sq ft = square feet KBtu = one thousand British thermal units
Source: CalEEMod model default estimates

Water and Wastewater

There would be greenhouse gas emissions from the use of electricity to pump water to the project and to treat wastewater. Water usage for the project was estimated based on the water use report from the Yucaipa Valley Water District Water Supply Study (YVWD 2013).

Table 20: Project Water Consumption

Land Use	Building Area (sq ft)	Water Use (million gallons/year)[(1)]		
		Total	Indoor	Outdoor
Warehouse	1,860,760	20.35	11.36	8.99

Note:
(1) The indicated water consumption rates have been linearly scaled downward from the original project size of 2,560,000 square feet to 1,860,760 square feet
sq ft = square feet
Source: Yucaipa Valley Water District Water Supply Study (YVWD 2013).

Solid Waste

Greenhouse gas emissions would be generated from the decomposition of solid waste generated by the project. CalEEMod was used to estimate the greenhouse gas emissions from this source. The CalEEMod default for the mix of landfill types is as follows:

- Landfill no gas capture: 6 percent
- Landfill capture gas flare: 94 percent
- Landfill capture gas energy recovery: 0 percent

The CalEEMod 2013 default waste generation values were used for this analysis. The waste generation rate from the project is shown in Table 21.

Table 21: Waste Generation

Land Use	Size at buildout (sq ft)	Waste at buildout (tons/year)	Disposal Rate (tons/Ksq ft/year)
Warehouse	1,860,760	1,714	0.92

Notes:
sq ft = square feet; Ksq ft = thousand square feet
Source of disposal rate: CalEEMod model default

Vegetation

The project would construct buildings onsite as well as asphalt parking areas, thereby changing the land use and reducing potential carbon sequestration. The project would also plant trees and integrate landscape into the project design, thereby increasing carbon sequestration. These sequestration benefits were not quantified in CalEEMod, as project specific details of vegetation types and quantities were not available.

Other Support Equipment

The operation of the project would also require the use of forklifts and yard trucks to move delivered goods and trailers within the building yards. Information provided by the project applicant indicates that the forklifts and yard trucks would be electrically powered. In addition, the project applicant has indicated that there will be no requirement for standby emergency generators. Therefore, the electricity for the forklifts and yard trucks is included in the greenhouse gas emissions assessment.

5.3.2 - Emission Assumptions – Localized Operational Emissions

The predominant sources of local operational emissions are the motor vehicles and trucks that access the project site. Such emissions result from the delivery truck traffic that arrives, unloads, and departs daily from the project buildings and from the daily worker traffic accessing the project's parking lots. In this assessment, three main emission sources were evaluated as to their localized operational impacts on air quality:

- Delivery truck exhaust emissions from truck traffic that would travel to and within the project site from the entrances along Cherry Valley Boulevard;
- Truck idling emissions at loading docks of the project buildings; and
- Automobile traffic from workers while traveling to and within the project from entrances along Cherry Valley Boulevard.

The estimation of the mobile source emissions requires the specification of several key pieces of information including, the number of vehicle trips by vehicle type, trip travel lengths, vehicle idling time, and emission factors that define the amount of emissions as a function of vehicle speed and distance traveled, or amount of idling time per vehicle.

Daily pollutant emissions from the various mobile sources were calculated using information derived from the project description, project traffic study, and mobile source emission factors from the ARB EMFAC2014 mobile source emissions factor model. Onsite vehicle trip distances were determined from the project's site plan as the distance from the project entrance to the loading docks of the project buildings. Vehicle trips were also defined according to their driveway distribution and trip destinations along Cherry Valley Boulevard, east of the project and west of the project to Interstate 10 as per the project traffic study. The emission factors for the project's mobile source operational emissions were based on the 2017 fleet year, the opening year for the project. Vehicle travel speeds while traveling onsite were assumed to be 15 miles per hour (mph) for both trucks and worker vehicles, while passenger cars were assumed to travel at 35 mph and heavy duty trucks at 25 mph while traveling along Cherry Valley Boulevard. Delivery trucks were assumed to idle for 15 minutes per day at the

building loading dock areas. The inventory of diesel truck trips was presented earlier in Table 16 and Table 17 above. The project was assumed to operate over a 24-hour schedule. Daily pollutant emissions were used to estimate the project's daily and annual impacts. In addition to the estimation of daily emissions, peak hour emissions were also estimated to provide an assessment of impacts for nitrogen dioxide (NO_2)and carbon dioxide (CO), and estimates for the acute non-cancer hazard estimate which are based on 1 hour or 8 hour averaging times.

Emissions from motor vehicles can be characterized as follows:

- Combustion Emissions (grams/mile or grams/hour for idling): Combustion emissions (i.e., exhaust emissions) result from the combustion of fuel and are the main source of emissions for all pollutants. EMFAC has the capability to provide emission rates for user defined vehicle speeds, fuel type, vehicle class, and model year.
- Tire Wear (grams/mile) and Brake Wear (grams/mile): EMFAC has the capability to provide particulate emissions from tires and brakes occurring from operational wear.
- Running Loss (grams/mile): Running loss emissions are defined as evaporative hydrocarbons that are emitted from hoses, fittings or canisters, while the vehicle is in operation. This occurs either because fuel heating has caused the vapor generation rate to exceed the vehicle's capacity to control the vapors, or through permeation and leakage. (Total Organic gas emissions only)

The exhaust emissions for each pollutant are calculated as follows:

$$Emissions_{total} = \sum_{i=1}^{n} \left\{ VMT_i \left[EF_i + RL_i \right] + \left[EF_{idling\text{-}1} \times IdVOL_i \times T_i \right] \right\}$$

Where:

$Emissions_{total}$ = total running exhaust and idling emissions summed over all vehicle classes
EF_i = running exhaust emission factor for each vehicle type at a specific vehicle speed (g/mi)
EF_{idling} = idling emission factor for each vehicle class (g/hour)
VMT_i = total number of vehicle trips by vehicle class
$IdVOL_i$ = number of idling vehicles by vehicle class
RL_i = TOC evaporative running loss for each vehicle class (g/mi)
T_i = idling hours for each vehicle class (hours)
n = number of vehicle classes
$_i$ = vehicle class

Particulate matter emissions result from not only vehicle travel and idling, but also from tire wear and brake wear and from re-entrained road dust from travel on paved roads. The total particulate matter emission factor then includes the following:

$$PM = PM_r + PM_t + PM_b + PM_{erd}$$

Where:

PM = Particulate matter emission factor (g/mi).
PM_r = Running exhaust emission factor (g/mi).
PM_t = Tire wear emission factor (g/mi).
PM_b = Brake wear emission factor (g/mi)
PM_{erd} = Re-entrained road dust emission factor for paved roads (g/mi).

The tire wear and brake wear emission factors are derived from the EMFAC2014 emission model for both PM_{10} and $PM_{2.5}$ emissions.

The relevant expression for estimating road dust emissions on paved roads was taken from the EPA AP-42 emission methodology as follows (EPA 2011):

$$PM_{dust} = EF_{rd} \times VMT$$

Where:

PM_{dust} = Particulate emissions from re-suspended road dust.
VMT = Vehicle miles traveled by all vehicles along the road (mi/day).
EF_{erd} = re-entrained paved road dust emission factor calculated as:

$$EF_{erd} = k \times (sL)^{0.91} \times (W)^{1.02}$$

Where:

k = particle size multiplier for the particulate size of interest (lbs/VMT)
sL = silt loading (g/m^2)
W = average weight of all vehicles along the road (tons)

The emission factors for the various pollutants used in the localized analysis are provided in Appendix B.

5.3.3 - Localized Analysis Methodology (Dispersion Modeling) - Operations

Methodology

The evaluation of localized impacts determines the potential of the project to violate any air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations. To evaluate localized impacts for construction, an air dispersion model (EPA model, AERMOD) was used to simulate the movement of project-related pollutants through the air and compare the concentration of those pollutants with the localized significance thresholds.

Terrain elevations were obtained for the project site using AERMAP, the AERMOD terrain data pre-processor. The urban dispersion option was used, utilizing the County of Riverside population provided by the SCAQMD, 2,100,516. The meteorological data for the years 2008 through 2012 is from the SCAQMD Banning Airport. Table 22 summarizes the general AERMOD model assumptions

Table 22: General Modeling Assumptions

Feature	Assumption
Terrain processing	Complex terrain; elevations were obtained for the project site using the EPA AERMAP terrain data pre-processor
Emission source configuration	See Table 23
Regulatory Dispersion Options	Default Assumptions Used
Land Use	Urban; County of Riverside population provided by the SCAQMD (population: 2,100,516)
Coordinate System	Universal Transverse Mercator
Building downwash	Included in calculations; each building was assumed to be 47 feet in height
Meteorological Data	SCAQMD Banning Airport Meteorological Data for 2008-2012
NO_2 Assessment Methodology	Ambient Ratio Method
Receptor height	0 meters, as recommended by SCAQMD LST methodology
Source: FirstCarbon Solutions 2015.	

Emission Source Characterization

Each of the emission source types described above also requires geometrical and emission release specifications for use in the air dispersion model. Table 23 provides a summary of the assumptions used to configure the various emissions. By way of explanation, the following definitions are used in defining the emission source geometrical configurations referred to in Table 23:

- Point source: a single identifiable local source of emissions; it is approximated in the AERMOD air dispersion model as a mathematical point in the modeling region, with a location and emission characteristics such as height of release, temperature, etc. (Example: a stack or vent); and
- Line source: a series of adjacent volume sources along a path (Example: vehicular traffic along a street).

Table 23: Summary of Emission Source Configurations

Emission Source Type	Geometric Configuration	Relevant Assumptions
Onsite Diesel Truck Traffic	Line Sources	• See Table 16 and Table 17 for an inventory of truck operations • Stack release height: 12 feet • Vehicle Speed: 15 mph • Length of the line source (distance from the facility entrances on Cherry Valley Boulevard to the loading docks of the project buildings)

Table 23 (cont.): Summary of Emission Source Configurations

Emission Source Type	Geometric Configuration	Relevant Assumptions
		• Vehicle types: heavy duty diesel delivery trucks • Emission factor: ARB EMFAC 2014 • Operations: 24/7
Onsite Diesel Truck Idling	Point Sources located at each facility	• See Table 17 and Table 18 for an inventory of truck operations • Stack release height: 12 feet • Stack release characteristics > Stack diameter: 0.3 feet > Stack velocity: 170 feet/sec > Stack temperature: 200° F • Idle time: 15 minutes per truck per day • Vehicle type: heavy duty diesel delivery trucks • Emission factor: ARB EMFAC 2014 • Operations: 24/7
Offsite Vehicle Traffic	Line sources	• See Table 17 and Table 18 for an inventory of truck operations • Stack release height: 12 feet • Vehicle speed: 35 mph for passenger cars and 25 mph for heavy duty trucks • Vehicle type: passenger cars and heavy duty trucks • Travel along Cherry Valley Boulevard to and from the project driveways • Operations: 24/7
Source: FirstCarbon Solutions 2015.		

Exhibit 5 provides the location of the various project facilities and emission source locations analyzed in this assessment.

Receptor Network

The assessment also requires that a network of receptors be specified such that the impacts can be computed at the various locations within the network.

Exhibit 6 shows the various receptor locations that included fence line receptors and locations of existing and proposed sensitive receptors. Receptor locations were generally placed at 50-meter intervals south of the project in the residential area of the proposed Sunny Cal Specific Plan and at 100 and 200-meter intervals surrounding the project site.

5.3.4 - Health Risk Assessment Methodology

About Health Risk Assessments

A HRA is a guide that helps to determine if current or future exposures to a chemical or substance could affect the health of a population. The State of California Office of Environmental Health Hazard Assessment (OEHHA) develops methods for conducting HRAs. As defined under the Air Toxics "Hotspots" Information and Assessment Act of 1987 ["AB 2588" (Chapter 1252, Statutes of

1987), California Health and Safety Code Section 44306], "A health risk assessment means a detailed comprehensive analysis prepared pursuant to Section 44361 to evaluate and predict the dispersion of hazardous substances in the environment and the potential for exposure of human populations and to assess and quantify both the individual and population-wide health risks associated with those levels of exposure" (OEHHA 1987).

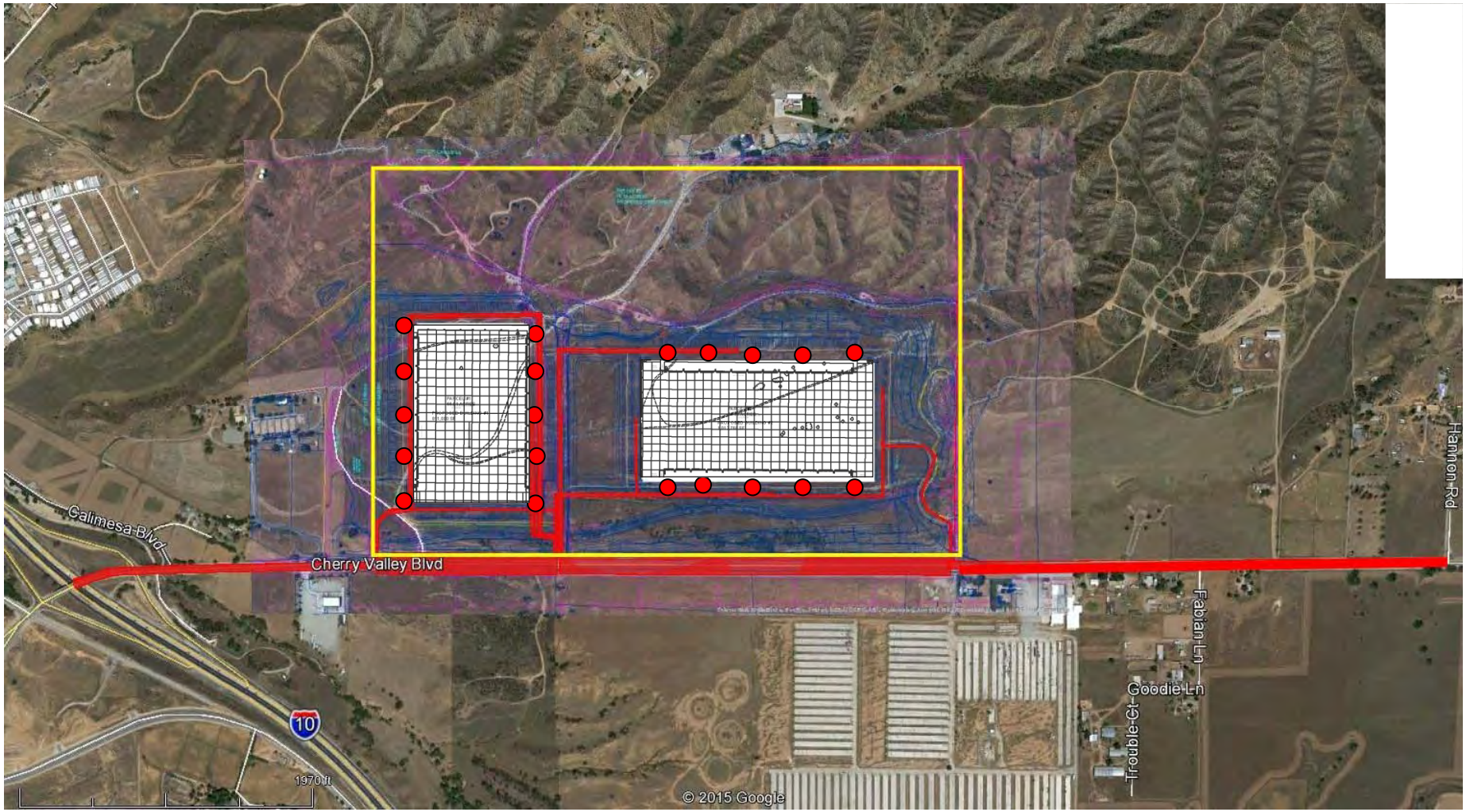
This HRA builds upon the methodology described above in the localized air quality assessment by examining the project's potential health risk impacts. The HRA methodology applies a risk characterization model to the results from the air dispersion model to estimate potential health risks at each sensitive receptor location. However, unlike the localized assessment, which looks at impacts within a specific year, the HRA examines the impacts over extended exposure time, which in the case of cancer risk is a 70-year lifetime exposure. The methodology applied in calculating cancer risk from TACs has been published by the SCAQMD and the OEHHA. In this regard, cancer risk is expressed as the probability of an individual developing cancer due to exposure to TAC emissions out of a population of 1 million individuals. Thus, a receptor calculated to have a cancer risk of 1 in one million, means that this receptor has a probability of 1 person in 1 million of developing cancer from the continuous exposure to TACs.

The methodology basically assumes that a person is exposed continuously to a project's TAC emissions for a period of 350 days per year, 24 hours per day, over a 70-year lifetime period. The SCAQMD has established a significance threshold of 10 in 1 million for cancer risk attributable to exposure to a project's emissions. Project-related cancer risks at sensitive receptors exceeding this significance threshold are considered by the SCAQMD to result in significant health risk impacts for purposes of CEQA compliance.

Clearly, this methodology provides a very conservative estimate of health risk given that an individual would not typically reside in any one location for a 70-year period, and be continuously exposed over that period, 350 days per year, 24 hour per day. Exposure duration is one factor in determining the estimation of cancer risk. In a recent study prepared by the California Office of Environmental Health Hazard Assessments (OEHHA 2012), OEHHA concluded that from examining US census data from 2006 to 2009, over 90 percent of California householders had lived at their current home address for less than 30 years, and over 63 percent householders had lived at their current residence for 9 years or less.

Other California surveys indicate that during the period 2000-2001, on average, Californians spend approximately 73 percent of their time at home per day. When looking at the data by age group, the time increases to 85 percent for children under 2 years old. Children that are 2 years or older but less than 16 years old spend 72 percent of their time at home; whereas, Californians that are 16 years or older spend 73 percent of their time at home. In addition, all ethnicity groups spend 71 percent to 74 percent of their time at home. The data also demonstrate a trend where the higher the total household income is, the less time the residents spend at their home.

Thus, the cancer risk methodology applied in the HRA will produce conservative estimates of health risks (in terms of over-estimating impacts).



Vehicle Travel Sources

Truck Idling Sources

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Exhibit 5
Locations of Operational Emission Sources

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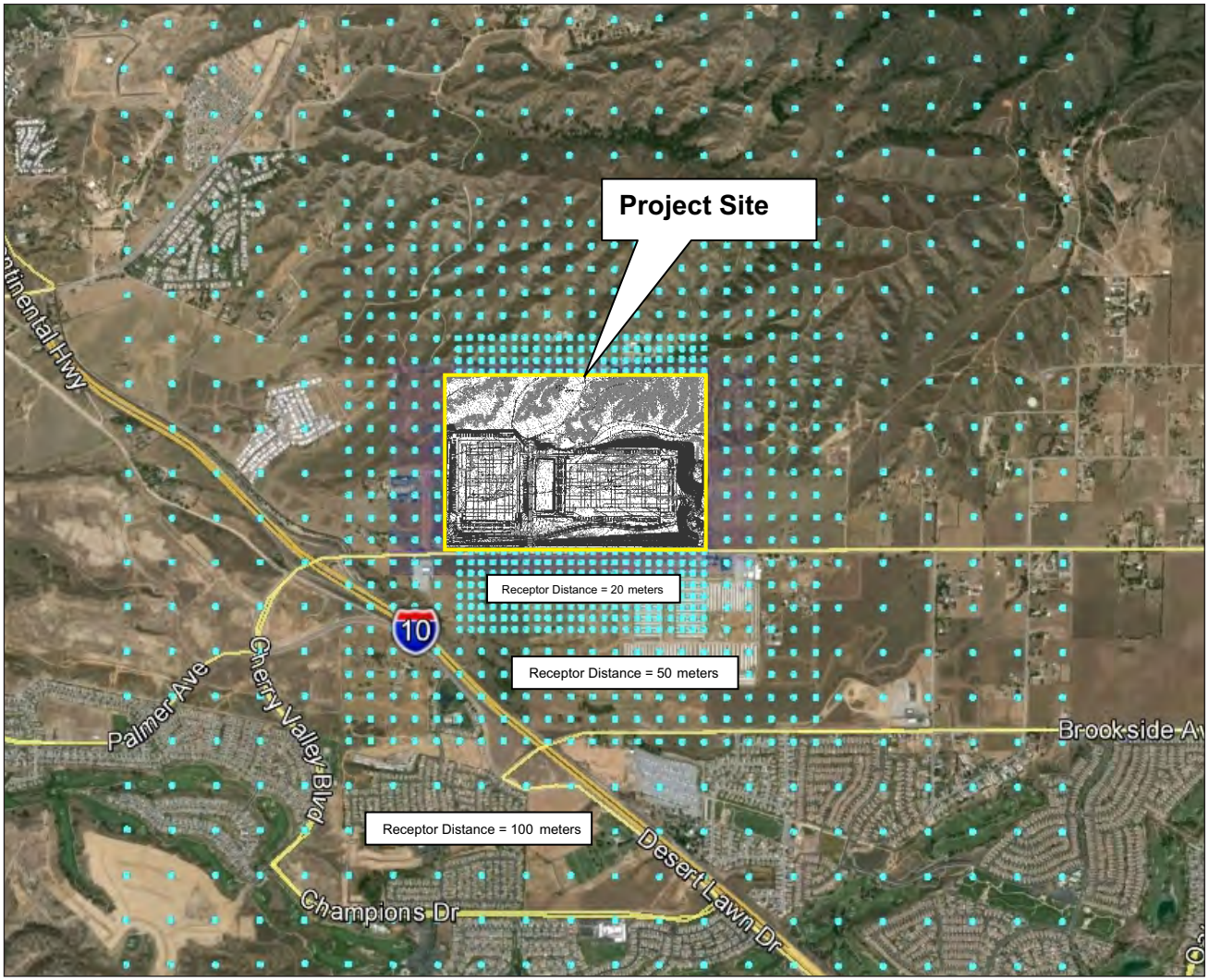

Receptor Locations

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Exhibit 6
Air Dispersion Model Receptor Network

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Exposures to TACs such as DPM can also cause chronic (long-term) related non-cancer illnesses such as reproductive effects, respiratory effects, eye sensitivity, immune effects, kidney effects, blood effects, central nervous system effects, birth defects, or other adverse environmental effects.

Risk Assessment Methodology

The construction and operation of the project would result in the release of TACs from the operation of diesel-powered equipment and vehicles. Exposures to TACs would have the potential to cause health risks in terms of excess risk of cancer and non-cancer health effects as discussed below.

Toxic Air Contaminants of Concern

The most important TAC emitted by the project with respect to health risk is DPM from off-road construction equipment and from the operation of diesel-fueled vehicles during operations. As stated earlier, between 70 to 80 percent of the estimated airborne cancer risk within the SCAQMD is due to DPM from all sources located within the SoCAB. Other TACs are also associated with the operation of gasoline vehicles and include pollutants such as benzene, 1, 3-butadiene, formaldehyde, acetaldehyde, ethyl benzene, and naphthalene. The most relevant health effects of DPM were discussed in Table 4 above.

Cancer Health Risk Assessment Methodology

The cancer risk from DPM is calculated by multiplying an average DPM concentration calculated using the AERMOD air dispersion model, and an inhalation exposure factor as in Equation 1 below (OEHHA 2003).

Cancer Risk = Inhalation cancer potency factor (CPF) x Dose-inhalation (EQ-1)

Where:

Cancer Risk = Total individual lifetime excess cancer risk defined as the cancer risk a hypothetical individual faces if exposed to carcinogenic emissions from a particular facility; this risk is defined as an excess risk because it is above and beyond the background cancer risk to the population contributed by emission sources not related to the project; cancer risk is expressed in terms of risk per million exposed individuals.

Inhalation cancer potency factor (CPF) = 1.1 (milligrams per kilogram per day)$^{-1}$ for DPM;

$$\text{Dose-inhalation} = C_{air} \times (\text{DBR} \times \text{EF} \times \text{ED} \times 10^{-6} / \text{AT}) \times 10^{6} \quad \text{(EQ-2)}$$

Where:

C_{air} is the average DPM concentrations calculated from the AERMOD model in $\mu g/m^3$.
DBR is the average daily breathing rate (L/kg of body weight - day)
EF is the exposure frequency (days per year)
ED is the exposure duration (years)
AT is the time period over which the exposure is calculated (days).

The values listed in the cancer risk equations are shown in Table 24.

Table 24: Inhalation Exposure Factor Values for Sensitive Receptors

Receptor	CPF - diesel PM (mg/kg-dy)-1	DBR (liters/kg-day)	EF (days/yr)	ED (yrs)	AT (days)
Sensitive/Residential	1.1	302	350	70	25,550

Notes:
CPF = cancer potency factor diesel PM = diesel particulate matter DBR = daily breathing rate
EF = exposure frequency ED = exposure duration
AT = average time period over which the exposure is averaged.
Source: OEHHA 2003.

Applying the cancer risk equations with the values for the various factors shown in Table 24, the Cancer Risk for DPM is then calculated as:

$$\text{Sensitive/Residential Cancer Risk}_{\text{diesel PM}} = C_{\text{diesel PM}} \times 318.5 \qquad \text{(EQ-3)}$$

Where:

Cancer $\text{Risk}_{\text{diesel PM}}$ = lifetime 70-year cancer risk from DPM emissions (risk/million)
$C_{\text{diesel PM}}$ = average DPM concentration from the AERMOD model in $\mu g/m^3$ over the lifetime 70-year exposure period

Non-Cancer Health Risk Characterization

Chronic Non-Cancer Impacts

Exposures to TACs such as DPM can also cause chronic (long-term) related non-cancer illnesses such as reproductive effects, respiratory effects, eye sensitivity, immune effects, kidney effects, blood effects, central nervous system effects, birth defects, or other adverse environmental effects. Risk characterization for non-cancer health risks from DPM is expressed as a HI. The HI is a ratio of the predicted concentration of a project's emissions to a concentration considered acceptable to public health professionals, termed the REL. A significant risk is defined by the SCAQMD as an HI of 1 or greater. When evaluating chronic non-cancer effects due to TAC exposures, a hazard quotient (HQ) is established for each individual TAC as follows and for each target organ[9] affected by the individual TAC:

$$HQ_i = C_{air}/REL_i \qquad \text{(EQ-4)}$$

Where:

HQ_i = chronic hazard quotient for each TAC
C_{air} = Annual average concentration of each TAC ($\mu g/m^3$)
REL = Chronic Reference Exposure Level ($\mu g/m^3$)

[9] A target organ is a biological organ(s) most adversely affected by exposure to a chemical substance and includes the respiratory system, cardiovascular system, eyes, nervous system, hematological system, immune system, reproductive system, developmental system, skin, and endocrine system

To evaluate the potential for adverse non-cancer health effects from simultaneous exposure to multiple TACs, the HQs for all TACs that affect the same target organ are summed yielding a HI as follows:

$$HI_{to} = \sum_{tO} HQ_{tac} \qquad \text{(EQ-5)}$$

Where:

HI_{to} = sum of the hazard quotients for all TACs affecting the same target organ
HQ_{tac} = hazard quotient for TAC and target organ.

Chronic health effects were calculated based on annual average DPM concentrations from the operation of the project, since DPM is the most important TAC considered in this assessment. The California OEHHA has assigned a chronic non-cancer REL of 5 μg/m^3 for DPM (OEHHA 2012) for DPM. DPM has effects on the respiratory system, which accounts for essentially all of the potential chronic non-cancer hazards from DPM. Therefore, the only HI calculated was for the respiratory system.

Acute Non-Cancer Impacts

Exposures to toxics air contaminants can also have short-term or acute non-cancer effects, typically dealing with exposures over an hour or so. The California OEHHA has not defined a reference exposure level for DPM appropriate for estimating acute non-cancer hazards from DPM. Therefore, to estimate the potential acute non-cancer impacts from the project operation, it was necessary to examine the various individual chemical components (or chemical species) that comprise the emissions from the diesel and gasoline motor vehicles. For this purpose, use was made of emission source chemical speciation profiles for TOG that provide estimates of the various chemical components that comprise the exhaust from diesel and gasoline vehicles. From this information, an estimate can be made of the maximum one-hour average concentration levels of the project's various chemical species from which an acute non-cancer hazard index can be determined.

Estimation of DPM Emissions

In accordance with accepted SCAQMD methodology, the emission factors for DPM (as PM_{10} exhaust) emissions were averaged over the time period of 2017 to 2086 to correspond to the 70-year exposure time period assumed in the estimation of lifetime cancer risks. This was accomplished by extracting the DPM emission factors for each year from 2017 to 2050 for each vehicle class, and speed from the EMFAC2014 mobile source emission model. The EMFAC2014 emission model does not provide emission factors beyond the year 2050; therefore, the emission factors beyond the year 2050 were set at their year 2050 values. An average DPM emission rate was then calculated as the average value of the emission factors calculated for the years 2017 to 2086. The relevant emission factors are provided in Appendix D.

5.3.5 - Supplemental Health Risk Assessment

Subsequent to the preparation of the health risk assessment contained within Section 5.3.3 above, a significant update in methodology and guidance for estimating cancer risks was published in March 2015 by the California Office of Environmental Health Hazards Assessment (OEHHA). The new OEHHA guidance uses more recent scientific findings to include children's greater sensitivities and

susceptibilities to exposures to toxic air contaminants. In general, residential cancer risks from pollutants like diesel particulate matter are found to be higher with the application of the new OEHHA guidance than the cancer risks estimated using the methodology currently summarized in Table 24 above as currently recommended by the SCAQMD which does not take into account child sensitivity and susceptibility. This supplemental assessment of cancer risk applies the new OEHHA guidance in updating the cancer risk estimates from the project.

Currently, the SCAQMD has not officially adopted the new OEHHA cancer risk guidance for evaluating cancer risks for purposes of CEQA assessments. However, while this supplemental assessment is not required under CEQA by the SCAQMD, it is presented below in anticipation of the guidance being adopted by the SCAQMD for CEQA evaluations in the near future.

Estimation of Motor Vehicle DPM Emissions with EMFAC2014

The project was assumed to commence operation in 2017. The emission factors for DPM (as PM_{10} exhaust) emissions were estimated for the years 2017, 2018, 2019, 2020, 2025, 2030, 2035, 2040, and 2045. This was done to account for the future reduction in DPM emissions forecasted by the new EMFAC2014 model from motor vehicles, particularly heavy duty trucks as motor vehicles meet the mandated state mobile vehicle emission regulations.

Estimation of Construction DPM Emissions

Construction DPM emissions (as PM_{10} exhaust) were estimated using the CalEEMod land use emission model as previously described in Section 5.2 above. Construction was assumed to commence in 2016 and continue into 2017.

Cancer Risk Methodology – New OEHHA Guidance

The new cancer risk guidance published by the OEHHA contains a set of assumptions for estimating cancer risks that incorporate early-in-life cancer risk adjustment factors that account for increased sensitivity and susceptibility of infants and young children to exposures to carcinogens. These adjustment factors include age-sensitivity weighting factors, age-specific daily breathing rates, and age-specific time-at-home factors. The formulation of cancer risk is similar to the formulation shown in Equation 2 above with the addition of the age adjustment factors (AAF) shown in Equation 6 below.

$$\text{Inhalation Exposure Factor} = CPF \times EF \times ED \times AAF/AT \quad \text{(EQ-6)}$$

Where:

CPF = Inhalation cancer potency factor for the TAC $(mg/kg\text{-}day)^{-1}$
EF = Exposure frequency (days/year)
ED = Exposure duration (years)
AT = Averaging time period over which exposure is averaged (days)
AAF = set of age-specific adjustment factors that include age sensitivity factors (ASF), daily breathing rates (DBR), and time at home factors (TAH)

The OEHHA recommended values for the various cancer risk parameters shown in Equation 6 are shown in Table 25. Note that even though the SCAQMD has not officially adopted the new OEHHA

guidance for CEQA evaluations, the SCAQMD provides recommended values for the various cancer risk parameters that are shown in Table 25.

Table 25: Exposure Assumptions for Cancer Risk – New OEHHA Guidance

Receptor Type	Exposure Frequency		Exposure Duration (years)	Age Sensitivity Factors (ASF)	Time at Home Factor (TAH)[1] (%)	Daily Breathing Rate[2] (DBR) (L/kg-day)
	Hours/ day	Days/year				
Sensitive/Residential						
3rd Trimester	24	350	0.25	10	100	361
0-2 years	24	350	2	10	100	1,090
3-15 years	24	350	14	3	100	572
16 to 30 years	24	350	14	1	73	261

Notes:
(1) Time at Home (TAH) factors recommended by the SCAQMD
(2) The daily breathing rates recommended by the SCAQMD are the 95th percentile rate for sensitive/residential receptors 0 to 2 years and 80th percentile breathing rates for ages 3 years and older
(L/kg-day) = liters per kilogram body weight per day
Source of Current OEHHA Guidance: OEHHA 2015 and SCAQMD 2015; see Appendix E

Annual average DPM air quality impacts were calculated at each receptor location for each year commencing with the construction in 2016 out to the year 2045, the 30-year exposure duration called for in the new OEHHA guidance for sensitive receptors. Specifically, construction annual DPM impacts were estimated for the years 2016 and 2017. Annual average operational impacts were estimated for the years 2017, 2018, 2019, 2020, 2025, 2030, 2035, 2040, and 2045. Operational DPM impacts were then interpolated between these years to provide annual DPM impacts for all years from 2016 to 2045. Note, the project's operational impacts during 2016 were set to zero. During 2017 when both construction and operations would occur simultaneously, the annual DPM impacts from construction were added to the annual DPM impacts from operations to provide a total impact assessment due to all sources of DPM emissions from the project. Equation 6 was then employed to estimate the cancer risk for each year during the 30-year exposure duration of 2016 to 2045. The 30-year exposure duration cancer risk was then estimated as the sum of the cancer risks for each individual year.

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SECTION 6: AIR QUALITY IMPACT ANALYSIS

This section calculates the estimated emissions from construction and operation of the project and compares the resulting air quality impacts to the relevant CEQA and SCAQMD significance thresholds.

6.1 - Impact Analysis

6.1.1 - Consistency with Air Quality Management Plan

Impact AQ-1:	**The project would conflict with or obstruct implementation of the applicable air quality plan.**

Impact Analysis

According to the 1993 SCAQMD Handbook, there are two key indicators of consistency with the AQMP:

1. Indicator: Whether the project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP. Project applicability: applicable and assessed below.
2. Indicator: A project would conflict with the AQMP if it will exceed the assumptions in the AQMP in 2010 or increments based on the year of project build-out and phase. The Handbook indicates that key assumptions to use in this analysis are population number and location and a regional housing needs assessment. The parcel-based land use and growth assumptions and inputs used in the Regional Transportation Model run by the SCAG that generated the mobile inventory used by the SCAQMD for AQMP are not available. Therefore, this indicator is not applied for the evaluation of the project.

In addition to indicator 1 above, consistency with the AQMP will also be determined based on whether the project complies with applicable control measures, rules, and regulations, as discussed below.

Project's Contribution to Air Quality Violations

According to the SCAQMD, the project is consistent with the AQMP if the project would not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP (SCAQMD 1993, page 12-3).

If a project's emissions exceed the SCAQMD regional thresholds for NO_X, ROG, PM_{10}, or $PM_{2.5}$, it follows that the emissions could cumulatively contribute to an exceedance of a pollutant for which the SoCAB is in nonattainment (ozone, nitrogen dioxide, PM_{10}, $PM_{2.5}$) at a monitoring station in the SoCAB. An exceedance of a nonattainment pollutant at a monitoring station would not be consistent with the goals of the AQMP - to achieve attainment of pollutants.

As noted in the discussion of Impact AIR-3 below, the regional significance analysis of construction emissions demonstrated that without mitigation, emissions of ROG would exceed the SCAQMD regional significance thresholds. The regional significance analysis of operational impacts indicates that without mitigation, the project would violate the SCAQMD regional significance thresholds for ROG and NO_X.

Consistency with Current General Plans

The development of emission burdens used in air quality management plans to demonstrate compliance with ambient air quality standards is based, in part, on land use patterns contained within local general plans. Therefore, it is reasonable to conclude that if a project is consistent with the applicable general plan land use designation, and if the general plan was adopted prior to the applicable air quality management plan, then the growth of vehicle miles traveled (VMT) and/or population generated by said project would be consistent with the growth in VMT and population assumed within the air quality management plan. The current General Plan land use for the project site is Very Low Density Residential (VLDR) within the County, and Residential Low (RL) with the City of Calimesa. The project would result in the construction and operation of warehouses uses and would generate a higher growth in VMT than anticipated under the General Plan. Therefore, growth supported by development of the project would not be accounted for in the air quality management plan. The project is potentially significant under this criterion.

Control Measures

This step involves assessing the project's compliance with the control measures in the AQMPs.

2003 AQMP. The 2003 AQMP contains a number of land use and transportation control measures including the following: the District's Stationary and Mobile Source Control Measures; State Control Measures proposed by ARB; and Transportation Control Measures provided by SCAG. ARB's strategy for reducing mobile source emissions include the following approaches: new engine standards; reduce emissions from in-use fleet, require clean fuels, support alternative fuels and reduce petroleum dependency, work with EPA to reduce emissions from national and state sources, and pursue long-term advanced technology measures (SCAQMD 2003, page 4-25). Transportation control measures provided by SCAG include those contained in the Regional Transportation Plans, the most current version of which is the 2012 Regional Transportation Plan. The Regional Transportation Plan has control measures to reduce emissions from on-road sources by incorporating strategies such as high occupancy vehicle interventions, transit, and information-based technology interventions (SCAQMD 2003, page 4-19). The project indirectly would comply with the control measures set by ARB and SCAG.

2007 AQMP. The focus of the 2007 AQMP is to demonstrate attainment of the federal $PM_{2.5}$ ambient air quality standard by 2015 and the federal 8-hour ozone standard by 2024, while making expeditious progress toward attainment of state standards. This is to be accomplished by building upon improvements from the previous plans and incorporating all feasible control measures while balancing costs and socioeconomic impacts. The 2007 AQMP indicates that $PM_{2.5}$ is formed mainly by secondary reactions or sources. Therefore, instead of reducing fugitive dust, the strategy for

reducing $PM_{2.5}$ focuses on reducing precursor emissions of SO_X, directly emitted $PM_{2.5}$, NO_X, and ROG.

The Final 2007 AQMP control measures consist of four components. The first component is SCAQMD's Stationary and Mobile Source Control Measures. The Final 2007 AQMP includes 30 short-term and mid-term stationary and seven mobile source control measures for SCAQMD implementation. A complete listing of the measures is in the 2007 AQMP and includes measures such as VOC reductions from gasoline transfer and dispensing facilities, further NO_X reductions from space heaters, localized control program for PM emission hot spots, urban heat island, energy efficiency and conservation, etc. Some of the measures will become new rules and some will be amendments to existing rules. When the rules pass, the owner-operator will follow the applicable rules.

The second component is ARB's Proposed State Strategy, which includes short- and mid-term control measures aimed at reducing emissions from sources that are primarily under state jurisdiction, including on-road and off-road mobile sources, and consumer products. These measures are required in order to achieve the remaining emission reductions necessary for $PM_{2.5}$ attainment. ARB's strategy includes measures such as improvements to California's Smog Check Program, expanded passenger vehicle retirement, cleaner in-use heavy-duty trucks, reductions from port related sources, cleaner off-road equipment, evaporative and exhaust strategies, pesticide strategies, etc. When these measures are implemented by the ARB, the project would be required to follow them.

The third component is SCAQMD Staff's Proposed Policy Options to Supplement ARB's Control Strategy. SCAQMD staff believes that a combination of regulatory actions and public funding is the most effective means of achieving emission reductions. As such, the 2007 Final AQMP proposes three policy options for the decision makers to consider in achieving additional reductions. The first option is to incorporate the SCAQMD proposed additional control measures as a menu of selections further reducing emissions from sources primarily under state and national jurisdiction. The second option is to have the State fulfill its NO_x emission reduction obligations under the 2003 AQMP by 2010, for its short-term defined control measures plus additional reductions needed to meet the NO_X emission target between 2010 and 2014. The third option is based on the same rate of progress under Policy Option 1, but it relies heavily on public funding assistance to achieve the needed NO_X reductions via accelerated fleet turnover, to post-2010 on-road emission standards or the cleanest off-road engine standards in effect today or after 2010. This strategy does not apply to the project.

The fourth component consists of Regional Transportation Strategy and Control Measures provided by SCAG. Transportation plans within the SoCAB are statutorily required to conform to air quality plans in the region, as established by the 1990 Federal Clean Air Act and reinforced by other Acts. The region must demonstrate that its transportation plans and programs conform to the mandate to meet the federal ambient air quality standards in a timely manner. The Regional Transportation Plan, prepared by the SCAG, is developed every 4 years with a 20-year planning horizon to meet the long-term transportation planning requirements for emission reductions from on-road mobile sources within the SoCAB. The biennial Regional Transportation Improvement Program requires that the short-term implementation requirements of the Transportation Conformity Rule be met by SCAG. The first 2 years of the program are fiscally constrained and demonstrate timely

implementation of a special category of transportation projects called Transportation Control Measures. In general, Transportation Control Measures are those projects that provide emission reductions from on-road mobile sources, based on changes in the patterns and modes by which the regional transportation system is used. Strategies are grouped into three categories: high occupancy vehicle strategy, transit and systems management, and information-based technology (traveling during a less congested time of day). SCAG approved the transportation measures in the Regional Transportation Plan, which have been included in the region's air quality plans. The Transportation Control Measures will be implemented and will subsequently reduce emissions in the SoCAB.

2012 AQMP. The 2012 AQMP was adopted December 7, 2012. The purpose of the 2012 AQMP for the SoCAB is to set forth a comprehensive and integrated program that will lead the SoCAB into compliance with the federal 24-hour $PM_{2.5}$ air quality standards, and to provide an update of the SoCAB's projections in meeting the federal 8-hour ozone standards. Similarly to the prior AQMPs, the project would comply with all applicable rules and regulations enacted as part of the AQMP. In addition, as discussed in the Regulatory section, the AQMP relies upon the SCAG regional transportation strategy, which is in its adopted 2012-2035 RTP/SCS and 2011 Federal Transportation Improvement Program. Included in the RTP/SCS are regional transportation strategy and transportation control measures including the following: active transportation (non-motorized transportation - biking and walking); transportation demand management; transportation system management; transit; passenger and high-speed rail; goods movement; aviation and airport ground access; highways; arterials; and operations and maintenance.

SIPs. Geographical areas in the state that exceed the federal air quality standards are called nonattainment areas. The project area is in nonattainment for ozone, PM_{10}, $PM_{2.5}$, and nitrogen dioxide. SIPs show how each area will attain the federal standards. To do this, the SIPs identify the amount of pollutant emissions that must be reduced in each area to meet the standard and the emission controls needed to reduce the necessary emissions. On September 27, 2007, ARB adopted its State Strategy for the 2007 SIP. In 2009, the SIP was revised to account for emissions reductions from regulations adopted in 2007 and 2008 and clarifies ARB's legal commitment. There are currently proposed revisions and a 2011 Progress Report. The South Coast is currently 94 percent of the way towards achieving the 2014 emissions levels identified in its $PM_{2.5}$ SIP. The SIP takes into account ARB rules and regulations. The project will comply with applicable rules and regulations.

Summary

In summary, the project would comply with all applicable rules and regulations. However, the project could impede attainment because its emissions exceed the SCAQMD regional significance thresholds.

Level of Significance Before Mitigation

Potentially significant impact.

Mitigation Measures

Implement Mitigation Measures AQ-1 to AQ-8.

Level of Significance After Mitigation

Significant and unavoidable impact. The project would comply with all applicable rules and regulations. However, the project could impede attainment because its emissions exceed the SCAQMD regional significance thresholds for ROG during construction and NOx and ROG during operations even after mitigation.

Potential for Air Quality Standard Violation

Impact AQ-2: **The project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation.**

Impact Analysis

Two criteria are used to assess the significance of this impact: (1) the localized construction and operational significance analysis and (2) the CO hot spot analysis.

Localized Construction Analysis

The SCAQMD Governing Board adopted a methodology for calculating localized air quality impacts through localized significance thresholds (also referred to as a LST analysis). Localized significance thresholds represent the maximum emissions from a project that would not cause or contribute to an exceedance of the most stringent applicable state or federal ambient air quality standards. Localized significance thresholds were developed in recognition of the fact that criteria pollutants such as CO, NO_X, and PM_{10} and $PM_{2.5}$ in particular, can have local impacts at nearby sensitive receptors as well as regional impacts. The localized significance thresholds are developed for each source receptor area and are applicable to emissions of NO_X, CO, PM_{10}, and $PM_{2.5}$.

The localized assessment methodology limits the emissions in the analysis to those generated from onsite activities. The onsite emissions during construction are compared with the localized significance thresholds and are summarized in Table 26. As shown in Table 26, unmitigated emissions during construction do not exceed the SCAQMD localized construction significance thresholds.

Table 26: Localized Significance Analysis (Construction)

Activity	Onsite Emissions (pounds per day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Site Preparation	54.6	41.1	10.0	6.6
Mass Grading	89.3	56.4	6.6	4.1
Building Construction	28.6	17.9	2.0	1.8
Tenant Improvements	14.6	12.5	1.2	1.2
Paving	20.3	14.7	1.1	1.0
Maximum Daily Emissions[1]	**89.3**	**56.4**	**10.0**	**6.6**
Localized Significance Threshold	236	2,817	21	11
Exceed Threshold?	No	No	No	No

Table 26 (cont.): Localized Significance Analysis (Construction)

Activity	Onsite Emissions (pounds per day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Notes: [1] The maximum daily emissions refer to the maximum emissions that would occur in one day; it was assumed that the site preparation and grading activities do not occur at the same time as the other construction activities; therefore, their emissions are not summed; the maximum daily emissions would occur during grading activities for NOx and CO and during the site preparation activity for particulate matter. Source of emissions: Appendix A Source of thresholds: South Coast Air Quality Management District 2009, for Source Receptor Area 29, at a distance of 25 meters and an area disturbed of 5 acres per day.				

Localized Operational Analysis

The localized impacts during project operations are summarized in Table 27. As shown in this table, the operation of the project would not exceed any SCAQMD operational localized significance threshold.

Table 27: Localized Significance Analysis (Operations)

Air Pollutant	Averaging Time, Units	Local Project Impact	Back-ground Air Quality	Total	Standard/ Threshold	Significant Impact?
Carbon monoxide (CO)	1-hour, ppm	0.03	2.29	2.32	20	No
	8-hour, ppm	0.02	1.60	1.62	9.0	No
Nitrogen dioxide (NO_2)	1-hour, ppm	0.016	0.072	0.088	0.18	No
	1-hour 98th percentile, ppm	0.012	0.050	0.062	0.100	No
	Annual, ppm	0.001	0.010	0.011	0.03	No
Particulate matter (PM_{10})	24-hour, $\mu g/m^3$	1.4	NA	1.4	2.5	No
	Annual, $\mu g/m^3$	0.6	NA	0.6	1.0	No
Particulate matter ($PM_{2.5}$)	24-hour, $\mu g/m^3$	0.4	NA	0.4	2.5	No

Notes:
Concentration units for each air pollutant are shown in the second column; the AERMOD model estimates pollutant concentrations in units of micrograms per cubic meter; to estimate pollutant concentrations for NO2 and CO which are in units of parts per million by volume, the NO2 pollutant concentrations in micrograms per cubic meter are divided by 1,880 and the CO pollutant concentrations are divided by 1,100; these multiplication factors are based on a standard temperature of 25 degrees centigrade and a standard atmospheric pressure of 760 millibars

NA=Not Applicable; as noted above, since the SCAQMD exceeds the federal or State PM_{10} and $PM_{2.5}$ standards, determining background levels of PM_{10} and $PM_{2.5}$ are unnecessary (SCAQMD 2008); the PM_{10} and $PM_{2.5}$ significance thresholds are based on the requirements of SCAQMD Rule 403 – Fugitive Dust from construction and SCAQMD Rule 1303

Table 27 (cont.): Localized Significance Analysis (Operations)

Air Pollutant	Averaging Time, Units	Local Project Impact	Back-ground Air Quality	Total	Standard/ Threshold	Significant Impact?
- Requirements ppm = parts per million (a unit of concentration); µg/m^3 = micrograms per cubic meter (a unit of concentration) Sources: - Local project impacts are from project specific dispersion modeling; model output is in Appendix B, Localized Criteria Pollutant Assessment. - Background air quality for CO and NO_2 from Table 1 of this AQ-GHG report. - Total = local project impact + background air quality - Standard/threshold: see Table 10 of this AQ-GHG report. Source: Appendix B.						

Carbon Monoxide Hot Spot Analysis

CO "hot spot" thresholds ensure that emissions of CO associated with traffic impacts from a project, in combination with CO emissions from existing and forecasted regional traffic, do not exceed state or federal standards for CO at any traffic intersection impacted by the project. Project concentrations may be considered significant if a CO hot spot intersection analysis determines that project generated CO concentrations cause a localized violation of the state CO 1-hour standard of 20 ppm, state CO 8-hour standard of 9 ppm, federal CO 1-hour standard of 35 ppm, or federal CO 8-hour standard of 9 ppm.

A CO hot spot is a localized concentration of CO that is above the state or federal 1-hour or 8-hour CO ambient air standards. Localized high levels of CO are associated with traffic congestion and idling or slow-moving vehicles. To provide a worst-case scenario, CO concentrations are estimated at project-impacted intersections, where the concentrations would be the greatest.

This analysis follows guidelines recommended by the CO Protocol (University of California, Davis 1997) and the SCAQMD. According to the CO Protocol, intersections with Level of Service (LOS) E or F require detailed analysis. In addition, intersections that operate under LOS D conditions in areas that experience meteorological conditions favorable to CO accumulation require a detailed analysis. The SCAQMD recommends that a local CO hot spot analysis be conducted if the intersection meets one of the following criteria: 1) the intersection is at LOS D or worse and where the project increases the volume to capacity ratio by 2 percent, or 2) the project decreases LOS at an intersection from C to D.

The Traffic Study prepared for this project by Urban Crossroads analyzed four project scenarios: Existing Plus Project (2014), Existing Plus Ambient Growth Plus Project (2017), Existing Plus Ambient Growth Plus Project Plus Cumulative (2017), and Horizon Year Plus Project (2035). The Existing Plus Project and Existing Plus Ambient Growth Plus Project scenarios resulted in two intersections operating at LOS below D, while the Existing Plus Ambient Growth Plus Project Plus Cumulative scenario resulted in three intersections operating at LOS below D. The Horizon Year Plus Project scenario resulted in six intersections operating at LOS below D.

Using the CALINE4 model, potential CO hot spots were analyzed at the intersections listed in Table 28. Two intersections from each analysis year (2014, 2017, and 2035) were chosen to investigate potential near-term and long-term impacts. These intersections were chosen because they operate at LOS D or worse and had the highest traffic volumes for the given scenario year. There are several inputs to the CALINE4 model. One input is the traffic volumes, which are from the project-specific traffic report. Emission factors were generated using the EMFAC2011 model for the applicable scenario year.

As shown in Table 28, the estimated 1-hour and 8-hour average CO concentrations at build-out in combination with background concentrations are below the state and federal standards. No CO hot spots are anticipated because of traffic-generated emissions by the project in combination with other anticipated development in the area. Therefore, the mobile emissions of CO from the project are not anticipated to contribute substantially to an existing or projected air quality violation of CO. Therefore, according to this criterion, air pollutant emissions during operation would result in a less than significant impact.

Table 28: Localized Carbon Monoxide Concentrations

Scenario	Intersection	Peak Hour	Estimated CO Concentration (ppm)				Significant Impact?
			1 Hour Impact[1]	Significance Threshold	8 Hour Impact[2]	Significance Threshold	
Existing Plus Project (2014)	1. I-10 EB Ramps and Cherry Valley Blvd.	PM	3.0	20.0	1.9	9.0	No
Existing Plus Project (2014)	2. I-10 WB Ramps and Cherry Valley Blvd.	AM	3.0	20.0	1.9	9.0	No
Existing Plus Ambient Growth Plus Project Plus Cumulative (2017)	1. I-10 EB Ramps and Cherry Valley Blvd.	PM	3.0	20.0	1.9	9.0	No
Existing Plus Ambient Growth Plus Project Plus Cumulative (2017)	2. I-10 WB Ramps and Cherry Valley Blvd.	AM	3.0	20.0	1.9	9.0	No
Horizon Year Plus Project (2035)	1. I-10 EB Ramps and Cherry Valley Blvd.	PM	2.9	20.0	1.8	9.0	No

Table 28 (cont.): Localized Carbon Monoxide Concentrations

Scenario	Intersection	Peak Hour	Estimated CO Concentration (ppm)				Significant Impact?
			1 Hour Impact[(1)]	Significance Threshold	8 Hour Impact[(2)]	Significance Threshold	
Horizon Year Plus Project (2035)	2. I-10 WB Ramps and Cherry Valley Blvd.	PM	2.6	20.0	1.8	9.0	No

Notes:
(1) The 1-hour concentration is the CALINE4 project increment (see Appendix D for model output) plus the 1-hour background concentration of 2.3 ppm (from Table 1). 1-hour background calculated by dividing 8-hour background CO by 0.7 (persistence factor).
(2) The 8-hour concentration is the CALINE4 project increment (see Appendix D) multiplied by 0.7 (persistence factor to convert the 1-hour average CALINE4 model output to an 8-hour average), then adding the 8 hour background concentration of 1.6 ppm (from Table 1).
Source: see Appendix D.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

None required.

Level of Significance After Mitigation

Less than significant impact.

Cumulative Impacts

Impact AQ-3: **The project would result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).**

Impact Analysis

To result in a less than significant impact, the following criteria must be true:

1. Regional analysis: emissions of nonattainment pollutants must be below the regional significance thresholds. This is an approach recommended by the SCAQMD in its comment letters.
2. Summary of projections: the project must be consistent with current air quality attainment plans including control measures and regulations. This is an approach consistent with Section 15130(b) of the CEQA guidelines.
3. Cumulative health impacts: the project must result in less than significant cumulative health effects from the nonattainment pollutants. This approach correlates the significance of the

regional analysis with health effects, consistent with the court decision, *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1219-20.

Regional Analysis

If an area is in nonattainment for a criteria pollutant, then the background concentration of that pollutant has historically exceeded the ambient air quality standard. It follows that if a project exceeds the regional threshold for that nonattainment pollutant, then it would result in a cumulatively considerable net increase of that pollutant and result in a significant cumulative impact.

The SoCAB is in nonattainment for PM_{10}, $PM_{2.5}$, nitrogen dioxide, and ozone. Therefore, if the project exceeds the regional thresholds for PM_{10}, or $PM_{2.5}$, then it would contribute to a cumulatively considerable impact for those pollutants. If the project exceeds the regional threshold for NO_X or VOC (ozone precursors), then it follows that the project would contribute to a cumulatively considerable impact for ozone. If the project exceeds the NO_X threshold, it could contribute cumulatively to nitrogen dioxide concentrations.

Regional emissions include those generated from all onsite and offsite activities. Regional significance thresholds have been established by the SCAQMD because emissions from projects in the SoCAB can potentially contribute to the existing emission burden and possibly affect the attainment and maintenance of ambient air quality standards. Projects within the SoCAB region with emissions in excess of any of the thresholds presented in Table 6 for construction and operations are considered to make a cumulatively considerable contribution to that exceedance.

Construction Emissions

Table 29 summarizes construction-related emissions (without mitigation). For the assumptions used in generating the emissions, please refer to Section 4 of this report. The information shown in Table 29 indicates that without mitigation, the project's short-term construction emissions would exceed the SCAQMD regional threshold for ROG.

Table 29: Unmitigated Regional Construction Air Pollutant Emissions

Source	Emissions (pounds per day)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Site Preparation	5.2	54.7	42.3	0.0	10.1	6.7
Mass Grading	7.6	89.5	58.3	0.1	6.9	4.2
Building Construction	9.9	63.1	109.4	0.2	14.6	5.5
Tennant Improvements	146.4	15.4	22.7	0.2	3.2	1.7
Paving	3.5	20.4	15.6	0.0	1.3	1.1
Maximum Daily Emissions(1)	**159.8**	**98.9**	**147.7**	**0.2**	**19.1**	**8.3**
Significance Threshold	75	100	550	150	150	55
Significant Impact?	**Yes**	No	No	No	No	No

Table 29 (cont.): Unmitigated Regional Construction Air Pollutant Emissions

Source	Emissions (pounds per day)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Notes: (1) The maximum daily emissions refer to the maximum emissions that would occur in one day; it was assumed that the site preparation and grading activities do not occur at the same time as the other construction activities; therefore, their emissions are not summed; the maximum daily emissions would occur during the overlapping of the building construction, tenant improvements, and paving construction activities for all pollutants ROG = reactive organic gases NO_X = nitrogen oxides CO = carbon monoxide SO_X = sulfur oxides PM_{10} and $PM_{2.5}$ = particulate matter Source of emissions: Appendix A: CalEEMod Output. Source of thresholds: South Coast Air Quality Management District 2011a.						

Operational Regional Emissions

Maximum daily operational emissions from emission sources generated both onsite and offsite as derived from CalEEMod are shown in Table 30 and Table 31 for the project build out year of 2017. As shown in the tables, the project's unmitigated operational emissions would exceed the SCAQMD's regional thresholds for ROG and NOx.

Table 30: Unmitigated Regional Operational Emissions - Summer

Source	Emissions (pounds per day)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Mobile - Gasoline Vehicles	5.8	7.1	84.1	0.2	2.4	1.0
Mobile - Heavy Duty Diesel Trucks	24.0	404.6	236.8	1.3	15.7	9.6
Area	47.7	0.0	0.3	0.0	0.0	0.0
Energy	0.1	1.1	0.9	0.0	0.1	0.1
Total	**77.6**	**412.8**	**.322.1**	**1.5**	**18.2**	**10.7**
Significance Threshold	55	55	550	150	150	55
Significant Impact?	**Yes**	**Yes**	No	No	No	No
Notes: ROG = reactive organic gases NO_X = nitrogen oxides CO = carbon monoxide SO_X = sulfur oxides PM_{10} and $PM_{2.5}$ = particulate matter Area = painting and consumer products Source of emissions: Appendix A: CalEEMod Output. for the project buildout year of 2017 Source of thresholds: South Coast Air Quality Management District 2011a.						

Table 31: Unmitigated Regional Operational Emissions - Winter

Source	Emissions (pounds per day)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Mobile - Gasoline Vehicles	6.0	7.8	77.8	0.2	2.4	1.1
Mobile – Diesel Heavy Duty Trucks	24.2	412.1	253.7	1.2	15.4	9.4
Area	47.7	0.0	0.3	0.0	0.0	0.0
Energy	0.1	1.1	0.9	0.0	0.1	0.1
Total	**78.5**	**429.2**	**337.8**	**1.5**	**18.2**	**10.7**
Significance Threshold	55	55	550	150	150	55
Significant Impact?	**Yes**	**Yes**	No	No	No	No

Notes:
ROG = reactive organic gases NO_X = nitrogen oxides CO = carbon monoxide
SO_X = sulfur oxides PM_{10} and $PM_{2.5}$ = particulate matter Area = painting and consumer products
Source of emissions: Appendix A: CalEEMod Output for the project buildout year of 2017
Source of thresholds: South Coast Air Quality Management District 2011a.

Plan Approach

Section 15130(b) of the CEQA Guidelines states the following:

> The following elements are necessary to an adequate discussion of significant cumulative impacts: 1) Either: (A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or (B) A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact.

In accordance with CEQA Guidelines 15130(b), this analysis of cumulative impacts is based on a summary of projections analysis. This analysis considers the current CEQA Guidelines, which includes the recent amendments approved by the Natural Resources Agency and effective on March 18, 2010. This analysis is based on the 2003 and 2007 AQMPs. The SoCAB is in nonattainment for ozone, particulate matter (PM_{10} and $PM_{2.5}$), and nitrogen dioxide, which means that concentrations of those pollutants currently exceed the ambient air quality standards for those pollutants. When concentrations of ozone, PM_{10}, $PM_{2.5}$, and nitrogen dioxide exceed the ambient air quality standard, then those sensitive to air pollution (i.e., children, elderly, sick) could experience health effects, such as decrease of pulmonary function and localized lung edema in humans and animals, increased mortality risk, and risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures, and pulmonary function decrements in chronically exposed humans.

Under the amended CEQA Guidelines, cumulative impacts may be analyzed using other plans that evaluate relevant cumulative effects. The AQMPs describe and evaluate the future projected emissions sources in the SoCAB, and sets forth a strategy to meet both state and federal Clean Air Act planning requirements and federal ambient air quality standards. Therefore, the AQMPs are relevant plans for a CEQA cumulative impacts analysis. The 2003 AQMP updates the attainment demonstration for the federal standards for ozone and PM_{10}; replaces the 1997 attainment demonstration for the federal CO standard and provides a basis for a maintenance plan for CO for the future; and updates the maintenance plan for the federal nitrogen dioxide standard that the SoCAB has met since 1992. The 2007 AQMP focuses on ozone and $PM_{2.5}$. The AQMP also incorporates significant new scientific data, emission inventories, ambient measurements, control strategies, and air quality modeling.

The geographic scope for cumulative criteria pollution from air quality impacts is the SoCAB, because that is the area in which the air pollutants generated by the sources within the SoCAB circulate and are often trapped. The SCAQMD is required to prepare and maintain an AQMP and a SIP to document the strategies and measures to be undertaken to reach attainment of ambient air quality standards. While the SCAQMD does not have direct authority over land use decisions, it is recognized that changes in land use and circulation planning are necessary to maintain clean air. The SCAQMD evaluated the entire SoCAB when it developed the AQMP.

In accordance with CEQA Guidelines section 15064, subdivision (h)(3), a lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project complies with the requirements in a previously approved plan or mitigation program. As identified in Impact AQ-1, the project complies with the control measures in the 2003 and the 2007 AQMP and all of the SCAQMD's applicable rules and regulations. However, because the project exceeds the SCAQMD's CEQA significance thresholds, the analysis contained in Impact AQ-1 demonstrates that the project is not consistent with the most recent AQMP and SIP without mitigation. Therefore, the project presents a significant impact according to this criterion.

Cumulative Health Impacts

The SoCAB is in nonattainment for ozone, nitrogen dioxide, PM_{10}, and $PM_{2.5}$, which means that the background levels of those pollutants are at times higher than the ambient air quality standards. The air quality standards were set to protect public health, including the health of sensitive individuals (such as the elderly, children, and the sick). Therefore, when the concentration of those pollutants exceeds the standard, it is likely that some sensitive individuals in the population would experience health effects that were described in Table 4. However, the health effects are a factor of the dose-response curve. Concentration of the pollutant in the air (dose), the length of time exposed, and the response of the individual are factors involved in the severity and nature of health impacts. If a significant health impact results from project emissions, it does not mean that 100 percent of the population would experience health effects.

The regional analysis indicates that without mitigation, the project would exceed the SCAQMD regional significance thresholds for VOC and NO_x (ozone precursors). Because ozone is a secondary pollutant (it is not emitted directly but formed by chemical reactions in the air), it can be formed miles downwind of the project site. Project emissions of VOC and NO_x may contribute to the

background concentration of ozone and cumulatively cause health effects. Impacts may include the following: irrigation to respiratory system; reduce lung function; breathing pattern changes; reduction of breathing capacity; inflame and damage cells that line the lungs; make lungs more susceptible to infection; aggravate asthma; aggravate other chronic lung diseases; cause permanent lung damage; some immunological changes; increased mortality risk; and vegetation and property damage. Children who live in high ozone communities and who participate in multiple sports have been observed to have a higher asthma risk. This is a significant cumulative health impact associated with ground-level ozone concentrations.

Additionally, the project could result in a significance cumulative contribution to PM_{10}. Sensitive individuals may experience health impacts when concentrations of this pollutant exceeds the ambient air quality standards. Health impacts from particulate matter may include the following:

Short-term exposure (hours/days): irrigation of the eyes, nose, throat; coughing; phlegm; chest tightness; shortness of breath; aggravate existing lung disease, causing asthma attacks and acute bronchitis; those with heart disease can suffer heart attacks and arrhythmias.

The project could result in a significant impact to nitrogen dioxide. The potential effects from nitrogen dioxide may include the following:

- Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups;
- Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; and/or
- Contribution to atmospheric discoloration.

As shown by the CO hotspot analysis in Impact AQ-2, the project, in combination with CO emissions from other regional emission sources, would not result in an exceedance of the CO ambient air quality standard at project-impacted intersections. The standards are set to protect the health of sensitive individuals. Therefore, the project would not result in cumulative health effects from CO exposure.

Level of Significance Before Mitigation

Potentially significant impact.

Mitigation Measures

Implement Mitigation Measures AQ-1 to AQ-8.

The mitigated construction emissions are shown in Table 32. After mitigation, the construction activities would not exceed any daily threshold, and construction emissions would be less than significant.

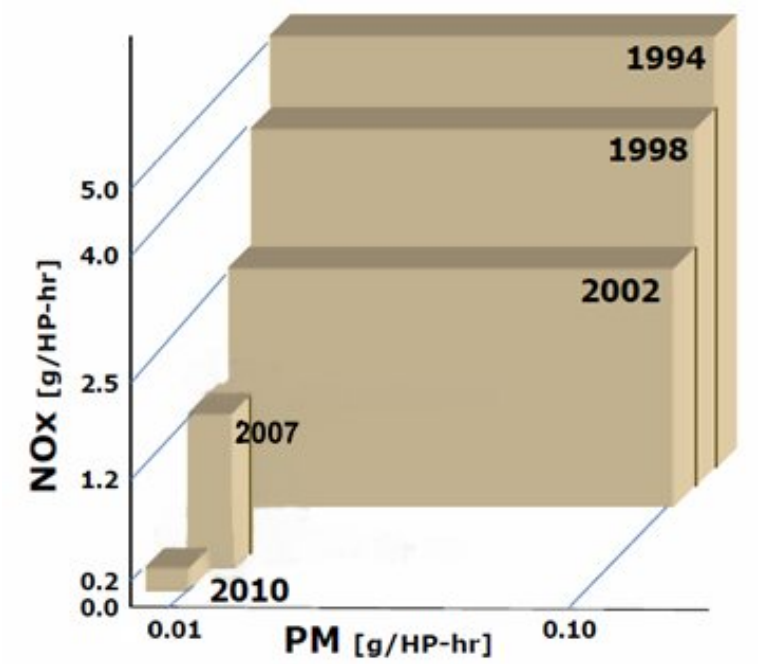
Table 32: Mitigated Regional Construction Air Pollutant Emissions

Source	Emissions (pounds per day)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Site Preparation	1.1	19.6	24.6	0.0	8.2	4.9
Mass Grading	2.1	40.6	49.3	0.1	4.6	2.1
Building Construction	7.6	48.3	109.2	0.2	13.5	4.6
Tennant Improvements	60.5	9.8	22.5	0.0	2.6	1.1
Paving	2.1	11.2	17.8	0.0	0.8	0.6
Maximum Daily Emissions[(1)]	**70.2**	**69.3**	**148.4**	**0.2**	**16.9**	**6.3**
Significance Threshold	75	100	550	150	150	55
Significant Impact?	No	No	No	No	No	No

Notes:
[(1)] The maximum daily emissions refer to the maximum emissions that would occur in one day; it was assumed that the site preparation and grading are independent activities that do not occur at the same time as the other construction activities; therefore, their emissions are not summed; the maximum daily emissions would occur during the overlapping of the building construction, tenant improvements, and paving construction activities for all pollutants.
ROG = reactive organic gases NO_X = nitrogen oxides CO = carbon monoxide
SO_X = sulfur oxides PM_{10} and $PM_{2.5}$ = particulate matter
Source of emissions: Appendix A: CalEEMod Output
Source of thresholds: South Coast Air Quality Management District 2011a.

Mitigation Measure AQ-7(c) requires that the heavy-duty diesel trucks accessing the project site have engines made in ~~2007~~ 2010 or newer. These engines have stricter emissions standards for NOx and PM. The figure below demonstrates the historical changes in U.S. heavy duty diesel emission standards for NOx and PM. As shown below, the model year ~~2007~~ 2010 standards are only a fraction of the older standards, at 0.2 grams per horsepower hour (g/HP-hr) of NOx and 0.01 g/HP-hr of PM. To estimate the reduction in emissions from this mitigation, the emission factors in CalEEMod were changed toreflect model year 2010 emission factors for the running exhaust emissions, which assumes that the operational heavy-heavy duty diesel trucks accessing the project site are model year 2010 or newer.

Figure 4: Historic Emission Standards for Nitrogen Oxide and Particulate Matter



Mitigated maximum daily operational emissions are shown in Table 33 for the summer and Table 34 for the winter. As shown, the project's mitigated operational emissions would continue to exceed the SCAQMD's regional thresholds for ROG and NOx in both season scenarios; therefore, these impacts are significant and unavoidable.

Table 33: Mitigated Regional Operational Emissions - Summer

Source	Emissions (pounds per day)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Mobile - Gasoline Vehicles	5.8	7.1	84.1	0.2	2.4	1.0
Mobile - Heavy Duty Diesel Trucks	26.6	313.5	222.1	1.4	16.8	10.2
Area	47.7	0.0	0.3	0.0	0.0	0.0
Energy	0.1	1.1	0.9	0.0	0.1	0.1
Total	**80.2**	**321.7**	**307.4**	**1.6**	**18.3**	**10.4**
Significance Threshold	55	55	550	150	150	55
Significant Impact?	**Yes**	**Yes**	No	No	No	No

Notes:
Mitigation Measure AQ-2 requires all Heavy Heavy-Duty Trucks to use model year 2010 or newer engines, and emissions reflect EMFAC2011 running exhaust factors for the model year 2010.
ROG = reactive organic gases NO_X = nitrogen oxides CO = carbon monoxide
SO_X = sulfur oxides PM_{10} and $PM_{2.5}$ = particulate matter
Source of emissions: Appendix A: CalEEMod Output for the project buildout year of 2017
Source of thresholds: see Table 7.

Table 34: Mitigated Regional Operational Emissions - Winter

Source	Emissions (pounds per day)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Mobile - Passenger Vehicles	5.8	7.6	76.3	0.2	2.3	1.0
Mobile - Heavy Duty Trucks	27.4	325.4	245.1	1.4	16.8	10.2
Area	47.7	0.0	0.3	0.0	0.0	0.0
Energy	0.1	1.1	0.9	0.0	0.1	0.1
Total	**81.0**	**334.1**	**246.3**	**1.6**	**19.2**	**11.3**
Significance Threshold	55	55	550	150	150	55
Significant Impact?	**Yes**	**Yes**	No	No	No	No

Notes:
Mitigation Measure AQ-2 requires all Heavy Heavy-Duty Trucks to use model year 2010 or newer engines, and emissions reflect EMFAC2011 running exhaust factors for the model year 2010.
ROG = reactive organic gases NO_X = nitrogen oxides CO = carbon monoxide
SO_X = sulfur oxides PM_{10} and $PM_{2.5}$ = particulate matter
Source of emissions: Appendix A: CalEEMod Output for the project buildout year of 2017
Source of thresholds: see Table 7.

Level of Significance After Mitigation

Significant and unavoidable impact.

Sensitive Receptors

Impact AQ-4: The project would not expose sensitive receptors to substantial pollutant concentrations.

Sensitive Receptors

Those individuals who are sensitive to air pollution include children, the elderly, and persons with preexisting respiratory or cardiovascular illness. For purposes of CEQA, the SCAQMD considers a sensitive receptor to be a location where a sensitive individual could remain for 24 hours, such as residences, hospitals, or convalescent facilities (SCAQMD 2008a). Commercial and industrial facilities are not included in the definition because employees do not typically remain onsite for 24 hours. However, when assessing the impact of pollutants with 1-hour or 8-hour standards (such as nitrogen dioxide and carbon monoxide), commercial and/or industrial facilities would be considered sensitive receptors for those purposes.

The closest sensitive receptors are existing residences located to the east of the project along Cherry Valley Boulevard and proposed residential developments (i.e., Sunny Cal Specific Plan) located across Cherry Valley Boulevard, approximately 50 meters south of the project.

Localized Significance Threshold Analysis

The localized construction analysis uses thresholds that represent the maximum emissions for a project that would not cause or contribute to an exceedance of the most stringent applicable federal

or state ambient air quality standard (SCAQMD 2008a). The thresholds are developed based on the ambient concentrations of that pollutant for each source receptor area and on the location of the sensitive receptors. If the project results in emissions under those thresholds, it follows that the project would not cause or contribute to an exceedance of the standard. The standards are set to protect the health of sensitive individuals. If the standards are not exceeded at the sensitive receptor locations, it follows that the receptors would not be exposed to substantial pollutant concentrations.

As identified in Impact AQ-2, the localized construction analysis demonstrated that the project would not exceed the localized thresholds for CO, nitrogen dioxide, PM_{10}, or $PM_{2.5}$. Therefore, during construction, the project would not expose sensitive receptors to substantial pollutant concentrations of CO, nitrogen dioxide, PM_{10}, or $PM_{2.5}$. Further, as identified in Impact AQ-2, the operation of the project would not exceed either of the SCAQMD's operational localized significance thresholds for CO, nitrogen dioxide, PM_{10}, or $PM_{2.5,}$ or create a localized CO hotspot. If the relevant significance thresholds were not exceeded, then the sensitive individuals would not be significantly impacted. Therefore, according to this criterion, air pollutant emissions during operation would result in a less than significant impact.

Toxic Air Pollutants – Project Construction

The construction equipment would emit DPM, which is a carcinogen. However, the DPM emissions are short-term in nature. Determination of risk from DPM is considered over a 70-year exposure time. Guidance published by the California Air Pollution Control Officers Association (CAPCOA 2009), Health Risk Assessments for Proposed Land Use Projects, does not include guidance for health risks from construction projects addressed in CEQA; risks near construction projects are expected to be included later when the toxic emissions from construction activities are better understood. Therefore, considering the short time frame for construction, exposure to DPM during construction is anticipated to be less than significant.

Toxic Air Pollutants –Project Operation

The ARB Air Quality and Land Use Handbook contains recommendations that will "help keep California's children and other vulnerable populations out of harm's way with respect to nearby sources of air pollution" (ARB 2005), including recommendations for distances between sensitive receptors and certain land uses. The Handbook states that its recommendations are advisory and should not be interpreted as "buffer zones." The ARB recognizes the opportunity for more detailed site-specific analyses and there is no "one size fits all" solution to land use planning. The Handbook recommends avoiding siting new sensitive land uses within 1,000 feet of a distribution center. The nearest existing sensitive receptor is over 2,000 feet northwest of the project site, while the nearest planned sensitive receptor is approximately 164 feet (50 meters) from the project site. Therefore, since the project involves the construction of a warehouse approximately 164 feet (50 meters) from the nearest sensitive receptor, a more detailed site-specific Health Risk Assessment has been prepared. The Health Risk Assessment quantifies the cancer risk from project operational toxic air pollutant emissions, primarily from delivery truck exhaust from traffic and truck idling emissions at loading docks.

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The results of the Health Risk Assessment for cancer risks are provided in Table 35. These results reflect emissions from onsite vehicle travel and idling, as well as traveling along Cherry Valley Boulevard to and from the project. As noted from this table, the operation of the project would not exceed the SCAQMD's cancer risk significance threshold of 10 in one million at any of the locations identified in the analysis. The maximum cancer risk is 6 in a million and is near the project's future driveway #1 at Cherry Valley Boulevard. The maximum chronic and acute non-cancer hazard indices from the operation of the project are estimate to be less than 0.1, values less than the SCAQMD's significance threshold of 1.0. Therefore, cancer risks are less than significant.

Table 35: Estimates of Lifetime Cancer Risk from Project Operations

Location	Cancer Risk (per million)		Exceeds Significance Threshold?
	Maximum Lifetime Project Risk	Significance Threshold	
36240 Cherry Valley Boulevard	0.2	10	No
37101 Cherry Valley Boulevard	0.2	10	No
37251 Cherry Valley Boulevard	0.2	10	No
37255 Cherry Valley Boulevard	0.1	10	No
37275 Cherry Valley Boulevard	0.1	10	No
37303 Cherry Valley Boulevard	0.1	10	No
37321 Cherry Valley Boulevard	0.1	10	No
9865 Roberts Street	0.1	10	No
9975 Roberts Street	0.1	10	No
Sunny Cal Specific Plan (Cherry Valley Boulevard)	1.2	10	No
Holbert Ranch	0.1	10	No
Tournament Hills Elementary School	0.0	10	No
Brookside Elementary School	0.0	10	No
Beaumont High School	0.0	10	No
Bornstein Property	0.3	10	No
Sunset Ranch	0.3	10	No
Note: the maximum cancer risk at any receptor location regardless of whether the location is an existing residence, or zoned for residential, or zoned for non-residential is 6.0 in one million; the location of this maximum risk is near future project driveway 1 and Cherry Valley Boulevard. Source: See Appendix C.			

Toxics Air Pollutants – Cumulative

The SCAQMD has not defined a cumulative significance threshold for toxic air contaminants; however, it assumes that a project that does not exceed the project-level significance threshold

would also not result in a cumulatively significant impact. Considering that, this assessment of the project's cumulative impacts uses the following two-step methodology to determine significance:

- Step One: quantify the sum of the existing risk in the project area, probable new projects within a ¼ mile radius from the project, and the project's impacts. The sum is compared with the 10 in a million threshold. If the cumulative total impacts are below this threshold, a finding of non-significance can be made. If the total impacts exceed the threshold, then they are potentially significant and step two comes into play.
- Step Two: If the project's cancer risk is less than the 10 in a million threshold, then impacts are less than significant.

Step One

Existing Contribution to Cumulative Health Impacts

The South Coast Air Quality Management District (SCAQMD) has conducted an analysis of the cumulative effects of toxic air contaminants (TACs) within the South Coast Air Basin (Basin) as part of its *Multiple Air Toxics Exposure Study in the South Coast Air Basin (MATES-IV,* the latest version of this MATES study series*)*. The MATES studies express cumulative TAC impacts in terms of potential increased cancer risks. The MATES-IV study estimates that the Basin-wide average excess cancer risk level resulting from exposure to cumulative TACs is approximately 367 incidents per one million population. The MATES-IV Study estimates the cumulative TAC-source cancer risk for the localized area encompassing the Project site at 157 in one million. Diesel Particulate Matter (DPM)-source cancer risks, are reflected in the area's ambient cumulative cancer risk along with all other TAC-source risks, and accounts for the predominance (68%) of the total risk shown in MATES-IV. The cancer risk of 157 in a million constitutes the existing impact from TAC emission sources in the region without the impacts from the project.

Related Projects Contribution to Cumulative Health Impacts

In addition to the MATES-IV cumulative TAC-source cancer risk noted above, other new or proposed potential TAC-generating projects (related projects) in the project area not included in the MATES IV study could contribute to cumulative TAC impacts. These related projects, due to their recent and/or tentative nature, are not reflected in the cumulative TAC impacts identified in the MATES-IV study.

Based on a review of the cumulative development project listing contained in the project traffic study (Urban Crossroads 2014), four projects were identified within the 0.25-mile radius from the project. These development projects are all single-family residential projects and include the following:

- Holbert Ranch – 131 dwelling units
- Bornstein Property – 209 dwelling units
- Sunny Cal Specific Plan – 497 dwelling units
- Sunset Ranch (Osborne/Dunham) – 231 dwelling units

Since these projects are residential, they are not expected to generate TAC emissions that could impact nearby health risk levels.

Project Contribution to Cumulative Health Impacts

Project-level TACs would incrementally increase the background cancer risk by a maximum of 1.2 incidents per million population.

Summary of the Total Cumulative Cancer Risk for Step One

The total cumulative cancer risk under Step One of the cumulative assessment is 158 in a million (157 in a million from existing sources and 1 in a million from the project). In light of the fact that the existing plus planned project impacts already exceeds the 10 in a million cumulative significance threshold by a large margin, a potentially significant cumulative impact exists without the project. Therefore, a second step is required to determine whether the project makes a cumulatively considerable contribution.

Step Two

Identification of a specific amount of risk that constitutes a cumulatively considerable contribution to an existing cumulative impact is necessary in order to avoid a potential conflict with CEQA provisions, which state that any increase within an already-impacted area is not necessarily significant (i.e., "one additional molecule" is not the appropriate standard). According to current SCAQMD recommendations, a project contribution of 10 in one million or more would be considered a cumulatively considerable contribution to the significant cumulative impact. Since the project's maximum cancer risk (1.2 in a million) does not exceed the 10 in one million threshold, the project's health risk impacts are determined to be less than significant on a project-level and would not be considerably significant on a cumulative-level basis.

Supplemental Cancer Risk Assessment

Table 36 summarizes the cancer risks from the construction and operation of the project based on the application of the new CARB and OEHHA guidance and methodologies at various locations surrounding the Project. The estimated risks shown include the mitigation measures identified in the Section 1.5 Mitigation Measures Applied to the Project including Tier III off-road construction equipment and MY2010 heavy-heavy diesel duty trucks. As noted in the table, the cancer risks are generally higher under the new model/guidance compared to the values shown in Table 35 which relies on the older version of the EMFAC mobile source emission model and the current SCAQMD guidance on estimating cancer risks. Nonetheless, the cancer risk levels at all locations after application of the new guidance and methodologies remain below the SCAQMD cancer risk significance threshold of 10 in one million.

Table 36: Estimates of Lifetime Cancer Risks Using the New SCAQMD/OEHHA Guidance and Methodologies

Location	Cancer Risk (New Emission Model/Cancer Risk Guidance WITH MITGATION (per million))		Exceeds Significance Threshold?
	Maximum Lifetime Project Risk	Significance Threshold	
36240 Cherry Valley Boulevard	2.0	10	No
37101 Cherry Valley Boulevard	1.6	10	No
37251 Cherry Valley Boulevard	1.2	10	No
37255 Cherry Valley Boulevard	0.9	10	No
37275 Cherry Valley Boulevard	0.9	10	No
37303 Cherry Valley Boulevard	0.9	10	No
37321 Cherry Valley Boulevard	0.8	10	No
9865 Roberts Street	0.2	10	No
9975 Roberts Street	1.3	10	No
Sunny Cal Specific Plan (Cherry Valley Boulevard)	5.0	10	No
Holbert Ranch	0.4	10	No
Tournament Hills Elementary School	0.1	10	No
Brookside Elementary School	0.1	10	No
Beaumont High School	0.1	10	No
Bornstein Property	4.6	10	No
Sunset Ranch	1.8	10	No
Source: See Appendix E Mitigated emissions include Tier III construction equipment and MY2010 for heavy-heavy duty diesel Trucks			

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

None required.

Level of Significance After Mitigation

Less than significant impact.

Objectionable Odors

Impact AQ-5: The project would not create objectionable odors affecting a substantial number of people.

Background Information

Odors can cause a variety of responses. The impact of an odor results from interacting factors, such as frequency (how often), intensity (strength), duration (in time), offensiveness (unpleasantness), location, and sensory perception.

Odor is typically a warning system that prevents animals and humans from consuming spoiled food or toxic materials. Odor-related symptoms reported in a number of studies include nervousness, headache, sleeplessness, fatigue, dizziness, nausea, loss of appetite, stomach ache, sinus congestion, eye irritation, nose irritation, runny nose, sore throat, cough, and asthma exacerbation (SCAQMD 2007b).

The SCAQMD's role is to protect the public's health from air pollution by overseeing and enforcing regulations (SCAQMD 2007b). The SCAQMD's resolution activity for odor compliance is mandated under California Health & Safety Code Section 41700, and falls under SCAQMD Rule 402. This rule on Public Nuisance Regulation states: "A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. The provisions of this rule shall not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals."

The SCAQMD indicates that the number of overall complaints has declined over the last five years. Over the last four years, odor complaints make up 50 to 55 percent of the total nuisance complaints. Over the past decade, odors from paint and coating operations have decreased from 27 to 7 percent and odors from refuse collection stations have increased from 9 to 34 percent (SCAQMD 2007b).

Impact Analysis

The SCAQMD recommends that odor impacts be addressed in a qualitative manner. Such an analysis shall determine whether the project would result in excessive nuisance odors, as defined under the California Code of Regulations and Section 41700 of the California Health and Safety Code, and thus would constitute a public nuisance related to air quality.

Land uses typically considered associated with odors include wastewater treatment facilities, waste-disposal facilities, or agricultural operations. The project does not contain land uses typically associated with emitting objectionable odors. The project would involve the use of diesel construction equipment and diesel trucks during construction. Emissions from these diesel sources would rapidly disperse in the atmosphere and not be noticeable to the nearby public.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

None required.

Level of Significance After Mitigation

Less than significant impact.

SECTION 7: GREENHOUSE GAS IMPACT ANALYSIS

7.1 - CEQA Guidelines

CEQA Guidelines define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in the environment." To determine if a project would have a significant impact on greenhouse gases, the type, level, and impact of emissions generated by the project must be evaluated.

The following greenhouse gas significance thresholds are contained in Appendix G of the CEQA Guidelines, which were amendments adopted into the Guidelines on March 18, 2010, pursuant to SB 97. A significant impact would occur if the project would:

(a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or

(b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

The evaluation of an impact under CEQA requires measuring data from a project against both existing conditions and a "threshold of significance." With regard to establishing a significance threshold, the Office of Planning and Research's amendments to the CEQA Guidelines Section 15064.7(c) state that "[w]hen adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence."

CEQA Guidelines Section 15064.4(a) further states, " . . . A lead agency shall have discretion to determine, in the context of a particular project, whether to: (1) Use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use . . . ; or (2) Rely on a qualitative analysis or performance based standards."

CEQA Guidelines Section 15064.4 provides that a lead agency may take into account the following three considerations in assessing the significance of impacts from greenhouse gas emissions:

- **Consideration #1**: The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting.
- **Consideration #2**: Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
- **Consideration #3**: The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the

possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

7.1.1 - Biological Diversity v. California Department of Fish and Wildlife ("Newhall Ranch")

On November 30, 2015, the California Supreme Court in *Center for Biological Diversity v. California Department of Fish and Wildlife* ("*Newhall Ranch*") invalidated the GHG analysis for a large master planned residential development in Los Angeles County consisting of over 20,000 residential dwelling units and other uses, determining that the GHG significance finding was "not supported by a reasoned explanation based on substantial evidence." In particular, the Court upheld: (1) use of the statewide emissions reduction goal in AB 32 as a significance criterion (pp. 15-19), (2) use of the Scoping Plan's BAU model "as a comparative tool for evaluating efficiency and conservation efforts" of the Project (pp. 18-19), and (3) a comparison of the project's expected emissions to a BAU model rather than a baseline of pre-project conditions (pp.15-19).

Notwithstanding, however, the Court invalidated the GHG analysis on the grounds that the "administrative record discloses no substantial evidence that the Newhall Ranch's project-level reduction of 31 percent in comparison to [BAU] is consistent with achieving AB 32's statewide goal of a 29 percent reduction from [BAU] … ." (p.19, original italics; see also p. 23 ("Nor is Justice Corrigan correct that our analysis 'assumes project-level reduction in greenhouse gas emissions must be greater than the reduction California is seeking to achieve statewide.' [internal citations omitted] . . . [W]e only hold that DFW erred in failing to substantiate its assumption that the Scoping Plan's statewide measure of emissions reduction can also serve as the criterion for an individual land use project.")

In so doing, the Court in *Newhall Ranch* questioned whether "a greater degree of reduction may be needed" from new versus existing development to achieve the statewide goal set forth in AB 32. (p. 20.) The Court also stated that the EIR failed to contain sufficient evidence to conclude that the "land use density" assumptions used in the EIR's GHG emissions model relate to the land use density assumptions used in the Scoping Plan's BAU model. (p. 21-22.) Because this information was not contained in the *Newhall Ranch* EIR, the Court determined that the record in *Newhall Ranch* did not contain substantial evidence supporting the BAU threshold.

The Court in *Newhall Ranch* outlined "potential pathways to compliance" that future EIRs could use to determine if GHG emissions from a given project are significant. Specifically, the Court advised that:

- **Substantiation of Project Reductions from BAU**. A lead agency may use a BAU comparison based on the Scoping Plan's methodology if it also substantiates the reduction a particular project must achieve to comply with statewide goals. The Court suggested a lead agency could examine the "data behind the Scoping Plan's business-as-usual model" to determine the necessary project-level reductions from new land use development at the proposed location. (p. 25.)

- **Compliance with Regulatory Programs or Performance Based Standards**. A lead agency "might assess consistency with AB 32's goal in whole or part by looking to compliance with regulatory programs designed to reduce greenhouse gas emissions from particular activities. (See Final Statement of Reasons, supra, at p. 64 [greenhouse gas emissions 'may be best analyzed and mitigated at a programmatic level.'].) To the extent a project's design features comply with or exceed the regulations outlined in the Scoping Plan and adopted by the Air Resources Board or other state agencies, a lead agency could appropriately rely on their use as showing compliance with 'performance based standards' adopted to fulfill 'a statewide . . . plan for the reduction or mitigation of greenhouse gas emissions.' (CEQA Guidelines § 15064.4(a)(2), (b)(3); see also id., § 15064(h)(3) [determination that impact is not cumulatively considerable may rest on compliance with previously adopted plans or regulations, including 'plans or regulations for the reduction of greenhouse gas emissions'].) (p. 25.)
- **Compliance with GHG Reduction Plans or Climate Action Plans (CAPs)**. A lead agency may utilize "geographically specific GHG emission reduction plans" such as climate action plans or greenhouse gas emission reduction plans to provide a basis for the tiering or streamlining of project-level CEQA analysis. (p. 26.)
- **Compliance with Local Air District Thresholds**. A lead agency may rely on "existing numerical thresholds of significance for greenhouse gas emissions" adopted by, for example, local air districts. (p. 27.)

Therefore, consistent with CEQA Guidelines Appendix G, the three factors identified in CEQA Guidelines Section 15064.4 and the *Newhall Ranch* opinion, the following thresholds are considered in determining the significance of impacts from GHG.

- ***Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emission of GHGs (see Impact GHG-1).***
  Analysis under Impact GHG-1 involves a quantitative analysis of the Project's compliance with the County of Riverside's Climate Action Plan ("CAP"). The CAP is a geographically specific plan that was adopted by the County of Riverside for the purpose of reducing GHG emissions under the control or influence of the County consistent with AB 32 and subsequent state legislation and state agency action to address climate change. This threshold is also consistent with the SCAQMD's draft interim threshold Tier 2, which consists of determining whether a project is consistent with a qualified greenhouse gas reduction plan.
- ***Would the project conflict with the ARB Scoping Plan and regulations adopted for the purpose of reducing emissions of greenhouse gases (See Impact GHG-2)?***
  Analysis under Impact GHG-2 involves a qualitative analysis of the Project's consistency with the ARB's Scoping Plan and with GHG emission reducing regulations. The Scoping Plan (and its adopted regulations) are considered a statewide plan, policy, or regulation adopted by a public agency to reduce GHG emissions that may be used to assess consistency with AB 32.

The County has further determined that each one of the above-two thresholds is considered to be a separate and independent basis upon which to substantiate the significance of the project's GHG impact.

7.1.2 - Methodology

FirstCarbon Solutions (FCS) used CalEEMod Version 2013.2.2 to quantify emissions associated with the construction and operation of the proposed project. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000, et seq.). The methodology follows South Coast Air Quality Management District (SCAQMD) recommendations for quantification of emissions and evaluation of potential greenhouse gas impacts. Supporting information is provided in Appendix F.

Existing Emissions

The project site is currently vacant. Therefore, for the purposes of this analysis, existing GHG emissions at the project site are assumed to be zero, and all activities related to the project are considered potential increases in GHG emissions.

Greenhouse Gas Emissions Quantification

GHG emissions per unit of activity, also referred to as emission factors, are incorporated in CalEEMod for each analysis year. Project-related greenhouse gas emissions are quantified based on the Project's buildout year of 2017.

7.1.3 - Construction Emissions

The project would emit GHGs from upstream emission sources and direct sources from construction activities (combustion of fuels from worker vehicles and construction equipment).

An upstream emission source (also known as life cycle emissions) refers to emissions that were generated during the manufacture of products to be used for construction of the project. Upstream emission sources for the project include but are not limited to the following: emissions from the manufacture of cement; emissions from the manufacture of steel; and/or emissions from the transportation of building materials to the seller. The upstream emissions were not estimated because they are expressly not within the purview of EIRs per CEQA Guidelines Section 15144. Additionally, the California Air Pollution Control Officers Association White Paper on CEQA and Climate Change states "The full life-cycle of GHG [greenhouse gas] emissions from construction activities is not accounted for . . . and the information needed to characterize [life-cycle emissions] would be speculative at the CEQA analysis level" (CAPCOA 2008). Therefore, pursuant to CEQA Guidelines Sections 15144 and 15145, upstream /life cycle emissions are speculative; no further discussion is provided.

Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and prevailing weather conditions. Construction emissions result from on-site and off-site activities. On-site emissions principally consist of exhaust emissions (CO_2, CH_4, and N_2O) from heavy-duty construction equipment and motor vehicle operation. Off-site emissions are caused by motor vehicle exhaust (CO_2, CH_4, and N_2O) from delivery vehicles and worker traffic.

The project would emit greenhouse gases from upstream emission sources and direct sources (combustion of fuels from worker vehicles and construction equipment). Greenhouse gas emissions

from project construction equipment and worker vehicles are based on CalEEMod default values. The emissions are from all phases of construction. The emissions analysis assumed full buildout of the project in 2017. The construction schedule utilized in the analysis, represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as time passes and the analysis year increases due to emission regulations becoming more stringent.[10] In order to provide a conservative analysis, the short-term construction emissions have been amortized over the expected (long-term) operational life of the project and are included in the quantification of operational emissions. The operational life of a conventional commercial/industrial building is estimated to be 30 years per SCAQMD guidance.

GHG emissions from project construction equipment and worker vehicles are shown in Table 37. The emissions are from all phases of construction.

Table 37: Construction Greenhouse Gas Emissions

Phase	Total $MTCO_2e$ per year
2016	1,180.13
2017	1,870.48
Total	*3,050.61*
Amortized over 30 years	**102**
Notes: Total $MTCO_2e$ may be different from CalEEMod output due to rounding. $MTCO_2e$ = metric tons of carbon dioxide equivalents Source: GHG Modeling Results (Appendix F).	

7.1.4 - Operational GHG Emissions

Operational or long-term emissions occur over the life of the project. Sources of operational emissions include:

- **Area**. Refers to consumer products, area architectural coatings, and landscaping equipment. Area emissions were estimated using CalEEMod.
- **Indirect Electricity**. Refers to the GHG emissions generated by off-site power plants to supply electricity required for the project. Electricity emissions were estimated using CalEEMod.
- Mobile. Refers to motor vehicle/exhaust emissions from the employee and customer vehicles and heavy-duty trucks that would access the project site. Motor vehicle and truck emissions were calculated using CalEEMod and information contained in the project's traffic impact study.

[10] As shown in the California Emissions Estimator Model (CalEEMod) User's Guide Version 2013.2, Table 3.4 "OFFROAD Equipment Emission Factors" as the analysis year increases, emission factors for the same equipment pieces decrease due to the natural turnover of older equipment being replaced by newer less polluting equipment and new regulatory requirements.

- **Natural Gas**. Refers to exhaust from natural gas usage. Carbon dioxide emissions were estimated using CalEEMod.
- **Water.** Estimates the land uses contribution of greenhouse gas emissions associated with supplying and treating the water and wastewater. Water emissions were estimated using CalEEMod.
- **Waste**. Refers to the greenhouse gas emissions associated with disposal of solid waste into landfills. Waste emissions were estimated using CalEEMod.

Proposed Project Emissions

This analysis is restricted to greenhouse gases identified by AB 32, which include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The project would generate a variety of greenhouse gases during construction and operation, including several defined by AB 32 such as carbon dioxide, methane, and nitrous oxide.

The project may also emit greenhouse gases that are not defined by AB 32. For example, the project may generate aerosols. Aerosols are short-lived particles, as they remain in the atmosphere for about one week. Black carbon is a component of aerosol. Studies have indicated that black carbon has a high global warming potential; however, the Intergovernmental Panel on Climate Change states that it has a low level of scientific certainty. Water vapor could be emitted from evaporated water used for landscaping, but this is not a significant impact because water vapor concentrations in the upper atmosphere are primarily due to climate feedbacks rather than emissions from project-related activities. The project would emit nitrogen oxides and volatile organic compounds, which are ozone precursors. Ozone is a greenhouse gas; however, unlike the other greenhouse gases, ozone in the troposphere is relatively short-lived and can be reduced in the troposphere on a daily basis. Stratospheric ozone can be reduced through reactions with other pollutants.

Certain greenhouse gases defined by AB 32 would not be emitted by the project. Perfluorocarbons and sulfur hexafluoride are typically used in industrial applications, none of which would be used by the project. Therefore, it is not anticipated that the project would emit perfluorocarbons or sulfur hexafluoride.

An upstream emission source (also known as life cycle emissions) refers to emissions that were generated during the manufacture of products to be used for construction of the project. Upstream emission sources for the project include but are not limited emissions from the manufacture of cement, emissions from the manufacture of steel, and/or emissions from the transportation of building materials to the seller. The upstream emissions were not estimated because they are not within the control of the project and to do so would be speculative. Additionally, the California Air Pollution Control Officers Association White Paper on CEQA and Climate Change supports this conclusion by stating, “The full life-cycle of GHG [greenhouse gas] emissions from construction activities is not accounted for . . . and the information needed to characterize [life-cycle emissions] would be speculative at the CEQA analysis level.” Therefore, pursuant to CEQA Guidelines Sections 15144 and 15145, upstream/life cycle emissions are speculative and no further discussion is necessary.

The operational emissions for the project based on the anticipated 2017 opening year are shown in Table 38. As shown, the project would emit approximately 29,041 $MTCO_2e$ under the 2017 opening year scenario. For the complete assumptions, please refer to Appendix F.

Table 38: Project Operational Emissions

Source	Emissions (MTCO2e per year)
Area	<1
Energy	1,954
Mobile – Passenger Vehicles	2,948
Mobile - Trucks	23,175
Waste	780
Water	84
Construction Emissions Amortized over 30 years	102
Total	**29,041**

Notes:

Total $MTCO_2e$ may be different from CalEEMod output due to rounding.

$MTCO_2e$ = metric tons of carbon dioxide equivalents

Source: GHG Modeling Results (Appendix F).

7.2 - Impact Analysis

7.2.1 - Greenhouse Gas Inventory

Impact GHG-1: **The project would generate direct and indirect greenhouse gas emissions; however, these emissions would not result in a significant impact on the environment.**

Thresholds of Significance for this Project

As discussed in the Newall Ranch decision, a lead agency may asses the significance of GHG emissions by determining a project's consistency with a local GHG reduction plan or CAP that qualifies under Section 15183.5 of the CEQA Guidelines. The County of Riverside's CAP serves to fulfill this role.

The CAP is designed to ensure that the development accommodated by the buildout of the General Plan supports the goals of Assembly Bill (AB) 32—the Global Warming Solutions Act of 2006. The California Air Resources Board (ARB) adopted the State's strategy for achieving AB 32 targets in its Climate Change Scoping Plan (Scoping Plan) in 2008. The Scoping Plan greenhouse gas reduction goal is to reduce statewide emissions to 1990 levels by 2020. The Riverside County CAP includes strategies that will achieve this target. The CAP target is to reduce County emissions by the amount recommended in the Scoping Plan for local government of 15 percent below 2008 levels by 2020.

This was roughly equivalent to the 28.4 percent overall reduction in statewide emissions from business as usual in 2020. The strategy will continue to provide reductions past 2020 and includes a commitment to update the CAP beginning in 2017. The new plan will include a specific target for GHG reductions for 2035 and 2050. The targets will be consistent with broader state and federal reduction targets and with the scientific understanding of the needed reductions by 2050. The CAP includes analysis that includes the conceptual reductions required to achieve the percent reductions that would be required to achieve the levels needed to achieve the 2050 target outlined in Executive Order S-3-05, but the CAP does not include a comprehensive strategy to achieve the later targets pending adoption of a statewide strategy for those later years.

In determining whether the project conflicts with any applicable plan, policy, or regulation, the California Resources Agency has stated that in order to be used for the purpose of determining significance, a plan must contain specific requirements that result in reductions of greenhouse gas emissions to a less than significant level. The following from CEQA Guidelines Section 15083.5(b) lists the requirements for greenhouse gas reduction plans used for this purpose:

(1) Plan Elements. A plan for the reduction of greenhouse gas emissions should:
   (A) Quantify greenhouse gas emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area;
   (B) Establish a level, based on substantial evidence, below which the contribution to greenhouse gas emissions from activities covered by the plan would not be cumulatively considerable;
   (C) Identify and analyze the greenhouse gas emissions resulting from specific actions or categories of actions anticipated within the geographic area;
   (D) Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level;
   (E) Establish a mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels;
   (F) Be adopted in a public process following environmental review.

(2) Use with Later Activities. A plan for the reduction of greenhouse gas emissions, once adopted following certification of an EIR or adoption of an environmental document, may be used in the cumulative impacts analysis of later projects. An environmental document that relies on a greenhouse gas reduction plan for a cumulative impacts analysis must identify those requirements specified in the plan that apply to the project, and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project. If there is substantial evidence that the effects of a particular project may be cumulatively considerable notwithstanding the project's compliance with the

specified requirements in the plan for the reduction of greenhouse gas emissions, an EIR must be prepared for the project.

The CAP meets these requirements as shown below:

- The CAP quantifies emissions for a 2008 base year and future inventories for 2020, 2035, and 2050 for the County.
- The CAP has adopted a target of reducing GHG emissions down to 15 percent below 2008 levels within the County of Riverside by 2020. This reduction target is compliant with AB 32; the AB 32 Climate Change Scoping Plan states: "In recognition of the critical role local governments will play in the successful implementation of AB 32, ARB recommended a greenhouse gas reduction goal for local governments of 15 percent below today's levels by 2020 to ensure that their municipal and community-wide emissions match the State's reduction target" (Scoping Plan page ES-5, ARB December 2008). As such, the County is consistent with the State's efforts to reduce GHG emissions globally and substantially lessen the cumulative contribution.
- The CAP analyzed the GHG emissions resulting from specific sources under the jurisdiction of the County or within the County's ability to influence including source categories common to most climate action plans in California.
- The CAP identified specific measures that would reduce GHG emissions by the required amount from regulations that apply to existing and new development and local measures that apply to the sources of emissions including:
  - Land Use and Transportation
  - Transportation Facilities Strategies
  - Transportation Demand Strategies
  - Energy Conservation Strategies for New and Existing Buildings
  - Waste Diversion and Recycling and Energy Recovery
  - Strategies for Existing Development
  - Municipal Strategies
- The CAP includes procedures for tracking and monitoring plan performance measures including annual and triennial data collection and reporting to identify trends and potential shortfalls requiring corrective actions.
- The CAP was included as part of the General Plan Update Master Environmental Impact Report and was adopted and certified in a public hearing on December 08, 2015.
- The CAP includes binding and enforceable requirements that apply to development projects to ensure plan consistency. All emission reductions required to reach the plan 2020 targets are achieved through compliance with adopted regulations, ordinances, and code enforced by the State and the County. Reductions from mobile sources anticipated through implementation of the County's land use plan are enforced through the development review process. Conditions of approval may be applied for measures requiring project specific actions not specifically addressed by the regulation or code.

The point values in the Screening Tables were derived from the projected emissions reductions that each of the Implementation Measures (IM) within the Riverside County GHG Technical Report would achieve. The total emission reductions offered by each measure is based on both changes in existing land use activities as well as how new development is designed and built. In order to correctly allocate the emission reductions within the Screening Table, the amount of emission reductions afforded new development had to be segregated out of the aggregate total in a manner that is described below. Once the process of segregating new development out of the aggregate reduction totals was completed, the points were then proportioned by residential unit or square feet of commercial/industrial uses. This was accomplished by taking the predicted growth in households and commercial/industrial uses by the year 2020 and proportioning the appropriate IM reduction quantities for new development to the residential and commercial/industrial land use sectors within the Screening Table. These calculations result in point values that are allocated by residential unit or commercial/industrial square footage (measured in 1000 sq.ft.). Because of this, the size of the project is not relevant to the Screening Table. Regardless of size, each project needs to garnish 100 points to demonstrate consistency with the Technical Report. Efficiency, not size of the Project is critical. The following emission factor can be used in determining the amount of emissions reduced per point in the Screening Table:

- The respective calculated emission values are in metric tons of carbon dioxide equivalents (MTCO2e)
- For Residential Projects: 0.069 MTCO2e per Point per Residential Unit
- For Commercial and Industrial Projects: 0.031 MTCO2e per Point per 1,000 Square Feet of gross Commercial/Industrial building area
- The first step in developing the point system was the need to determine the total reductions afforded the GHG Plan. In total 4,288,863 MTCO2e will be reduced as a result of the GHG Plan.

As shown in the GHG Plan, 1,807,866 MTCO2e will be reduced through State strategies. The next step in developing the point system is to segregate out the County's efforts in reducing GHG emissions. As shown in the GHG Plan, 2,448,997 MTCO2e are reduced by the County's Implementation Measures. This amount includes reductions afforded existing building retrofits, other changes to activities associated with existing land uses, as well as reductions associated with new development.

The next step is to segregate out of the 2,448,997 MT CO2e that the County needs to reduce, the total the amount of emissions that will be reduced by new development.

The GHG Plan summarizes the reduction in emissions afforded new development from the Implementation measures. As summarized in the GHG Plan, 1,302,569 MTCO2e will be reduced from new development as a result of the County strategies. Within the 1,302,569 MTCO2e of new development reductions afforded County strategies, 619,336 MTCO2e of emissions reduced is accomplished through new Commercial and Industrial Projects, and 683,233 MTCO2e of emissions reduced is accomplished through new residential projects.

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The next step in allocating point values is to determine the number of new homes and commercial buildings that are anticipated by year 2020. The County predicts that 100,477 new residential units will be needed by 2020 to accommodate the population growth by 2020. A total of approximately 195,547,000 square feet of new commercial and industrial buildings within the unincorporated County area is needed to accommodate anticipated job growth. This estimate is based on the relationship between past growth in employment to the average growth in commercial/industrial building area for Riverside County.

Dividing the 683,233 MTCO2e reductions of emissions afforded the Implementation Measures for new residential development by the anticipated 100,477 new residential units that will be built yields 6.80 MTCO2e per residential unit that needs to be reduced to fulfill the anticipated reductions of the GHG Technical Report. That amount equals 100 points, producing the following for the point values: 0.0680 MTCO2e per Point per Residential Unit

A similar process was used to derive the point value for new commercial/Industrial development. Because commercial/industrial land uses are typically described in thousand square feet of building space, the point value was calculated as follows: 0.031 MTCO2e per 1,000 Sq. Ft. of gross Commercial/Industrial building area.

The final step was to allocate points to each of the reduction measures in order to provide the menu of point values. Table 3.7-3 shows the requisite points afforded each measure. Note that emissions associated with new development are reduced by the State's measures, as well as the County's Implementation measures. The Screening Tables focus on those measures the County is implementing associated with new development within the unincorporated County area. For this reason, the menu of options pertains to all of the Implementation Measures pertaining to new development.

Pursuant to the CAP, Projects that achieve at least 100 points based on the County's screening tables are determined to be consistent with the reduction quantities anticipated in the County's GHG Technical Report. As such, further project-specific GHG quantification is not required. Consistent with CEQA guidelines, such projects would be determined to have a less than significant individual and cumulative impact for GHG emissions.

In order to enforce the requirements of the CAP Screening Tables, Mitigation Measure GHG-1 requires that the project implement at least 100 points from the Riverside County Greenhouse Gas Emissions Screening Tables. Table 39 displays the points that are anticipated to be used by the project; during construction and operation of the project, the points may be switched for feasibility. Therefore, since the project will incorporate at least 100 points from the screening tables, the project's impact on greenhouse gas emissions is less than significant.

Table 39: County of Riverside Greenhouse Gas Screening Table

Feature	Description	Project Consistency	Points
E5.A.1	Insulation: Modestly enhance insulation (walls R-13, roof/attic R-38)	The project will satisfy this measure by installing wall insulation rated at R-13 or better and roof/attic insulation at R-38 or better for the office portions of the building.	15
E5.A.2	Window Insulation: Modestly enhanced window insulation (5% > Title 24)	The project will satisfy this measure by installing windows with insulation that exceeds the incumbent 2013 Title 24 standards by a minimum of 5 percent.	7
E5.A.4	Air infiltration: Minimizing leaks in the building envelope is as important as the insulation properties of the building. Insulation does not work effectively if there is excess air leakage. Modest Building Envelope Leakage (5% > Title 24).	The project will satisfy this measure by designing the building envelope to ensure that there is minimal building envelope leakage for the conditioned space. The building envelope will exceed the incumbent 2013 Title 24 standards by a minimum of 5 percent.	4
E5.B.1	Heating/Cooling Distribution System: Minimum Duct Insulation (R-4.2 required)	—	0
E5.B.2	Space Heating/Cooling Equipment: High efficiency HVAC (EER15/72% AFUE or 8.5 HSPF)	The project will satisfy this measure by installing a high efficiency HVAC unit rated EER15/72% AFUE or 8.5 HSPF or better.	8
E5.B.4	Water Heaters: 2008 Minimum Efficiency (0.57 Energy Factor)	—	0
E5.B.5	Daylighting: All rooms within building have daylight (through use of windows, solar tubes, skylights, etc.)	The project will satisfy this measure by installing daylighting such that all of the conditioned space will have daylight through the use of windows, solar tubes, skylights or equivalents. For example, the warehouse buildings will have skylights and the office areas will contain windows.	5
E5.B.6	Artificial Lighting: High efficiency lights (50% of in-unit fixtures are high efficacy)	The project will satisfy this measure by installing high efficacy lighting at a minimum of 50 percent of the in-unit lighting fixtures.	12
E6.A.1	Solar Photovoltaic panels: 23 percent of the power needs of the project	As identified in the Project Description, Section 2.3.1 of the DEIR, the project includes the use of solar panels on its roofs, which would provide approximately 23 percent of the project's power needs.	14
W1.C.1	Water Efficient Landscaping: Eliminate turf and only provide drought tolerant plants	The project will satisfy this measure through compliance with the landscaping plan that identifies the use of drought tolerant plants.	4

Table 39 (cont.): County of Riverside Greenhouse Gas Screening Table

Feature	Description	Project Consistency	Points
W1.C.2	Water Efficient Irrigation Systems: Weather based irrigation control systems combined with drip irrigation (demonstrate 20 percent reduced water use)	The project will satisfy this measure through compliance with the MWELO as required by the Riverside County Ordinance 859.2. Implementation of the MWELO will result in a minimum of 20 percent reduced water use for outdoor irrigation. Specifically, the irrigation system will be designed utilizing "state of the art" irrigation equipment such as smart controllers, rain shut-off devices, master valves and flow sensors, as well as water-efficient irrigation heads. Plant materials will also be separated by hydrozones.	5
W1.D.1	Showers: Water Efficient Showerheads (2.0 gpm) Title 24 standard (required)	The project will satisfy this measure through compliance with the 2013 California Plumbing Code Section 408.0 Showers, showerheads shall have a maximum flow rate of 2.0 gallons per minute consistent with 2013 CALGreen which currently applies to the project.	3
W1.D.2	Toilets: Water Efficient Toilets/Urinals (1.5gpf)	The project will satisfy this measure through compliance with the 2013 California Plumbing Code Section 403.2.1 Water Closets, either flush tank, flushometer tank, or flushometer valve operated, shall not exceed the effective flush volume of 1.28 gallons. Urinals shall have an average water consumption not to exceed 0.125 gallon per flush. Both of these requirements are consistent with 2013 CALGreen, which currently applies to the project.	3
W1.D.3	Faucets: Water Efficient faucets (1.28gpm)	The project will satisfy this measure through compliance with the 2013 California Plumbing Code Section 403.8 Lavatory Faucets, the maximum flow rate of lavatory faucets shall not exceed 1.0 gallon per minute.	3
T1.A.2	Car/vanpools: Car/vanpool program with preferred parking	The project will satisfy this measure through compliance with the 2013 Cal Green Code section 5.106.5.2, the project will provide designated parking stalls for low-emitting, fuel-efficient, and/or carpool/vanpool vehicles. As such, the project will provide a minimum of 36 preferred parking spaces for car/vanpools or low-emitting/fuel efficient vehicles.	2
T1.A.3	Bike lockers and secure racks Showers and changing facilities	The project will satisfy this measure through compliance with MM AQ-8 c) which requires that, each building shall provide secure	3

Table 39 (cont.): County of Riverside Greenhouse Gas Screening Table

Feature	Description	Project Consistency	Points
		bicycle storage space equivalent to two percent of the automobile parking spaces provided. Pursuant to MM AQ-8 d) Each building shall provide a minimum of two shower and changing facilities within 200 yards of a building entrance.	
T4.A.1	Parking: Provide reserved preferential parking spaces for car-share, carpool, and ultra-low or zero emission vehicles.	The project will satisfy this measure through compliance with MM AQ-8 e) which requires that, each building shall provide preferred parking for low-emitting and fuel-efficient vehicles equivalent to 5 percent of the required number of parking spaces. This measure is also consistent with 2013 Cal Green Code section 5.106.5.2, which requires that the project provide designated parking stalls for low-emitting, fuel-efficient, and/or carpool/vanpool vehicles for 5 percent of required spaces. As such, the project will provide a minimum of 36 preferred parking spaces for car-share, carpool, and ultra-low or zero emission vehicles.	1
T7.B.1	Electric Vehicle Recharging: Install electric vehicle charging stations in parking areas.	The project will satisfy this measure through compliance with MM AQ-8 b) which requires that, a minimum of two electric vehicle-charging stations for automobiles or light-duty trucks shall be provided at each building. As such, the project will provide a minimum of four electric vehicle-charging stations for automobiles or light-duty trucks at the site.	16
T8.A.1	Vehicle Idling Restriction: All commercial vehicles are restricted to 5-minutes or less per trip on-site and at loading docks	The project will satisfy this measure through compliance with, MM AQ-7 b), which requires the project to post signs in all dock and delivery areas containing the following: truck drivers shall turn off engines when not in use; trucks shall not idle for more than five minutes; telephone numbers of the building facilities manager and the California Air Resources Board to report violations.	2
L2.B.1	Landscaping Equipment: Project provides electrical outlets on the exterior of all buildings so that electric landscaping equipment is compatible with all built facilities	The project will satisfy this measure through installation of electrical outlets on the exterior of all buildings.	2
SW1.B.1	Recycling: Provide separated recycling bins within each building/floor and provide large	The project will satisfy this measure through requiring the provision of separated recycling bins within each building and will	2

Table 39 (cont.): County of Riverside Greenhouse Gas Screening Table

Feature	Description	Project Consistency	Points
	external recycling collection bins at central location for pick-up	include a recycling collection bin for pick-up by the local waste hauler consistent with the requirements of Assembly Bill 341.	
SW2.B.1	Recycling of Construction/Demolition Debris: Recycle at least 20 percent of debris	The project will satisfy this measure by requiring that the project will implement and develop a plan to recycle a minimum of 20 percent of construction debris.	6
—	—	—	**117**
Source: TSG-Cherry Valley L.P., personal communication, July 2016.			

Level of Significance Before Mitigation

Potentially significant impact.

Mitigation Measures

Implement Mitigation Measures AQ-7 and AQ-8, which serve to reduce mobile source emissions, and the following:

MM GHG-1 Prior to issuance of building permits, the applicant shall provide documentation to the County of Riverside Building Department demonstrating that the project will implement the above described project features that will achieve at least 100 points from the Riverside County Greenhouse Gas Emissions Screening Tables or achieve equivalent emission reductions from other measures approved by the County of Riverside.

Level of Significance After Mitigation

Less than significant impact.

Greenhouse Gas Reduction Plans

Impact GHG-2: The project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

Impact Analysis

Impact GHG-2 assesses the project's consistency with the overarching goals of AB 32 and the strategies of ARB's Scoping Plan as well as the regulatory measures adopted to further AB 32's goals.

CEQA allows lead agencies to consider whether regulatory programs are adequate to reduce a project's potentially significant environmental effects. Under AB 32, the State's emission inventory must be reduced to 1990 levels by 2020. One of the questions in the CEQA Guidelines checklist regarding GHG asks whether a project conflicts with any applicable plan, policy, or regulation of an

agency adopted for the purpose of reducing the emissions of greenhouse gases. The ARB Scoping Plan and its implementing regulations provide the regulatory framework for the State to achieve its target and to track its progress. Moreover, *Newhall Ranch* describes that a lead agency may assess consistency with AB 32's goal in whole or in part by looking to compliance with regulatory programs designed to reduce GHG emissions from particular activities … [Newhall, p. 25.] *Newhall Ranch* further describes that "[t]o the extent a project's design features comply with or exceed the regulations outlined in the Scoping Plan and adopted by the Air Board or other state agencies, a lead agency could appropriately rely on their use as showing compliance with 'performance based standards' adopted to fulfill 'a statewide . . . plan for the reduction or mitigation of greenhouse gas emissions.' (CEQA Guidelines § 15064.4(a)(2), (b)(3); see also id., § 15064(h)(3) [determination that impact is not cumulatively considerable may rest on compliance with previously adopted plans or regulations, including 'plans or regulations for the reduction of greenhouse gas emissions'].)"

An important underlying assumption when making a significance determination based on compliance with regulations is that the regulations are adequate to address the impact to a less than significant level. If compliance with regulations is sufficient to mitigate the impact to a less than significant level, then a project is not required to provide any additional mitigation to further reduce the impact. If, however, regulations are only partially effective in mitigating the impacts, or if the regulatory program is not fully implemented, there may be a gap between the amount that can be reasonably claimed from regulation and the amount needed to achieve the less than significant target.

The CARB 2008 Scoping Plan includes a regulatory strategy that will result in the State achieving the AB 32 target by 2020, accounting for growth projected by 2020. The measures in the 2008 Scoping Plan have all been in place since 2012. In the 2014 Scoping Plan Update was adopted in May 2014, however, ARB confirmed that the State had now adopted sufficient laws and regulations to achieve the AB 32 target and no new measures or targets were identified.

Measures of Plan Consistency or Conflict

Determining project consistency with greenhouse gas plans presents unique challenges because the impact is global and inherently cumulative in nature and the solutions require global and local action. A single state or nation or project cannot solve the problem and there are no binding international agreements in place that will achieve the amount of reductions scientists estimate will be required to prevent catastrophic climate change. California recognized this and decided to identify reduction targets for itself in AB 32 that would lead to California providing its fair share of reductions regardless of what other states or the federal government or other countries do to reduce their fair share. This leadership by example is hoped to spur other governments to take action to reduce their greenhouse gas impacts. California through AB 32 set its fair share reduction at the amount required to reduce emissions to 1990 levels by 2020.

The analysis below qualitatively examines the measures contained in the applicable plans and subsequent adopted regulations and how they interrelate with the project to achieve the State's goals.

Applicable Plans

The Scoping Plan provides the State's overall strategy in the form of measures that apply to emission sectors that comprise the State's greenhouse gas emission inventory. The Scoping Plan is the State's view from 30,000 feet for achieving the AB 32 mandates. The State's on-the-ground implementation strategy primarily takes the form of source specific regulations adopted by State agencies such as ARB, and the CEC. The State has adopted regulations described earlier in this section to implement the Scoping Plan measures and achieve the emission reductions required. The Scoping Plan envisions a limited role for local government in implementing the State's GHG reduction strategy focusing on local government's authority over land use and some transportation projects.

Relating Plans to Projects

The ARB Scoping Plan examines California's greenhouse gas profile in two ways – emissions-based and end use (demand side)-based. While it is possible to illustrate the inventory many different ways, no chart or graph can fully display how diverse economic sectors fit together. California's economy is a web of activity where seemingly independent sectors and subsectors operate interdependently and often synergistically. For example, reductions in water use reduce the need to pump water, directly lowering electricity use and associated greenhouse gas emissions. Similarly, reducing the generation of waste reduces the need to transport the waste to landfills – lowering transportation emissions and, possibly, landfill methane emissions. Increased recycling or re-use reduces the carbon emissions embedded in products – it takes less energy to make a soda can from recycled aluminum than from virgin feedstock.

Development projects are assessed for direct emissions from combustion of fuels for heating buildings and indirect emissions for fuel use from transportation activities associated with the project. Development projects are also end users of electricity that is often generated by power plants that are located far from the project site. Project emissions from electricity consumption are based on the projected use and the average emission rate for the electric utility serving the project.

The regulations implementing the Scoping Plan apply directly to the project in regards to energy efficiency of the buildings, water conservation, and refrigerant usage. Scoping Plan measures regarding motor vehicle fuel efficiency apply to vehicle manufacturers, but result in lower emissions from vehicles accessing the project site. The Renewable Portfolio Standard applies to electric utilities, but reduce emissions related to electricity used by the project. Transportation sector measures from the Scoping Plan are also implemented through SB 375 - The Sustainable Communities and Climate Protection Act of 2008 which targets emissions from the transportation system through actions that make transportation more efficient at the regional level. Individual development projects have no direct requirements from SB 375 but may benefit from being located in areas designated as Transit Priority Areas and from system-wide infrastructure improvements that reduce congestion and improve traffic flow for all system users.

Development projects are constructed to accommodate California's population and economic growth accounted for by the Scoping Plan. As described above, the regulations implementing the Scoping Plan touch many of the operations of the buildings and the day to day activities of people that will work and shop at the project. Most of the greenhouse gas regulations apply behind the scenes so that they are not noticed by end users of the project except to the extent that the types of

cars available for purchase are more fuel efficient. The developer is directly impacted by building energy efficiency and conservation regulations that must be followed during building construction. The cost of the efficiency measures is built into the construction cost of the building and rents but the owners and tenants benefit from lower energy bills and water bills resulting from the increased energy efficiency.

The Scoping Plan includes measures that reduce emissions from the following sectors:

- Transportation
- Electricity and Natural Gas
- Water
- Green Building
- Industry
- Recycling and Waste Management
- Forests
- High Global Warming Potential
- Agriculture

The 2008 Scoping Plan included 18 measures to reduce emissions from the various sectors. The measures often overlap and have interdependent relationships with other measures as described earlier. The measures are implemented with regulations and programs applicable to specific sources of emissions. More detailed descriptions of the measures are provided in Scoping Plan Appendix C, Sector Overview and Emission Reduction Strategies. The State has been very aggressive in adopting regulations to implement the Scoping Plan and as a result, the state is on track to achieve the 2020 target as discussed above.

Most of the reductions required to reach AB 32's 2020 reduction target will be achieved by regulations that apply to both existing and new development, including the RPS, Pavley standards, LCFS, landfill regulations, regulations and programs on high global warming potential (GWP) gases, initiatives on water conservation (such as SB X7-7), and the indirect influence of the Cap and Trade system on electricity and transportation fuel prices.

The Project's significance with respect to consistency with applicable plans, policies, or regulations adopted for the purpose of reducing GHG emission have been evaluated below and addressed for each sector.

Transportation

Approximately 90 percent of the Project's opening year GHG emissions as summarized in Table 3.7-2 are from transportation (mobile sources), heavy-duty trucks in particular. Transportation emissions are heavily regulated at the source, including, but not limited to engine emissions standards and fuel requirements. Because these regulations and policies reduce GHG emissions at the source, the Project will be subject to and therefore not conflict with these transportation measures.

State Regulations/Scoping Plan Measures

Adopted regulations that will reduce the Project's GHG emissions through engine emission standards and fuel requirements are described in detail in Section 3.7.2 above. These regulations include:

California Light-Duty Vehicle Greenhouse Gas Standards

AB 1493/Pavley I and II required CARB to adopt regulations to reduce GHG emissions from non-commercial passenger vehicles and light-duty trucks of model year 2009 through 2016.

The standards phase in during the 2009 through 2016 model years. When fully phased in, the near-term (2009–2012) standards will result in about a 22-percent reduction compared with the 2002 fleet, and the mid-term (2013–2016) standards will result in about a 30-percent reduction. The second phase of the implementation for the Pavley bill was incorporated into Amendments to the Low-Emission Vehicle Program referred to as LEV III or the Advanced Clean Cars program. The Advanced Clean Car program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for model years 2017 through 2025. The regulation will reduce GHGs from new cars by 34 percent from 2016 levels by 2025.

This measure applies to all new passenger vehicles starting with model year 2009. The project is consistent with this measure and its implementation as it would apply to all new passenger vehicles purchased in California. As such, any passenger vehicles associated with construction and operation of the project would be required to comply with the Pavley emissions standards.

Executive Order S-01-07 – Low Carbon Fuel Standard (LCFS)

The LCFS regulation became fully effective in 2010 and will reduce GHG emissions by reducing the carbon intensity of transportation fuels used in California by at least 10 percent by 2020. The proposed Project will utilize these emissions reductions as they are implemented into 2020 from all operational mobile emissions sources.

This measure applies to transportation fuels utilized by vehicles in California. The project is consistent with this measure and its implementation as motor vehicles associated with construction and operation of the project would utilize low carbon transportation fuels as required under this measure.

Medium/Heavy-Duty Vehicles

As part of the Heavy-duty Vehicle Greenhouse Gas Regulation, CARB also implemented the Drayage Truck Regulation and Truck and Bus Regulation. These three regulations were collectively adopted to address and reduce emissions from trucks. Since the proposed Project has a large truck component, these regulations will aid in reducing GHG emissions from the Project.

This measure applies to medium and heavy-duty vehicles that operate in the state, and thus would apply to medium and heavy-duty vehicles that serve the project. The project is consistent with this measure and its implementation as medium and heavy-duty vehicles associated with construction and operation of the project would be required to comply with the requirements of this regulation.

Tractor-Trailer Greenhouse Gas Regulation

The tractors and trailers subject to this regulation must either use EPA SmartWay certified tractors and trailers, or retrofit their existing fleet with SmartWay verified technologies. The regulation applies primarily to owners of 53-foot or longer box-type trailers, including both dry-van and refrigerated-van trailers, and owners of the heavy-duty tractors that pull them on California highways. The Project is consistent with this measure and its intended implementation as the project will be required to become a SmartWay Partner and the facility operator will be required to incorporate incentives and requirements such that a maximum feasible number of truck trips will be carried by SmartWay 1.0 or greater carriers pursuant to MM AQ-7 e) and MM AQ-7 f).

Cap-and-Trade Program

Notably, the Cap-and-Trade Program covers transportation fuel suppliers to address emissions from fuels and from combustion of other fossil fuels not directly covered at large sources in the Program's first compliance period. While the Cap-and-Trade Program technically covered fuel suppliers as early as 2012, they did not have a compliance obligation until 2015. The Cap-and-Trade Program covers the GHG emissions associated with the combustion of transportation fuels in California, whether refined in-state or imported. The point of regulation for transportation fuels is when they are supplied, or delivered into commerce. Accordingly, as with stationary source GHG emissions and GHG emissions attributable to electricity use, virtually all of GHG emissions from CEQA projects associated with VMT are covered by the Cap-and-Trade Program.

In September 2013, the SCAQMD adopted two Negative Declarations stating that GHG emissions subject to the CARB Cap-and-Trade Program do not count against the 10,000 MT CO2e significance threshold the SCAQMD applies when acting as a lead agency. In addition, the San Joaquin Valley Air Pollution Control District (SJVAPCD) has recently taken this one issue step further and adopted a policy: "CEQA Determinations of Significance for Projects Subject to CARB's GHG Cap-and-Trade Regulation." This policy applies when the SJVAPCD is the lead agency and when it is a responsible agency. In short, the SJVAPCD "has determined that GHG emissions increases that are covered under CARB's Cap-and-Trade regulation cannot constitute significant increases under CEQA…." The SJVAPCD classifies CARB's Cap-and-Trade Program as an approved GHG emission reduction plan or GHG mitigation program under CEQA Guidelines Section 15064(h) (3). The policy acknowledges that "combustion of fossil fuels including transportation fuels used in California (on and off road including locomotives), not directly covered at large sources, are subject to Cap-and-Trade requirements, with compliance obligations starting in 2015." As such, the SJVAPCD concludes that GHG emissions associated with vehicle miles traveled (VMT) cannot constitute significant increases under CEQA. This regulatory conclusion is therefore directly applicable to the proposed Project because VMT is by far the largest source of project GHG emissions.

Since the proposed Project has a large mobile source component and Cap-and-Trade emission reductions are difficult to calculate on a project-level, the proposed Project's mobile source emissions are very conservative, making the total emission calculations conservative. The phase-in of the Cap-and-Trade Program compliance obligations for transportation fuel providers further reduces GHG emissions attributable to mobile sources, beyond the GHG emissions reductions achieved and modeled by the Pavley Standard and LCFS.

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Regional and Local Measures

Southern California is a major hub for importing and exporting goods. SCAG estimates that over $2 trillion in cargo was moved across the region in 2010 alone, much of which travels through inland Southern California, including Western Riverside County. However, the many warehouses and distribution facilities employ non-passenger vehicles that contribute to GHG emissions. At the state level, more standards are being implemented to increase vehicle efficiencies and the 2012 RTP/SCS and SCAQMD are supporting greater penetration of low-emission trucks in the region. While goods will continue to be moved to support local and regional economies, electrification and other low-emission technologies installed in vehicles can reduce the GHG emissions of goods movement.

The Inland Empire is the heart of the region's warehouse Goods Movement network for goods that enter the Ports and are moved east to the rest of the country. The entire Goods Movement network is based on the Ports of Los Angeles/Long Beach (Ports of LA/LB) and all truck trips generated by the Project are conservatively assumed to come from the Ports of Los Angeles/Long Beach (Ports of LA/LB). The Ports have adopted several plans and policies to reduce GHG emissions including Green LA: An Action Plan to Lead the Nation in Fighting Global Warming, the Port of LA CAP, the Long Beach Sustainable City Action Plan, and the San Pedro Bay Ports Clean Air Action Plan.

As identified in the Riverside County CAP, the County has adopted several General Plan Policies that reduce automobile use and consequently GHG emissions, these measures go above and beyond the regulatory requirements of AB 32. A summary of applicable measures identified in the CAP are as follows:

R2-T1: Employment Based Trip and VMT Reduction

This measure would implement General Plan Policies AQ 3.3, AQ 10.1, AQ 10.3, and AQ 10.4 through the adoption of a voluntary trip reduction program for new commercial and industrial development that promotes commuter choices, employer transportation management, guaranteed ride home programs and commuter assistance and outreach type programs intended to reduce commuter vehicle miles traveled. The Project is consistent with this measure and its intended implementation as the project will be required to participate in Riverside County's Rideshare Program pursuant to MM AQ-8 a).

R2-T4: Preferential Parking

This measure would implement General Plan Policies AQ 3.3 and AQ 10.3 by encouraging proposed development projects to incorporate a comprehensive parking program to facilitate carpooling and alternate transportation. The Project is consistent with this measure and its intended implementation as the project will be required, pursuant to MM AQ-8 b) and MM AQ-8 e) to install a minimum of two electric-vehicle charging stations per building, and each building shall provide preferred parking for low-emitting and fuel-efficient vehicles equivalent to 5 percent of the required number of parking spaces.

R2-T5: Roadway Improvements Including Signal Synchronization and Transportation Flow Management

This R2 measure would implement General Plan Policies AQ 12.1 and AQ 12.3. Proposed development projects that pay fare-share fees toward signal synchronization improvements or construct signalized intersections within a traffic signal synchronization system. These modifications

include, but are not limited to, synchronization of signals, improvement of traffic flow, the development of parallel roadways and support for the extension of freight rail into Riverside County's industrial areas. The project is consistent with this measure as it will implement any required traffic signal synchronization or construction of new traffic signals as identified in the project's traffic impact analysis.

Project Design Features and Mitigation Measures

Lastly, the project will incorporate several project design features and mitigation measures that will further reduce the Project's GHG emissions from transportation. These measures further support the AB 32 / Scoping Plan reduction goals. A summary of mitigation measures that will reduce transportation-related GHG emissions are as follows:

MM AQ-2 All Heavy-Heavy Duty Haul Trucks (HHD) accessing the project site shall use year 2007 or newer engines during all construction activities.

MM AQ-7 The project shall implement the following measures to reduce emissions from onsite heavy duty trucks within six months after operations commence:

b) Post signs in all dock and delivery areas containing the following: truck drivers shall turn off engines when not in use; trucks shall not idle for more than five minutes; telephone numbers of the building facilities manager and the California Air Resources Board to report violations.
c) Tenants shall maintain records on its fleet equipment and vehicle engine maintenance to ensure that equipment and vehicles serving the warehouses within the project are in good condition, and in proper tune pursuant to manufacturer's specifications. Tenants shall maintain records on its fleet equipment and ensure that all Heavy-Heavy Duty Trucks (HHD) accessing the project site use year 2010 or newer engines. The records shall be maintained onsite and be made available for inspection by the County.
d) The facility operator will ensure that site enforcement staff in charge of keeping the daily log and monitoring for excess idling will be trained/certified in diesel health effects and technologies, for example, by requiring attendance at California Air Resources Board approved courses (such as the free, one-day Course #512).
e) Require facility operator to become a SmartWay Partner.
f) Require facility operator to incorporate incentives and requirements such that the maximum feasible number of truck trips will be carried by SmartWay 1.0 or greater carriers.

MM AQ-8 The following measures shall be incorporated into each building to reduce motor vehicle emissions:

a) All tenants shall participate in Riverside County's Rideshare Program. The purpose of the program would be to discourage single-occupancy vehicle trips and encourage alternate modes of transportation such as carpooling, transit, walking, and biking. The program shall provide employees with assistance in

using alternate modes of travel, including carpooling encouragement, ride-matching assistance, and vanpool assistance.

b) A minimum of two electric vehicle-charging stations for automobiles or light-duty trucks shall be provided at each building.
c) Each building shall provide secure bicycle storage space equivalent to two percent of the automobile parking spaces provided.
d) Each building shall provide a minimum of two shower and changing facilities within 200 yards of a building entrance.
e) Each building shall provide preferred parking for low-emitting and fuel-efficient vehicles equivalent to five percent of the required number of parking spaces.

Energy

The second largest source, approximately 7 percent, of GHG emissions shown in Table 3.7-2 from the Project is energy consumption from electricity and natural gas.

State Regulations/Scoping Plan Measures

Energy-related emissions are also heavily regulated at the source, including, but not limited to energy efficiency standards and renewable energy requirements. Because these regulations and polices reduce GHG emissions at the source, the Project will be subject to and therefore implement these energy measures.

Energy Efficiency – Title 24/CalGreen

As previously discussed in Section 3.7.2, the CEC indicates that the 2013 Title 24 standards will reduce energy consumption by 30 percent above that achieved by 2008 Title 24 (CEC 2012). More specifically, based on a comparison of 2008 to 2013 Title 24 reductions required, newly constructed non-residential buildings result in an overall reduction of approximately 22 percent energy demand. Additionally, the 2013 Title 24 standards currently in effect yield an approximately 68 percent energy savings when compared with the 2005 Title 24 standards (in place pre-AB 32)[11].

At this time, the 2013 Title 24 standards are currently in effect; notwithstanding, it is likely that by the time the building permits are processed for this Project, the 2016 Title 24 standards will be in effect (the 2016 Title 24 standards take effect on January 1, 2017). The analysis did not take any credit for implementation of the more restrictive 2016 Title 24 standards for which the CEC estimates will provide 5 percent electric energy savings from non-residential buildings compared to 2013 Title 24.[12]

The proposed Project is also subject to the CalGreen Code Title 24 building energy efficiency requirements that offer builders better windows, insulation, lighting, ventilation systems, and other features that reduce energy consumption in homes and businesses.

[11] See Table 2: Summary of First-Year-Electricity Savings in the Impact Analysis *2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings, November 2007. See Table 2: Summary of First-Year-Electricity Savings in the California Energy Commission's Consultant Report: Impact Analysis California's 2013 Building Energy Efficiency Standards, July 2013.*

[12] See CEC 2015. 2016 Building Energy Efficiency Standards Adoption Hearing Presentation. Website: http://www.energy.ca.gov /title24/2016standards/rulemaking/documents/2015-06-10_hearing/2015-06-10_Adoption_Hearing_Presentation.pdf. Accessed May 11, 2016.

Renewable Portfolio Standard

As previously described above in Section 3.7.2, California's Renewable Portfolio Standard (RPS) requires retail sellers of electric services to increase procurement from eligible renewable energy sources to 33 percent of total retail sales by 2020 as established under SB 1078 and accelerated under SB 107 and SBX1-2. Additionally, SB 1368 prohibits any retail seller of electricity in California from entering into a long-term financial commitment for baseload generation if the GHG emissions are higher than those from a combined-cycle natural gas power plant. As a customer of Southern California Edison, the proposed Project will purchase from an increasing supply of renewable energy sources and more efficient baseload generations and thereby reduce GHG emissions.

Million Solar Roofs Program

The Million Solar Roofs Program set a goal to install 3,000 megawatts (MW) of new solar capacity by 2017 – moving the state toward a cleaner energy future and helping lower the cost of solar systems for consumers. The Million Solar Roofs Initiative is a ratepayer-financed incentive program aimed at transforming the market for rooftop solar systems by driving down costs over time.

The project is consistent with this scoping plan measure as the project includes the use of solar panels on its roofs, which would provide approximately 23 percent of the project's power needs.

Regional and Local Measures

As identified in the Riverside County CAP, the County has adopted several General Plan Policies that reduce energy use and consequently GHG emissions, these measures go above and beyond the regulatory requirements of AB 32. A summary of applicable measures identified in the CAP are as follows:

R2-E5: Commercial/Industrial Energy Efficiency Program

This R2 measure would implement General Plan Policies AQ 5.2, AQ 5.4, LU 4.1e, OS 16.1 and OS 16.9, and involves the adoption of a Riverside County Program that facilitates the energy efficient design for new commercial buildings so that new commercial buildings are 5% to 20% more efficient than the current Title 24 Standards. The high end of this voluntary energy efficiency program is 10% greater than the minimum requirements of the LEED and ENERGY STAR programs. As energy efficiency standards increase, Riverside County may want to periodically re-evaluate their percentage beyond Title 24 goal to ensure it is still a feasibly achievable goal.

Commercial developments within the unincorporated portions of Riverside County are encouraged to participate in the voluntary Commercial Energy Efficiency Program. This voluntary program would set a minimum goal of achieving energy efficiency of 5% greater than current Title 24 Standards. Incentives to participate in this volunteer program would include prioritization and streamlining of the application process for commercial/industrial projects that achieve the minimum goal. The project is consistent with this measure as it will exceed the Title 24 Standards by a minimum of 5 percent pursuant to the Riverside County CAP Checklist implementation identified on Table 3.7-3 previously presented.

R2-E6: Commercial/Industrial Renewable Energy Program

This R2 measure would implement General Plan Policies OS 10.1, OS 11.2 and OS 11.3, and facilitate the voluntary incorporation of onsite renewable (solar or other renewable) energy generation into the design and construction of new commercial, office and industrial development.

The project is consistent with this measure as the project includes the use of solar panels on its roofs, which would provide approximately 23 percent of the project's power needs.

Project Design Features

Lastly, as identified in the Project Description, Section 2.3.1 of the DEIR, the project intends to construct buildings that will also be designed to provide CalGreen Standards with Leadership in Energy and Environmental Design (LEED) to be eligible for a Silver Certification level. This includes design considerations related to the building envelope, HVAC, lighting, and power systems. Additionally, the architectural expression such as roofs and windows in the buildings will relate to conserving energy.

For future office improvement, refrigerants and HVAC equipment will be selected to minimize or eliminate the emission of compounds that contribute to ozone depletion and global warming. Ventilation and HVAC systems will be designed to meet or exceed the minimum outdoor air ventilation rates described in the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) standards and/or per California Title 24 requirements. Additionally, the proposed Project will implement design features for future office improvement to increase the efficiency of the building envelope (i.e., the barrier between conditioned and unconditioned spaces). This includes installation of insulation to minimize heat transfer and thermal bridging and to limit air leakage through the structure or within the heating and cooling distribution system to minimize energy consumption.

Water

GHG emissions also result from electricity consumption related to water supply, treatment, and distribution, as well as wastewater treatment. As shown in Table 3.7-2, the Project's GHG emissions related to water consumption are less than one percent of total GHG emissions.

State Regulations/Scoping Plan Measures

Renewable Portfolio Standard Related to Water Supply and Conveyance

This measure would increase electricity production from eligible renewable power sources to 33% by 2020. A reduction in GHG emissions results from replacing natural gas-fired electricity production with zero GHG emitting renewable sources of power. By 2020, this requirement will reduce emissions from electricity used for water supply and conveyance in California by approximately 21.3 MMT CO2e, representing 15.2% of emissions from electricity generation (in-state and imports).

As previously discussed, as a customer of Southern California Edison, the proposed Project will purchase from an increasing supply of renewable energy sources and more efficient baseload generations consistent with RPS and thereby reduce GHG emissions.

Model Water Efficient Landscape Ordinance (MWELO)

The Model Water Efficient Landscape Ordinance (Ordinance) was required by AB 1881, the Water Conservation Act. The bill required local agencies to adopt a local landscape ordinance at least as effective in conserving water as the Model Ordinance by January 1, 2010. Reductions in water use of 20 percent consistent with (SBX-7-7) 2020 mandate are expected upon compliance with the ordinance. Governor Brown's Drought Executive Order of April 1, 2015 (EO B-29-15) directed DWR to update the Ordinance through expedited regulation. The California Water Commission approved the revised Ordinance on July 15, 2015 effective December 15, 2015. New development projects that include landscape areas of 500 square feet or more are subject to the Ordinance.

The project is required to comply with the MWELO as required by Riverside County Ordinance 859.2 which will result in a minimum of 20 percent reduced water use for outdoor irrigation. The project is consistent with this measure as it will result in a minimum 20 percent reduced water use pursuant to the Riverside County CAP Checklist implementation identified on Table 3.7-3 previously presented.

Regional and Local Measures

As identified in the Riverside County CAP, the County has adopted several General Plan Policies that reduce water use and consequently GHG emissions, these measures go above and beyond the regulatory requirements of AB 32. A summary of applicable measures identified in the CAP are as follows:

R2-W1: Water Use Reduction Initiative

This measure would implement General Plan Policies LU 4.1d and f, C 5.2 and OS 2.1 through OS 2.4 and provide incentives for all new proposed development projects to comply with the California Green Building Standards Code. Under the California Green Building Code, new developments are required to reduce indoor potable water use by 20% beyond the Energy Policy Act of 1992 fixture performance requirements, and to reduce outdoor potable water use by 50% from a mid-summer baseline average consumption through irrigation efficiency, native plant selection, the use of recycled water and/or captured rainwater, for example. The state is dependent upon local water purveyors and jurisdictions to implement these new requirements.

The project is consistent with this measure as it will provide water efficient landscaping, irrigation, showerheads, toilets, and faucets pursuant to the Riverside County CAP Checklist implementation identified on Table 3.7-3 previously presented.

Project Design Features/Mitigation

The proposed Project will implement a drought tolerant landscape plan that identifies the use of drought tolerant plants. The project will also provide water efficient landscaping, irrigation, showerheads, toilets, and faucets pursuant to the Riverside County CAP Checklist implementation identified on Table 3.7-3 previously presented.

Waste Diversion

Disposal of solid waste in landfills contributes approximately three percent of GHG emissions from the project as shown on Table 3.7-2.

State Regulations/Scoping Plan

The CARB Scoping Plan recommends three measures for reducing emissions from Municipal Solid Waste at the state level, including: 1) landfill methane control; 2) increase the efficiency of landfill methane capture; and 3) high recycling/zero waste. CARB is in the process of developing a discrete early action program for methane recovery (1), which was adopted in early 2010. This measure is expected to result in a 1.0 MMT CO2e reduction by 2020. Other measures proposed by CARB include increasing efficiency of landfill methane capture (2) and instituting high recycling/zero waste policies (3). Potential reductions associated with these measures are still to be determined.

Implementation of the CalGreen code and state measures reduce the amount of solid waste disposed of in landfills. The CalGreen code requires jurisdictions to divert a minimum of 50% of their nonhazardous construction and demolition waste from landfills. The City of Riverside reported a 64 percent waste diversion rate for the year 2006. In addition SB 341 amended the California Integrated Waste Management Act of 1989 to include a provision declaring that it is the policy goal of the state that not less than 75 percent of solid waste generated be source reduced, recycled, or composted by the year 2020, and annually thereafter. The proposed Project is subject to these regulations as well as SB 341's policy goal and thereby reduce GHG emissions.

Regional and Local Measures

As identified in the Riverside County CAP, the County has adopted several General Plan Policies that reduce waste and consequently GHG emissions, these measures go above and beyond the regulatory requirements of AB 32. A summary of applicable measures identified in the CAP are as follows:

R2-S1: County Diversion Program

This R2 measure would implement General Plan Policy AQ 4.1 and AQ 5.1 through a countywide waste diversion plan to further exceed the state requirements by diverting 75% of all waste from landfills by 2020. The following is a potential list of waste reduction measures that can be incorporated into development projects that will further strengthen existing waste reduction/diversion programs:

- Encourage commercial, office, and industrial development to adopt a voluntary procurement standard and prioritize those products that have less packaging, are reusable, recyclable, or compostable;
- Include recycling and green waste collection infrastructure (assigned areas with separate designated bens for each type of recycled material) within residential, commercial, and industrial development;
- Require a minimum of 15% of materials used in construction be sourced locally, as feasible; and

- Encourage the use of recycled building materials and cement substitutes for new developments.

The project is consistent with this measure as it will provide separated recycling bins within each building and a large external recycling collection bin, the project will also implement and develop a plan to recycle a minimum of 20 percent of construction debris pursuant to the Riverside County CAP Checklist implementation identified on Table 3.7-3 previously presented.

Project Design Features/Mitigation

As discussed previously, the project will provide separated recycling bins within each building and a large external recycling collection bin, the project will also implement and develop a plan to recycle a minimum of 20 percent of construction debris pursuant to the Riverside County CAP Checklist implementation identified on Table 3.7-3 previously presented.

Consistency with Executive Orders S-3-05 and B-30-15

At the state level, Executive Orders S-3-05 and B-30-15 are orders from the State's Executive Branch for the purpose of reducing GHG emissions. The goal of Executive Order S-3-05 is to reduce GHG emissions to 1990 levels by 2020 was codified by the Legislature as the 2006 Global Warming Solutions Act (AB 32). The Project, as analyzed above, is consistent with AB 32. Therefore, the Project does not conflict with this component of Executive Order S-3-05. The Executive Orders also establish goals to reduce GHG emissions to 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. These goals have not been codified. However, studies have shown that, in order to meet the 2030 and 2050 targets, aggressive technologies in the transportation and energy sectors, including electrification and the decarbonization of fuel, will be required. In its Climate Change Scoping Plan, ARB acknowledged that the "measures needed to meet the 2050 are too far in the future to define in detail." In the First Scoping Plan Update, however, ARB generally described the type of activities required to achieve the 2050 target: "energy demand reduction through efficiency and activity changes; largescale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and rapid market penetration of efficiency and clean energy technologies that requires significant efforts to deploy and scale markets for the cleanest technologies immediately." Due to the technological shifts required and the unknown parameters of the regulatory framework in 2030 and 2050, quantitatively analyzing the Project's impacts further relative to the 2030 and 2050 goals is speculative for purposes of CEQA. Moreover, ARB has not calculated and released the BAU emissions projections for 2030 or 2050, which are necessary data points for quantitatively analyzing a CEQA project's consistency with these targets (ARB 2014).

Although the proposed Project's emissions levels in 2030 and 2050 cannot be reliably quantified, statewide efforts are underway to facilitate the State's achievement of that goal and it is reasonable to expect the proposed Project's emissions level (14,008 metric tons of CO_2e per year) to decline as the regulatory initiatives identified by ARB in the First Scoping Plan Update are implemented, and other technological innovations occur. Stated differently, the proposed Project's emissions total presented in Table 3.6-7, represents the maximum emissions inventory for the Project as California's emissions sources are being regulated (and foreseeably expected to continue to be regulated in the

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future) in furtherance of the State's environmental policy objectives. As such, given the reasonably anticipated decline in proposed project emissions once fully constructed and operational, the proposed project is consistent with the Executive Orders' goals.

The Scoping Plan recognizes that AB 32 establishes an emissions reduction trajectory that will allow California to achieve the more stringent 2050 target: "These [greenhouse gas emission reduction] measures also put the state on a path to meet the long-term 2050 goal of reducing California's greenhouse gas emissions to 80 percent below 1990 levels. This trajectory is consistent with the reductions that are needed globally to stabilize the climate." Also, ARB's First Update "lays the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050," and many of the emission reduction strategies recommended by ARB would serve to reduce the proposed Project's post-2020 emissions level to the extent applicable by law:

1. Energy Sector: Continued improvements in California's appliance and building energy efficiency programs and initiatives, such as the State's zero net energy building goals, would serve to reduce the proposed Project's emissions level. Additionally, further additions to California's renewable resource portfolio would favorably influence the proposed Project's emissions level.
2. Transportation Sector: Anticipated deployment of improved vehicle efficiency, zero emission technologies, lower carbon fuels, and improvement of existing transportation systems all will serve to reduce the proposed Project's emissions level.
3. Water Sector: The proposed Project's emissions level will be reduced as a result of further desired enhancements to water conservation technologies.
4. Waste Management Sector: Plans to further improve recycling, reuse and reduction of solid waste will beneficially reduce the proposed Project's emissions level.

While the 2020 cap would remain in effect post-2020, the Cap-and-Trade Program is not currently scheduled to extend beyond 2020 in terms of additional GHG emissions reductions. However, ARB has expressed its intention to extend the Cap-and-Trade Program beyond 2020 in conjunction with setting a mid-term target. The "recommended action" in the First Update for the Cap-and-Trade Program is: "Develop a plan for a post-2020 Cap-and-Trade Program, including cost containment, to provide market certainty and address a mid-term emissions target." The "expected completion date" for this recommended action is 2017. In addition to CARB's First Update, in January 2015, during his inaugural address, Governor Jerry Brown expressed a commitment to achieve "three ambitious goals" that he would like to see accomplished by 2030 to reduce the State's GHG emissions:

(1) increasing the State's Renewable Portfolio Standard from 33 percent in 2020 to 50 percent in 2030; (2) cutting the petroleum use in cars and trucks in half; and (3) doubling the efficiency of existing buildings and making heating fuels cleaner. These expressions of Executive Branch policy may be manifested in adopted legislative or regulatory action through the state agencies and departments responsible for achieving the State's environmental policy objectives, particularly those relating to global climate change (Brown 2015). Further, recent studies show that the State's existing

and proposed regulatory framework will allow the State to reduce its GHG emissions level to 40 percent below 1990 levels by 2030, and to 80 percent below 1990 levels by 2050. Even though these studies did not provide an exact regulatory and technological roadmap to achieve the 2030 and 2050 goals, they demonstrated that various combinations of policies could allow the statewide emissions level to remain very low through 2050, suggesting that the combination of new technologies and other regulations not analyzed in the studies could allow the State to meet the 2050 target (Energy and Economics (2015).

Given the proportional contribution of mobile source-related GHG emissions to the State's inventory, recent studies also show that relatively new trends, such as the increasing importance of web-based shopping, the emergence of different driving patterns by the "millennial" generation and the increasing effect of Web-based applications on transportation choices, are beginning to substantially influence transportation choices and the energy used by transportation modes. These factors have changed the direction of transportation trends in recent years, and will require the creation of new models to effectively analyze future transportation patterns and the corresponding effect on GHG emissions. For the reasons described above, the proposed Project's post-2020 emissions trajectory is expected to follow a declining trend, consistent with the 2030 and 2050 targets.

Regarding goals for 2050 under Executive Order S-3-05, at this time it is not possible to quantify the emissions savings from future regulatory measures, as they have not yet been developed; nevertheless, it can be anticipated that operation of the project would comply with whatever measures are enacted that state lawmakers decide would lead to an 80-percent reduction below 1990 levels by 2050. Note again that the project already includes several project design features that exceed regulatory requirements and reduce vehicle miles traveled.

Accordingly, taking into account the proposed project's emissions, project design features, standard measures and the progress being made by the State towards reducing emissions in key sectors such as transportation, industry, and electricity, the project furthers the State's goals of reducing greenhouse gas emissions to 1990 levels by 2020 and an 80-percent reduction below 1990 levels by 2050, and does not obstruct their attainment.

Summary

The project is consistent with all applicable Scoping Plan goals and policies as evaluated herein. Additionally, the project incorporates a number of project design features and mitigation measures that go beyond the Scoping Plan requirements that would further minimize GHG emissions. The project promotes the goals of the Scoping Plan through implementation of the design measures that reduce energy consumption, and water consumption. In addition, the project is required to comply with the regulations described in this section that have been adopted to implement the Scoping Plan and to achieve the AB 32 2020 target. Therefore, the project does not conflict with any plans to reduce GHG emissions and furthers the State's goals relative to this impact. The impact is less than significant.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less than significant impact.

SECTION 8: RESIDENTIAL ALTERNATIVE ANALYSIS

8.1 - Description

The Residential Alternative would involve the development of a new residential neighborhood based on a specific plan, similar to nearby existing and planned (e.g. Sunny-Cal Specific Plan) residential neighborhoods of this size. The specific plan would be composed of various planning areas with defined uses and developments densities. Development of the Residential Alternative would result in a total of 792 new residential units, including 499 at 8-14 dwelling units/acre, 254 at 2-5 dwelling units per acre, and 40 at 1 dwelling unit per acre. The gross density for the overall project site would be 3.2 dwelling units per acre.

According to the Southern California Association of Governments (SCAG), unincorporated areas within the County of Riverside have an average of 3.19 persons per household. Therefore, the 792 housing units under the Residential Specific Plan Alternative could add an estimated 2,527 persons within the project area. The following discussion evaluates the potential air quality and greenhouse gas impacts associated with the Residential Specific Plan Alternative as compared to impacts from the project.

8.2 - Methodology

Construction emissions were not estimated for the residential alternative because they are assumed to be similar to the proposed project's construction emissions.

Operational air pollutant and greenhouse gas emissions were estimated by CalEEMod (version 2013.2.2) using default assumptions except for the following:

- Trip generation rates from the I-10 Gateway Residential Alternative Traffic Impact Analysis prepared by Urban Crossroads (September 24, 2014); 9.52 trips per for 792 dwelling units.
- All residential units were assumed to have natural gas fireplaces (instead of wood burning, pursuant to SCAQMD regulation).
- Trip lengths for the home to work trips were changed from the default of 19.8 miles (for a rural setting) to 25.5 miles per trip, pursuant to the information in the charts below (source: U.S. Census Bureau 2015) and Table 40 below.

Jobs by Distance - Work Census Block to Home Census Block

	2011	
	Count	Share
Total Primary Jobs	5,083	100.0%
Less than 10 miles	2,175	42.8%
10 to 24 miles	1,149	22.6%
25 to 50 miles	870	17.1%
Greater than 50 miles	889	17.5%

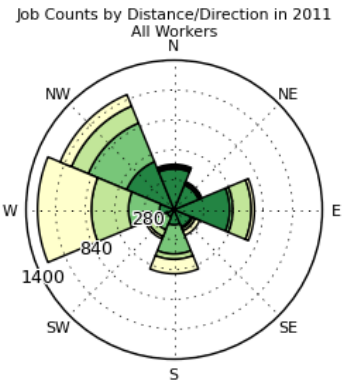

Table 40: Residential Alternative Home to Work Trip Lengths

Distance	Assumed Distance (miles)	Share (%)	Weighted Average (miles)
Less than 10 miles	5	42.8	2.1
10 to 24 miles	17	22.6	3.8
25 to 50 miles	38	17.1	6.5
Greater than 50 miles	75	17.5	13.1
Total			**25.5**

Source of Share: U.S. Census Bureau 2015.
Source of Assumed Distance: the mid-point of the range; the range greater than 50 miles is the approximate distance to Los Angeles from the project.
Source of Weighted Average: distance multiplied by the share divided by 100.

Operational Emissions Results

The operational air pollutant emissions for the residential alternative are shown in Table 41. As shown in the table, the project would have comparable ROG and SOx emissions as compared with the residential alternative. Both scenarios would have significant ROG emissions. The project would have greater NOx emissions than the alternative; however, both scenarios would have significant NOx emissions. The project would have fewer CO, PM_{10}, and $PM_{2.5}$ emissions; however, both scenarios would be less than significant. The project would have fewer PM_{10} emissions because most of the alternative's PM_{10} emissions are from paved road dust; the alternative would have more vehicle miles traveled compared with the project. NOx is an ozone precursor. Ozone, PM_{10}, and $PM_{2.5}$ are non-attainment pollutants in the South Coast Air Basin. Although the project would have greater NOx emissions, it would also have fewer PM_{10} and $PM_{2.5}$ emissions. A comparison of the project and the residential alternative indicate that impacts would be similar.

Table 41: Residential Alternative Air Pollutant Operational Emissions

Source	Emissions (pounds per day)					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Mobile	32.6	120.1	474.7	1.3	91.4	25.6
Area	34.9	0.8	66.1	0.0	1.4	1.4
Energy	0.8	6.8	2.9	0.0	0.5	0.5
Total Alternative Emissions	**68.3**	**127.7**	**543.7**	**1.3**	**93.3**	**27.5**
Project Emissions	**75.6**	**315.3**	**301.4**	**1.5**	**18.9**	**11.1**
Net Change with Project (project minus alternative)	7.3	187.6	-242.3	0.2	-74.4	-16.4
Significance Threshold	55	55	550	150	150	55

Notes:
ROG = reactive organic gases; NO_X = nitrogen oxides; CO = carbon monoxide
SO_X = sulfur oxides; PM_{10} and $PM_{2.5}$ = particulate matter
SIG = significant impact; LTS = less than significant
Source of emissions: Appendix A: CalEEMod Output
Source of project emissions: Table 33 (mitigated summer)

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Operational greenhouse gas emissions for the residential alternative are shown in Table 42. As shown in the table, the project would have approximately 16 percent greater greenhouse gas emissions as compared with the residential alternative. The project's greenhouse gas emissions are less than significant because pursuant to Mitigation Measure GHG-1, the project would be implementing at least 100 County of Riverside credits to reduce greenhouse gas emissions. The project would also be implementing onsite solar photovoltaic. It is possible that the residential alternative would also implement 100 credits, thereby reducing its level of significance. Therefore, the impact for the residential alternative could be the same as for the project.

Table 42: Residential Alternative Operational Greenhouse Gases

Source	Emissions (MTCO2e)
Mobile	17,909
Electricity	1,747
Natural gas	1,436
Hearth (natural gas fireplaces)	191
Landscaping	14
Water	361
Waste	423
Total: Residential Alternative	**22,081**
Total: Project (without construction)	**26,237**
Net increase with project	**4,156 (16%)**

MTCO2e = metric tons of carbon dioxide equivalents.
Source: CalEEMod output (Appendix A).

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Appendix A:
CalEEMod Output and Emissions Spreadsheets

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Construction
VOC Estimates during Painting
San Gorgonio Crossing

Prepared by FirstCarbon Solutions
4-Aug-16

Estimate of Area to be Painted (Exterior)

Taking the square root of the building size and mulitiplying by 4 yields the perimeter of each building.

	Area (sf)	*Building size (sf)*	*Buildings*	*Building perimeter (feet)*	*Height of building (feet)*	*Area painted per building (sf)*	*Number of coats*	*Area to be painted (sf)*
Building 1	737,480	737,480	1	3,435	47	161,448	2	322,896
Building 2	1,123,280	1,123,280	1	4,239	47	199,252	2	398,503
							Total	721,399

Estimate of Area to be Painted (Interior)

It is assumed that the warehouse interiors would be painted any offices (if any). Each building was assumed to have 15,000 square feet of office. CalEEMod assumes the total surface painting equals 2 times the square footage, which is used here to determine the interior area to be painted. it is also assumed that 2 coats of point will be used

	Buildings	*Office area per building (sf)*	*Area to be painted (sf)*
Building 1	1	15,000	60,000
Building 2	1	15,000	60,000
		Subtotal	120,000

Total Area to be Painted	Exterior	Interior	Total
Building 1	322,896	60,000	382,896
Building 2	398,503	60,000	458,503
Total	721,399	120,000	841,399

VOC Emissions Estimates

VOC emissions are estimated separately using the methodology in the CalEEMod manual:
E = EF x F • A
Where:
E = emissions (pounds VOC)
EF = emission factor (pounds per square feet) = VOC content (g/L) / 454 (g/lb) x 3.785(L/Gal) / 180(square feet)
A = building surface area (square feet)
F = fraction of surface area; 75% for exterior and 25% for interior

EF (assume 250 grams/Liter) 0.012 pounds/sq-ft

Interior Fraction of surface area = 0.25

	Area to be painted (sf)	*Emissions (lbs VOC)*	*Days of Painting*	*Emissions (lbs/day)*
Building 1	60,000	180	10	18.0
Building 2	60,000	180	10	18.0

Exterior Fraction of surface area = 0.75

	Area to be painted (sf)	*Emissions (lbs VOC)*	*Days of Painting*	*Emissions (lbs/day)*
Building 1	322,896	2,906	60	48.4
Building 2	398,503	3,587	60	59.8

Total Emissions

	Unmitigated (lbs/day)
Building 1	66.4
Building 2	77.8
	144.2

VOC Emissions (mitigated, 100 grams/Liter paints)

EF (assume 100 grams/Liter) 0.005 pounds/sq-ft

Interior Fraction of surface area = 0.25

	Area to be painted (sf)	*Emissions (lbs VOC)*	*Days of Painting*	*Emissions (lbs/day)*
Building 1	60,000	75	10	7.5
Building 2	60,000	75	10	7.5

Exterior Fraction of surface area = 0.75

	Area to be painted (sf)	*Emissions (lbs VOC)*	*Days of Painting*	*Emissions (lbs/day)*
Building 1	322,896	1,211	60	20.2
Building 2	398,503	1,494	60	24.9

Total Emissions

	Mitigated
Building 1	27.7
Building 2	32.4
Total	60.1

Days of painting for the interior offices assume that each building would take 10 days to paint.
Days of painting for the exterior assumes each building would take 60 days to paint.

Total ROG Emissions - Unmitigated

Architectural Coating:	144.2	lbs/day
Air Compressors:	2.2	lbs/day
Total	146.4	lbs/day

Total ROG Emissions - Mitigated

Architectural Coating	60.1	lbs/day
Air Compressors	0.4	lbs/day
Total ROG Emissions	60.5	lbs/day

ProjectNan	LocationSc	EMFAC_IC	WindSpee	Precipitatio	ClimateZor	Urbanizatic	Operationa	UtilityComp
San Gorgo	AB	SC	2.2	31	10	Urban	2016	Southern C

CO2Intens	CH4Intensi	N2OIntens	TotalPopul	TotalLotAc	UsingHistoricalEnergyUseData
630.89	0.029	0.006	0	53.85	0

PollutantSe	PollutantFu	PollutantName
1	Reactive O	ROG
1	Nitrogen O	NOX
1	Carbon Mo	CO
1	Sulfur Diox	SO2
1	Particulate	PM10
1	Particulate	PM2_5
1	Fugitive PM	PM10_FUG
1	Fugitive PM	PM25_FUG
1	Biogenic C	CO2_BIO
1	Non-Biogei	CO2_NBIO
1	Carbon Dio	CO2
1	Methane (C	CH4
1	Nitrous Oxi	N2O
1	CO2 Equiv	CO2E

tblLandUse

LandUseTy	LandUseSu	LandUseUn	LandUseSi	LotAcreage	LandUseSq	Population
Industrial	Unrefrigera	1860.76	1000sqft	42.72	1860760	0
Parking	Parking Lo	1237	Space	11.13	494800	0

tblConstructionPhase

PhaseNum	PhaseNam	PhaseType	PhaseStart	PhaseEndI	NumDaysV	NumDays	PhaseDescription
1	Site Prepar	Site Prepar	2016/01/02	2016/06/17	5	120	
2	Grading	Grading	2016/06/18	2016/09/16	5	65	
3	Building Co	Building Co	2016/09/17	2017/09/19	5	262	
4	Tenant Imp	Architectur	2017/01/02	2017/06/03	5	110	
5	Paving	Paving	2017/06/01	2017/06/28	5	20	

PhaseNam	OffRoadEq	OffRoadEq	UsageHou	HorsePow	LoadFactor
Site Prepa	Rubber Tir	3	8	255	0.4
Site Prepa	Tractors/Lo	4	8	97	0.37
Grading	Excavators	2	8	81	0.73
Grading	Off-Highwa	2	4	400	0.38
Grading	Scrapers	6	8	255	0.4
Grading	Tractors/Lo	2	8	97	0.37
Building Co	Cranes	1	7	226	0.29
Building Co	Forklifts	2	8	89	0.2
Building Co	Generator	1	8	84	0.74
Building Co	Tractors/Lo	2	7	97	0.37
Building Co	Trenchers	1	8	80	0.5
Building Co	Welders	1	8	46	0.45
Tenant Imp	Air Compre	5	8	78	0.48
Paving	Pavers	2	8	125	0.42
Paving	Paving Equ	2	8	130	0.36
Paving	Rollers	2	8	80	0.38

PhaseNam	WorkerTrip	VendorTrip	HaulingTrip	WorkerTrip	VendorTrip	HaulingTrip	WorkerVeh	VendorVeh
Site Prepar	18	0	1	14.7	6.9	20	LD_Mix	HDT_Mix
Grading	30	0	1	14.7	6.9	20	LD_Mix	HDT_Mix
Building Co	882	344	1	14.7	6.9	20	LD_Mix	HDT_Mix
Tenant Imp	176	0	1	14.7	6.9	20	LD_Mix	HDT_Mix
Paving	15	0	1	14.7	6.9	20	LD_Mix	HDT_Mix

HaulingVehicleClass
HHDT
HHDT
HHDT
HHDT
HHDT

PhaseNam	WorkerPer	VendorPer	HaulingPer	RoadSiltLo	MaterialSilt	MaterialMo	AverageVe	MeanVehic
Site Prepa	100	100	100	0.1	8.5	0.5	2.4	40
Grading	100	100	100	0.1	8.5	0.5	2.4	40
Building Co	100	100	100	0.1	8.5	0.5	2.4	40
Tenant Imp	100	100	100	0.1	8.5	0.5	2.4	40
Paving	100	100	100	0.1	8.5	0.5	2.4	40

:leSpeed

tblDemolition

PhaseNam	Demolition	DemolitionUnitAmount

PhaseNam	MaterialIm	MaterialEx	GradingSiz	ImportExpc	MeanVehic	AcresOfGr	MaterialMc	MaterialMc
Site Prepa	0	0	Cubic Yard	0	7.1	0	7.9	12
Grading	0	0	Cubic Yard	0	7.1	390	7.9	12

MaterialSiltContent
6.9
6.9

PhaseNam	Architectur	Architectur	EF_Reside	ConstArea_	EF_Reside	ConstArea_	EF_Nonres	ConstArea_
Tenant Imp	2008/07/01	3000/12/31	50	0	100	0	250	777000

EF_Nonres	ConstArea_Nonresidential_Exterior
250	717000

ParkingLotAcreage

VehicleTrip	VehicleTrip	WD_TR	ST_TR	SU_TR	HW_TL	HS_TL	HO_TL	CC_TL
Parking Lo	Space	0	0	0	0	0	0	8.4
Unrefrigera	1000sqft	0	0	0	0	0	0	8.4

CW_TL	CNW_TL	PR_TP	DV_TP	PB_TP	HW_TTP	HS_TTP	HO_TTP	CC_TTP
16.6	6.9	0	0	0	0	0	0	0
16.6	6.9	92	5	3	0	0	0	0

CW_TTP	CNW_TTP
0	0
59	41

Season	EmissionTy	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD
A	FleetMix	0.514315	0.06029	0.180146	0.139458	0.042007	0.006636	0.015782
A	CH4_IDLE	0	0	0	0	0.001305	0.001023	0.007417
A	CH4_RUNI	0.012856	0.027292	0.018079	0.02841	0.015319	0.011005	0.005209
A	CH4_STRE	0.009288	0.022918	0.012922	0.023997	0.025952	0.016764	0
A	CO_IDLEX	0	0	0	0	0.189258	0.152508	1.824523
A	CO_RUNE	1.107558	2.886346	1.564803	2.331503	1.481388	1.055097	1.183783
A	CO_STRE	2.091357	5.224013	3.061149	4.895643	4.977753	3.151543	19.71994
A	CO2_NBIC	0	0	0	0	8.241629	9.073965	606.0444
A	CO2_NBIC	296.0926	351.8901	425.5654	555.3365	569.8164	549.5148	987.486
A	CO2_NBIC	62.56144	73.46527	88.68805	115.5051	44.33818	30.60237	57.11204
A	NOX_IDLE	0	0	0	0	0.04537	0.096269	6.271082
A	NOX_RUN	0.099107	0.284768	0.180149	0.296193	1.298537	2.077845	3.186602
A	NOX_STRI	0.139039	0.301172	0.288979	0.47287	1.430496	0.960851	2.062918
A	PM10_IDLI	0	0	0	0	0.00048	0.001056	0.023075
A	PM10_PMI	0.03675	0.03675	0.03675	0.03675	0.04607	0.062538	0.11279
A	PM10_PMT	0.008	0.008	0.008	0.008	0.008939	0.009967	0.01125
A	PM10_RUI	0.001967	0.004582	0.002016	0.002297	0.008188	0.015715	0.081686
A	PM10_STF	0.002822	0.005147	0.002828	0.003282	0.001302	0.000827	0.00313
A	PM25_IDLI	0	0	0	0	0.000442	0.000972	0.021229
A	PM25_PMI	0.01575	0.01575	0.01575	0.01575	0.019744	0.026802	0.048338
A	PM25_PMT	0.002	0.002	0.002	0.002	0.002235	0.002492	0.002812
A	PM25_RUI	0.001805	0.004218	0.001855	0.002114	0.007536	0.014457	0.075148
A	PM25_STF	0.002591	0.004741	0.002606	0.003026	0.001193	0.000747	0.002675
A	ROG_DIUF	0.059527	0.180575	0.073494	0.089869	0.002941	0.001844	0.003331
A	ROG_HTS	0.134993	0.316948	0.161629	0.199343	0.075304	0.050574	0.131237
A	ROG_IDLE	0	0	0	0	0.03033	0.023553	0.159684
A	ROG_RES	0.050456	0.133019	0.065075	0.082744	0.001702	0.001074	0.001949
A	ROG_RUN	0.029825	0.082742	0.038567	0.065824	0.107368	0.10027	0.147643
A	ROG_RUN	0.300466	1.110855	0.510371	0.612939	0.438612	0.288849	0.563681
A	ROG_STR	0.1619	0.402847	0.227361	0.423064	0.457908	0.293853	1.296548
A	SO2_IDLE	0	0	0	0	0.000088	0.000094	0.005992
A	SO2_RUNI	0.003608	0.004168	0.004906	0.006214	0.005864	0.005585	0.009825
A	SO2_STRE	0.000772	0.000935	0.001055	0.001354	0.000551	0.000375	0.000941
A	TOG_DIUF	0.059527	0.180575	0.073494	0.089869	0.002941	0.001844	0.003331
A	TOG_HTSI	0.134993	0.316948	0.161629	0.199343	0.075304	0.050574	0.131237
A	TOG_IDLE	0	0	0	0	0.03223	0.025237	0.181788
A	TOG_RES	0.050456	0.133019	0.065075	0.082744	0.001702	0.001074	0.001949
A	TOG_RUN	0.043173	0.111316	0.05727	0.095252	0.126742	0.117683	0.169885
A	TOG_RUN	0.300466	1.110855	0.510371	0.612939	0.438612	0.288849	0.563681
A	TOG_STRI	0.173018	0.430321	0.242854	0.451848	0.489041	0.313941	1.387611
S	FleetMix	0.514315	0.06029	0.180146	0.139458	0.042007	0.006636	0.015782
S	CH4_IDLE	0	0	0	0	0.001305	0.001023	0.00699
S	CH4_RUNI	0.012856	0.027292	0.018079	0.02841	0.015319	0.011005	0.005209
S	CH4_STRE	0.009288	0.022918	0.012922	0.023997	0.025952	0.016764	0
S	CO_IDLEX	0	0	0	0	0.189258	0.152508	1.325773
S	CO_RUNE	1.216777	3.134248	1.717882	2.560959	1.505527	1.06367	1.191146
S	CO_STRE	1.65542	4.132192	2.414836	3.860619	4.034596	2.579157	16.17592
S	CO2_NBIC	0	0	0	0	8.24163	9.073966	642.0505
S	CO2_NBIC	311.3503	369.2282	447.0001	583.8284	569.8164	549.5148	987.486
S	CO2_NBIC	62.56144	73.46527	88.68805	115.5051	44.33818	30.60237	57.11204

S	NOX_IDLE	0	0	0	0	0.04537	0.096269	6.47281
S	NOX_RUN	0.087599	0.249724	0.158827	0.261385	1.204733	1.954101	2.995428
S	NOX_STRI	0.129287	0.279757	0.268641	0.439428	1.37627	0.924392	1.980077
S	PM10_IDLI	0	0	0	0	0.00048	0.001056	0.019453
S	PM10_PMI	0.03675	0.03675	0.03675	0.03675	0.04607	0.062538	0.11279
S	PM10_PM	0.008	0.008	0.008	0.008	0.008939	0.009967	0.01125
S	PM10_RUI	0.001967	0.004582	0.002016	0.002297	0.008188	0.015715	0.081686
S	PM10_STF	0.002822	0.005147	0.002828	0.003282	0.001302	0.000827	0.00313
S	PM25_IDLI	0	0	0	0	0.000442	0.000972	0.017896
S	PM25_PMI	0.01575	0.01575	0.01575	0.01575	0.019744	0.026802	0.048338
S	PM25_PM	0.002	0.002	0.002	0.002	0.002235	0.002492	0.002812
S	PM25_RUI	0.001805	0.004218	0.001855	0.002114	0.007536	0.014457	0.075148
S	PM25_STF	0.002591	0.004741	0.002606	0.003026	0.001193	0.000747	0.002675
S	ROG_DIUF	0.095488	0.29376	0.118325	0.145767	0.004615	0.002866	0.00521
S	ROG_HTS	0.14236	0.343432	0.171798	0.211664	0.080941	0.05414	0.137257
S	ROG_IDLE	0	0	0	0	0.03033	0.023553	0.150487
S	ROG_RES	0.076872	0.209016	0.099044	0.126612	0.002698	0.001683	0.003093
S	ROG_RUN	0.030829	0.086184	0.040255	0.069446	0.109342	0.100948	0.148199
S	ROG_RUN	0.287034	1.040921	0.478859	0.578795	0.429101	0.281318	0.550597
S	ROG_STR	0.137431	0.342339	0.193493	0.359549	0.405036	0.260481	1.128267
S	SO2_IDLE	0	0	0	0	0.000088	0.000094	0.006348
S	SO2_RUNI	0.003796	0.004378	0.005157	0.006537	0.005864	0.005585	0.009825
S	SO2_STRE	0.000764	0.000916	0.001043	0.001335	0.000535	0.000365	0.00088
S	TOG_DIUF	0.095488	0.29376	0.118325	0.145767	0.004615	0.002866	0.00521
S	TOG_HTSI	0.14236	0.343432	0.171798	0.211664	0.080941	0.05414	0.137257
S	TOG_IDLE	0	0	0	0	0.03223	0.025237	0.171318
S	TOG_RES	0.076872	0.209016	0.099044	0.126612	0.002698	0.001683	0.003093
S	TOG_RUN	0.044933	0.1159	0.059946	0.100165	0.128946	0.118478	0.170507
S	TOG_RUN	0.287034	1.040921	0.478859	0.578795	0.429101	0.281318	0.550597
S	TOG_STRI	0.146872	0.36569	0.20668	0.384013	0.432569	0.278279	1.207407
W	FleetMix	0.514315	0.06029	0.180146	0.139458	0.042007	0.006636	0.015782
W	CH4_IDLE	0	0	0	0	0.001305	0.001023	0.008007
W	CH4_RUNI	0.012856	0.027292	0.018079	0.02841	0.015319	0.011005	0.005209
W	CH4_STRE	0.009288	0.022918	0.012922	0.023997	0.025952	0.016764	0
W	CO_IDLEX	0	0	0	0	0.189258	0.152508	2.513272
W	CO_RUNE	1.070931	2.80448	1.514414	2.257218	1.47598	1.052454	1.181298
W	CO_STRE	2.163317	5.38759	3.166176	5.04963	5.029897	3.195781	20.14145
W	CO2_NBIC	0	0	0	0	8.24163	9.073966	556.3217
W	CO2_NBIC	291.3433	346.6973	418.9645	546.8823	569.8164	549.5148	987.486
W	CO2_NBIC	62.56144	73.46527	88.68805	115.5051	44.33818	30.60237	57.11204
W	NOX_IDLE	0	0	0	0	0.04537	0.096269	5.992507
W	NOX_RUN	0.095849	0.275787	0.17425	0.286352	1.273301	2.041311	3.12702
W	NOX_STRI	0.140756	0.304647	0.292533	0.478232	1.436118	0.965245	2.076835
W	PM10_IDLI	0	0	0	0	0.00048	0.001056	0.028078
W	PM10_PMI	0.03675	0.03675	0.03675	0.03675	0.04607	0.062538	0.11279
W	PM10_PM	0.008	0.008	0.008	0.008	0.008939	0.009967	0.01125
W	PM10_RUI	0.001967	0.004582	0.002016	0.002297	0.008188	0.015715	0.081686
W	PM10_STF	0.002822	0.005147	0.002828	0.003282	0.001302	0.000827	0.00313
W	PM25_IDLI	0	0	0	0	0.000442	0.000972	0.025832
W	PM25_PMI	0.01575	0.01575	0.01575	0.01575	0.019744	0.026802	0.048338
W	PM25_PM	0.002	0.002	0.002	0.002	0.002235	0.002492	0.002812

W	PM25_RUI	0.001805	0.004218	0.001855	0.002114	0.007536	0.014457	0.075148
W	PM25_STF	0.002591	0.004741	0.002606	0.003026	0.001193	0.000747	0.002675
W	ROG_DIUF	0.060275	0.187988	0.073249	0.088412	0.003213	0.001998	0.003701
W	ROG_HTS	0.151639	0.365805	0.179991	0.219089	0.087434	0.058518	0.158983
W	ROG_IDLE	0	0	0	0	0.03033	0.023553	0.172384
W	ROG_RES	0.049185	0.129774	0.063169	0.080502	0.001741	0.001085	0.002022
W	ROG_RUN	0.029411	0.081505	0.037967	0.064646	0.106918	0.100096	0.147486
W	ROG_RUN	0.337245	1.314813	0.597616	0.7125	0.475874	0.315018	0.610699
W	ROG_STR	0.165484	0.41075	0.232245	0.431345	0.462453	0.297307	1.318616
W	SO2_IDLE	0	0	0	0	0.000088	0.000094	0.0055
W	SO2_RUNI	0.003549	0.004105	0.004829	0.006119	0.005864	0.005584	0.009825
W	SO2_STRE	0.000773	0.000937	0.001056	0.001356	0.000552	0.000376	0.000949
W	TOG_DIUF	0.060275	0.187988	0.073249	0.088412	0.003213	0.001998	0.003701
W	TOG_HTSI	0.151639	0.365805	0.179991	0.219089	0.087434	0.058518	0.158983
W	TOG_IDLE	0	0	0	0	0.03223	0.025237	0.196246
W	TOG_RES	0.049185	0.129774	0.063169	0.080502	0.001741	0.001085	0.002022
W	TOG_RUN	0.042531	0.109744	0.056382	0.093706	0.126244	0.117482	0.169712
W	TOG_RUN	0.337245	1.314813	0.597616	0.7125	0.475874	0.315018	0.610699
W	TOG_STRI	0.176847	0.438761	0.248071	0.460691	0.493895	0.31763	1.411221

HHD	OBUS	UBUS	MCY	SBUS	MH
0.029894	0.001929	0.002512	0.004343	0.000595	0.002093
0.023312	0.019208	0	0	0.005436	0
0.010943	0.003092	0	0	0.007865	0
0	0	0	0	0	0
2.807141	2.363688	0	0	1.062266	0
1.791458	1.438412	5.309395	22.46667	4.690132	4.066224
60.54785	10.73079	10.67351	9.840292	32.79138	8.620814
566.6094	571.3528	0	0	570.8204	0
1646.287	1084.678	2106.663	146.912	1123.298	648.2914
58.74187	35.85036	29.384	43.61837	128.1731	31.30201
4.866988	5.938247	0	0	8.09214	0
6.151772	4.162105	12.68895	1.181261	8.268779	1.619164
3.790434	1.483064	1.21828	0.306177	2.214866	0.845153
0.012281	0.017907	0	0	0.027099	0
0.060035	0.095058	0.679332	0.036749	0.57356	0.050396
0.034724	0.010492	0.008	0.008	0.011033	0.008583
0.095957	0.055549	0.202905	0.000495	0.088713	0.027115
0.00287	0.000961	0.000798	0.001584	0.006589	0.001447
0.011299	0.016475	0	0	0.024931	0
0.025729	0.040739	0.291142	0.01575	0.245811	0.021598
0.008681	0.002623	0.002	0.002	0.002758	0.002146
0.08828	0.051105	0.186656	0.000403	0.081556	0.024922
0.002346	0.000851	0.000713	0.001264	0.005693	0.001267
0.002167	0.001001	0.0058	0.986388	0.038495	1.282473
0.11343	0.028521	0.101963	0.452985	0.270091	0.082848
0.501895	0.413546	0	0	0.11703	0
0.001425	0.00051	0.00318	0.562342	0.016446	0.50291
0.248168	0.153757	0.804121	2.464253	0.418291	0.134697
0.456717	0.303919	0.730136	1.507925	2.174937	1.98581
2.070068	0.670288	0.783106	2.114569	2.211904	0.514727
0.005602	0.005649	0	0	0.005643	0
0.016291	0.010841	0.020966	0.001953	0.011258	0.006701
0.001623	0.00056	0.000496	0.000673	0.001911	0.000475
0.002167	0.001001	0.0058	0.986388	0.038495	1.282473
0.11343	0.028521	0.101963	0.452985	0.270091	0.082848
0.571369	0.470791	0	0	0.133229	0
0.001425	0.00051	0.00318	0.562342	0.016446	0.50291
0.283289	0.180257	0.89574	2.705222	0.466784	0.163092
0.456717	0.303919	0.730136	1.507925	2.174937	1.98581
2.216466	0.716219	0.836665	2.27287	2.367426	0.550627
0.029894	0.001929	0.002512	0.004343	0.000595	0.002093
0.021969	0.018102	0	0	0.005123	0
0.010943	0.003092	0	0	0.007865	0
0	0	0	0	0	0
2.039785	1.717553	0	0	0.771886	0
1.802381	1.456138	5.342793	21.67183	4.675766	4.116207
49.99175	8.721111	8.997997	8.750899	28.11746	6.857543
600.2726	605.2978	0	0	604.7337	0
1646.287	1084.678	2106.663	146.912	1123.298	648.2914
58.74187	35.85036	29.384	43.61837	128.1731	31.30201

5.023548	6.129267	0	0	8.352446	0
5.814902	3.909713	11.95181	1.028022	7.77792	1.480982
3.636619	1.423909	1.164523	0.290121	2.094449	0.811359
0.010353	0.015096	0	0	0.022844	0
0.060035	0.095058	0.679332	0.036749	0.57356	0.050396
0.034724	0.010492	0.008	0.008	0.011033	0.008583
0.095957	0.055549	0.202905	0.000495	0.088713	0.027115
0.00287	0.000961	0.000798	0.001584	0.006589	0.001447
0.009525	0.013888	0	0	0.021017	0
0.025729	0.040739	0.291142	0.01575	0.245811	0.021598
0.008681	0.002623	0.002	0.002	0.002758	0.002146
0.08828	0.051105	0.186656	0.000403	0.081556	0.024922
0.002346	0.000851	0.000713	0.001264	0.005693	0.001267
0.00355	0.001508	0.008577	1.673982	0.058524	1.969466
0.117802	0.02952	0.10595	0.542762	0.274922	0.086968
0.472989	0.389728	0	0	0.11029	0
0.00241	0.000776	0.004868	1.064815	0.02582	0.800927
0.248418	0.154796	0.813369	2.393097	0.420596	0.135781
0.452938	0.297029	0.683876	1.418251	2.004591	1.950113
1.77718	0.590693	0.701969	1.851837	1.955902	0.436927
0.005935	0.005984	0	0	0.005979	0
0.016292	0.010842	0.020967	0.001938	0.011258	0.006702
0.001448	0.000526	0.000467	0.000648	0.001829	0.000445
0.00355	0.001508	0.008577	1.673982	0.058524	1.969466
0.117802	0.02952	0.10595	0.542762	0.274922	0.086968
0.538462	0.443676	0	0	0.125556	0
0.00241	0.000776	0.004868	1.064815	0.02582	0.800927
0.283563	0.181428	0.905529	2.630323	0.469266	0.164447
0.452938	0.297029	0.683876	1.418251	2.004591	1.950113
1.902744	0.631142	0.749962	1.990338	2.093142	0.467384
0.029894	0.001929	0.002512	0.004343	0.000595	0.002093
0.025166	0.020736	0	0	0.005868	0
0.010943	0.003092	0	0	0.007865	0
0	0	0	0	0	0
3.866825	3.255969	0	0	1.463266	0
1.789001	1.434285	5.30286	22.37643	4.677738	4.051776
61.29723	10.94905	10.81212	9.890709	33.68562	8.678181
520.1222	524.4764	0	0	523.9876	0
1646.287	1084.678	2106.663	146.912	1123.298	648.2914
58.74187	35.85036	29.384	43.61837	128.1731	31.30201
4.650785	5.674456	0	0	7.732669	0
6.051066	4.085772	12.44547	1.149328	8.1312	1.584207
3.808491	1.492345	1.225055	0.308062	2.241547	0.847975
0.014944	0.02179	0	0	0.032974	0
0.060035	0.095058	0.679332	0.036749	0.57356	0.050396
0.034724	0.010492	0.008	0.008	0.011033	0.008583
0.095957	0.055549	0.202905	0.000495	0.088713	0.027115
0.00287	0.000961	0.000798	0.001584	0.006589	0.001447
0.013748	0.020047	0	0	0.030336	0
0.025729	0.040739	0.291142	0.01575	0.245811	0.021598
0.008681	0.002623	0.002	0.002	0.002758	0.002146

0.08828	0.051105	0.186656	0.000403	0.081556	0.024922
0.002346	0.000851	0.000713	0.001264	0.005693	0.001267
0.002364	0.001071	0.006749	1.111022	0.045106	1.50971
0.142388	0.031738	0.129236	0.597193	0.336165	0.107681
0.541813	0.446437	0	0	0.126338	0
0.001478	0.000515	0.003469	0.556652	0.017733	0.542073
0.248112	0.153511	0.802233	2.467801	0.417146	0.134402
0.486836	0.325047	0.85165	1.768298	2.564406	2.096638
2.095707	0.680551	0.792081	2.133911	2.262392	0.519101
0.005142	0.005185	0	0	0.00518	0
0.016291	0.010841	0.020966	0.001951	0.011258	0.006701
0.001636	0.000564	0.000499	0.000675	0.001926	0.000476
0.002364	0.001071	0.006749	1.111022	0.045106	1.50971
0.142388	0.031738	0.129236	0.597193	0.336165	0.107681
0.616813	0.508235	0	0	0.143826	0
0.001478	0.000515	0.003469	0.556652	0.017733	0.542073
0.283228	0.17998	0.893745	2.708946	0.465568	0.162742
0.486836	0.325047	0.85165	1.768298	2.564406	2.096638
2.243928	0.727185	0.846261	2.293659	2.421478	0.55531

RoadPerce	RoadSiltLo	MaterialSilt	MaterialMc	MobileAver	MeanVehicleSpeed
100	0.1	4.3	0.5	2.4	40

Woodstove	NumberCo	NumberCa	NumberNo	NumberPe	Woodstove	WoodstoveWoodMass

tblFireplaces

FireplacesI	NumberWc	NumberGa	NumberPrc	NumberNo	FireplaceH	FireplaceD	FireplaceWoodMass

ROG_EF
0

Area_EF_F	Area_Resi	Area_EF_F	Area_Resi	Area_EF_N	Area_Nonr	Area_EF_N	Area_Nonr	Reapplicati
50	0	100	0	250	0	250	0	0

onRatePercent

NumberSn NumberSummerDays

EnergyUse	T24E	NT24E	LightingEle	T24NG	NT24NG
Parking Lo	0	0	0	0	0
Unrefrigera	0	0	0	0	0

WaterLand	WaterLand	IndoorWate	OutdoorWa	ElectricityIr	ElectricityIr	ElectricityIr	ElectricityIr	SepticTank
Parking Lo	Space	0	0	9727	111	1272	1911	10.33
Unrefrigera	1000sqft	0	0	9727	111	1272	1911	10.33

AerobicPer	Anaerobica	AnaDigest(	AnaDigestCogen	CombDigestGasPercent
87.46	2.21	100	0	
87.46	2.21	100	0	

SolidWaste	SolidWaste	SolidWaste	LandfillNo(	LandfillCap	LandfillCaptureGasEnergyRecovery
Parking Lo	Space	0	6	94	0
Unrefrigera	1000sqft	0	6	94	0

Vegetation	Vegetation	AcresBegir	AcresEnd	CO2peracre

BroadSpec	NumberOfT	CO2perTree

tblConstEquipMitigation

ConstMitig	FuelType	Tier	NumberOff	TotalNumb	DPF	OxidationCatalyst
Air Compre	Diesel	Tier 3	5	5	No Change	0
Cranes	Diesel	Tier 3	1	1	No Change	0
Excavators	Diesel	Tier 3	2	2	No Change	0
Forklifts	Diesel	Tier 3	2	2	No Change	0
Generator	Diesel	Tier 3	1	1	No Change	0
Off-Highwa	Diesel	Tier 3	2	2	No Change	0
Pavers	Diesel	Tier 3	2	2	No Change	0
Paving Equ	Diesel	Tier 3	2	2	No Change	0
Rollers	Diesel	Tier 3	2	2	No Change	0
Rubber Tir	Diesel	Tier 3	3	3	No Change	0
Scrapers	Diesel	Tier 3	6	6	No Change	0
Tractors/Lo	Diesel	Tier 3	8	8	No Change	0
Trenchers	Diesel	Tier 3	1	1	No Change	0
Welders	Diesel	No Change	0	1	No Change	0

SoilStabiliz	SoilStabiliz	SoilStabiliz	ReplaceGr	ReplaceGr	ReplaceGr	WaterExpo	WaterExpo	WaterExpo
0	0	0	0	0	0	1	3	61

WaterExpo	WaterUnpa	WaterUnpa	WaterUnpa	WaterUnpa	CleanPavedRoadPercentReduction
61	1	1	12	25	0

ProjectSett	IncreaseDe	IncreaseDe	IncreaseDe	IncreaseDi	ImproveWa	ImproveWa	ImproveDe	ImproveDe

IncreaseTr	IncreaseTr	IntegrateBe	IntegrateBe	ImprovePe	ImprovePe	ProvideTra	ProvideTra	ProvideTra

ImplementI	ImplementI	LimitParkin	LimitParkin	UnbundleP	UnbundleP	OnStreetM	OnStreetM	ProvideBR

ProvideBR	ExpandTra	ExpandTra	IncreaseTr	IncreaseTr	IncreaseTransitFrequencyHeadwaysPercentF

Reduction

Implement	Implement	Implement	TransitSub	TransitSub	TransitSub	ImplementI	ImplementI	WorkplaceI
0			0			0		0

Workplace	Workplace	Encourage	Encourage	Encourage	Encourage	MarketCon	MarketCon	Employee
		0				0		0

Employee\	Employee\	ProvideRid	ProvideRid	Implement	ImplementSchoolBusProgramPercentFamilyL
	2	0		0	

Jsing

Landscape	Landscape	Landscape	Landscape	Landscape	Landscape	UseLowVC	UseLowVC	UseLowVC
0		0		0		0	50	0

UseLowVC	UseLowVC	UseLowVC	UseLowVC	UseLowVC	HearthOnly	NoHearthC	UseLowVOC	CleaningS
100	0	250	0	250	0	0	0	

SuppliesCheck

ExceedTitl	ExceedTitl	InstallHighl	InstallHighl	OnSiteRen	KwhGener	KwhGener	PercentOfE	PercentOfE

ElectricityUseGenerated

tblApplianceMitigation

ApplianceT	ApplianceL	PercentImprovement
ClothWasher		30
DishWasher		15
Fan		50
Refrigerator		15

ApplyWate	ApplyWate	ApplyWate	UseReclair	PercentOu	PercentInd	UseGreyW	PercentOu	PercentInd
0			0			0		

InstallLowF	PercentRe	InstallLowF	PercentRe	InstallLowF	PercentRe	InstallLowF	PercentRe	TurfReduct
0	32	0	18	0	20	0	20	0

TurfReduct	TurfReduct	UseWaterE	UseWaterE	WaterEffici	MAWA	ETWU
		0	6.1	0		

InstituteRe	InstituteRecyclingAndCompostingServicesWastePercentReduction

OperOffRo	OperOffRo	OperHours	OperDaysF	OperHorse	OperLoadF	OperFuelType

SubModule	PhaseNam	Season	Remarks
1			
3			Land Use Provided by Project Applicant
4			Site preparation dates provided by CalEEMod default estimate; rema
5	Building Construction		Equipment Inventory provided by project applicant
5	Grading		Equipment Inventory provided by project applicant
5	Paving		Equipment inventory provided by project applicant
5	Site Preparation		Equipment inventory provided by project applicant
5	Tenant Improvements		Equipment Inventory provided by project applicant
6			Haul trips added to account for offroad construction equipment delive
9			
10			See separate spreadsheet for estimates of architectural coating
12			Construction ONLY
13		W	
17			Construction ONLY
18			Construction ONLY
19			Construction ONLY
20			Construction ONLY
21			Construction ONLY
22			Construction ONLY
25			Assumed offroad construction mitigation of Tier 3. Fugitivce dust redu

ıinder of schedule provided by project applicant

ɛry while traveling onsite

ɹctions required to meet SCAQMD Rule 403

ProjectNan	LocationSc	EMFAC_IC	WindSpee	Precipitatio	ClimateZor	Urbanizatio	Operationa	UtilityComp
San Gorgo AB		SC	2.2	31	10	Urban	2017	Southern C

CO2Intens	CH4Intensi	N2OIntens	TotalPopul	TotalLotAc	UsingHistoricalEnergyUseData
630.89	0.029	0.006	0	53.85	0

PollutantSe	PollutantFu	PollutantName
1	Reactive O	ROG
1	Nitrogen O	NOX
1	Carbon Mo	CO
1	Sulfur Diox	SO2
1	Particulate	PM10
1	Particulate	PM2_5
1	Fugitive PM	PM10_FUG
1	Fugitive PM	PM25_FUG
1	Biogenic C	CO2_BIO
1	Non-Biogei	CO2_NBIO
1	Carbon Dio	CO2
1	Methane (C	CH4
1	Nitrous Oxi	N2O
1	CO2 Equiv	CO2E

tblLandUse

LandUseTy	LandUseSu	LandUseUn	LandUseSi	LotAcreage	LandUseSq	Population
Industrial	Unrefrigera	1860.76	1000sqft	42.72	1860760	0
Parking	Parking Lo	1237	Space	11.13	494800	0

tblConstructionPhase

PhaseNum	PhaseNam	PhaseType	PhaseStart	PhaseEndD	NumDaysW	NumDays	PhaseDescription
1	Site Prepa	Site Prepa	2016/01/01	2016/01/01	5	1	

tblOffRoadEquipment

PhaseNam	OffRoadEq	OffRoadEq	UsageHou	HorsePow	LoadFactor
Site Prepa	Graders	0	0	174	0

PhaseNam	WorkerTrip	VendorTrip	HaulingTrip	WorkerTrip	VendorTrip	HaulingTrip	WorkerVeh	VendorVeh
Site Prepa	0	0	0	14.7	6.9	20	LD_Mix	HDT_Mix

HaulingVehicleClass
HHDT

PhaseNam	WorkerPer	VendorPer	HaulingPer	RoadSiltLo	MaterialSilt	MaterialMo	AverageVe	MeanVehic
Site Prepa	100	100	100	0.1	8.5	0.5	2.4	40

:leSpeed

tblDemolition

PhaseNam	Demolition	DemolitionUnitAmount

PhaseNam	MaterialIm	MaterialEx	GradingSiz	ImportExpc	MeanVehic	AcresOfGr	MaterialMc	MaterialMc
Site Prepa	0	0		0	7.1	0	7.9	12

MaterialSiltContent
6.9

tblArchitecturalCoating

PhaseNam	Architectur	Architectur	EF_Reside	ConstArea_	EF_Reside	ConstArea_	EF_Nonres	ConstArea_

EF_Nonres	ConstArea_Nonresidential_Exterior

ParkingLotAcreage

VehicleTrip	VehicleTrip	WD_TR	ST_TR	SU_TR	HW_TL	HS_TL	HO_TL	CC_TL
Parking Lo	Space	0	0	0	0	0	0	8.4
Unrefrigera	1000sqft	0.64	0.64	0.64	0	0	0	40

CW_TL	CNW_TL	PR_TP	DV_TP	PB_TP	HW_TTP	HS_TTP	HO_TTP	CC_TTP
16.6	6.9	0	0	0	0	0	0	0
40	40	92	5	3	0	0	0	0

CW_TTP	CNW_TTP
0	0
100	0

Season	EmissionTy	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD
A	FleetMix	0	0	0	0	0.168	0.052	0.177
A	CH4_IDLE	0	0	0	0	0.001298	0.001017	0.007328
A	CH4_RUNI	0.011884	0.025312	0.016673	0.02682	0.014277	0.010099	0.004747
A	CH4_STRE	0.007956	0.020703	0.011365	0.022371	0.024616	0.015462	0
A	CO_IDLEX	0	0	0	0	0.188193	0.151708	1.823498
A	CO_RUNE	0.992878	2.620723	1.406562	2.185033	1.349872	0.931397	1.023582
A	CO_STRE	1.864156	4.802795	2.746709	4.597246	4.718227	2.90638	18.18252
A	CO2_NBIC	0	0	0	0	8.115122	8.934711	598.7027
A	CO2_NBIC	283.4051	339.2945	410.9152	538.8223	560.7045	540.7827	971.8326
A	CO2_NBIC	60.02885	70.95272	85.83116	112.458	43.75753	30.09506	54.8247
A	NOX_IDLE	0	0	0	0	0.045454	0.096369	5.917678
A	NOX_RUN	0.089563	0.260435	0.159786	0.274035	1.208171	1.936313	2.772989
A	NOX_STRI	0.121766	0.277361	0.254691	0.440705	1.400237	0.937023	1.943665
A	PM10_IDLI	0	0	0	0	0.000478	0.001052	0.019577
A	PM10_PMI	0.03675	0.03675	0.03675	0.03675	0.046083	0.062496	0.112968
A	PM10_PMT	0.008	0.008	0.008	0.008	0.008941	0.009964	0.011258
A	PM10_RUI	0.001919	0.004303	0.001956	0.002256	0.007791	0.01501	0.070918
A	PM10_STF	0.002898	0.004973	0.002911	0.003317	0.001199	0.00072	0.002544
A	PM25_IDLI	0	0	0	0	0.00044	0.000968	0.018011
A	PM25_PMI	0.01575	0.01575	0.01575	0.01575	0.01975	0.026784	0.048415
A	PM25_PMT	0.002	0.002	0.002	0.002	0.002235	0.002491	0.002814
A	PM25_RUI	0.001768	0.003974	0.001804	0.002079	0.007171	0.013809	0.065243
A	PM25_STF	0.002671	0.004594	0.00269	0.003061	0.001101	0.000655	0.002209
A	ROG_DIUF	0.053495	0.172862	0.069671	0.090345	0.002861	0.001744	0.003023
A	ROG_HTS	0.123348	0.305457	0.15434	0.202355	0.074573	0.048748	0.11517
A	ROG_IDLE	0	0	0	0	0.030146	0.023411	0.157768
A	ROG_RES	0.046563	0.129693	0.063598	0.08493	0.001688	0.001044	0.001807
A	ROG_RUN	0.024545	0.070143	0.03255	0.060549	0.098398	0.091638	0.131886
A	ROG_RUN	0.272247	1.058792	0.480789	0.613006	0.433596	0.276684	0.511915
A	ROG_STR	0.139393	0.365247	0.200478	0.394599	0.43462	0.272033	1.159284
A	SO2_IDLE	0	0	0	0	0.000088	0.000094	0.006013
A	SO2_RUNI	0.003606	0.004166	0.004902	0.006216	0.005859	0.005581	0.00982
A	SO2_STRE	0.000768	0.000928	0.00105	0.00135	0.000548	0.00037	0.000898
A	TOG_DIUF	0.053495	0.172862	0.069671	0.090345	0.002861	0.001744	0.003023
A	TOG_HTSI	0.123348	0.305457	0.15434	0.202355	0.074573	0.048748	0.11517
A	TOG_IDLE	0	0	0	0	0.032036	0.025088	0.179606
A	TOG_RES	0.046563	0.129693	0.063598	0.08493	0.001688	0.001044	0.001807
A	TOG_RUN	0.03684	0.096547	0.049756	0.088307	0.116498	0.107825	0.151867
A	TOG_RUN	0.272247	1.058792	0.480789	0.613006	0.433596	0.276684	0.511915
A	TOG_STRI	0.148925	0.390083	0.214112	0.421433	0.464154	0.290572	1.239929
S	FleetMix	0	0	0	0	0.168	0.052	0.177
S	CH4_IDLE	0	0	0	0	0.001298	0.001017	0.006906
S	CH4_RUNI	0.011884	0.025312	0.016673	0.02682	0.014277	0.010099	0.004747
S	CH4_STRE	0.007956	0.020703	0.011365	0.022371	0.024616	0.015462	0
S	CO_IDLEX	0	0	0	0	0.188193	0.151708	1.325029
S	CO_RUNE	1.09511	2.856312	1.548861	2.403145	1.371923	0.939783	1.031297
S	CO_STRE	1.471132	3.792072	2.163641	3.623714	3.825592	2.374524	14.83287
S	CO2_NBIC	0	0	0	0	8.115123	8.934711	634.2726
S	CO2_NBIC	298.0286	356.0872	431.6791	566.5705	560.7045	540.7826	971.8326
S	CO2_NBIC	60.02885	70.95272	85.83116	112.458	43.75753	30.09506	54.8247

S	NOX_IDLE	0	0	0	0	0.045454	0.096369	6.108037
S	NOX_RUN	0.079171	0.228439	0.140914	0.24187	1.121099	1.821549	2.606763
S	NOX_STRI	0.113216	0.257623	0.236761	0.409537	1.347193	0.901497	1.865702
S	PM10_IDLI	0	0	0	0	0.000478	0.001052	0.016503
S	PM10_PMI	0.03675	0.03675	0.03675	0.03675	0.046083	0.062496	0.112968
S	PM10_PM	0.008	0.008	0.008	0.008	0.008941	0.009964	0.011258
S	PM10_RUI	0.001919	0.004303	0.001956	0.002256	0.007791	0.01501	0.070918
S	PM10_STF	0.002898	0.004973	0.002911	0.003317	0.001199	0.00072	0.002544
S	PM25_IDLI	0	0	0	0	0.00044	0.000968	0.015183
S	PM25_PMI	0.01575	0.01575	0.01575	0.01575	0.01975	0.026784	0.048415
S	PM25_PM	0.002	0.002	0.002	0.002	0.002235	0.002491	0.002814
S	PM25_RUI	0.001768	0.003974	0.001804	0.002079	0.007171	0.013809	0.065243
S	PM25_STF	0.002671	0.004594	0.00269	0.003061	0.001101	0.000655	0.002209
S	ROG_DIUF	0.085587	0.280555	0.111923	0.14629	0.004482	0.002706	0.00471
S	ROG_HTS	0.129679	0.330124	0.163509	0.214145	0.079929	0.052051	0.12067
S	ROG_IDLE	0	0	0	0	0.030146	0.023411	0.148681
S	ROG_RES	0.07022	0.201895	0.095863	0.128947	0.002655	0.00162	0.002835
S	ROG_RUN	0.025595	0.073707	0.034213	0.063977	0.100172	0.09225	0.132426
S	ROG_RUN	0.259926	0.992058	0.451375	0.579095	0.424123	0.26944	0.499717
S	ROG_STR	0.118216	0.310351	0.170556	0.33538	0.384721	0.24148	1.011781
S	SO2_IDLE	0	0	0	0	0.000088	0.000094	0.00637
S	SO2_RUNI	0.003795	0.004378	0.005153	0.00654	0.005859	0.005581	0.00982
S	SO2_STRE	0.000761	0.00091	0.00104	0.001333	0.000532	0.000361	0.000841
S	TOG_DIUF	0.085587	0.280555	0.111923	0.14629	0.004482	0.002706	0.00471
S	TOG_HTSI	0.129679	0.330124	0.163509	0.214145	0.079929	0.052051	0.12067
S	TOG_IDLE	0	0	0	0	0.032036	0.025088	0.169262
S	TOG_RES	0.07022	0.201895	0.095863	0.128947	0.002655	0.00162	0.002835
S	TOG_RUN	0.03862	0.101228	0.05237	0.092989	0.118486	0.108548	0.15247
S	TOG_RUN	0.259926	0.992058	0.451375	0.579095	0.424123	0.26944	0.499717
S	TOG_STRI	0.126303	0.331455	0.182155	0.358189	0.410859	0.257932	1.082091
W	FleetMix	0	0	0	0	0.168	0.052	0.177
W	CH4_IDLE	0	0	0	0	0.001298	0.001017	0.007911
W	CH4_RUNI	0.011884	0.025312	0.016673	0.02682	0.014277	0.010099	0.004747
W	CH4_STRE	0.007956	0.020703	0.011365	0.022371	0.024616	0.015462	0
W	CO_IDLEX	0	0	0	0	0.188193	0.151708	2.51186
W	CO_RUNE	0.959175	2.544368	1.360302	2.114829	1.344988	0.929085	1.021249
W	CO_STRE	1.929022	4.954291	2.841294	4.7419	4.76668	2.946828	18.58351
W	CO2_NBIC	0	0	0	0	8.115123	8.934711	549.5824
W	CO2_NBIC	278.859	334.2728	404.5325	530.6052	560.7045	540.7826	971.8326
W	CO2_NBIC	60.02885	70.95272	85.83116	112.458	43.75753	30.09506	54.8247
W	NOX_IDLE	0	0	0	0	0.045454	0.096369	5.654801
W	NOX_RUN	0.08661	0.252196	0.154536	0.264917	1.184714	1.902346	2.72115
W	NOX_STRI	0.12327	0.280566	0.257818	0.445697	1.405679	0.941267	1.956748
W	PM10_IDLI	0	0	0	0	0.000478	0.001052	0.023821
W	PM10_PMI	0.03675	0.03675	0.03675	0.03675	0.046083	0.062496	0.112968
W	PM10_PM	0.008	0.008	0.008	0.008	0.008941	0.009964	0.011258
W	PM10_RUI	0.001919	0.004303	0.001956	0.002256	0.007791	0.01501	0.070918
W	PM10_STF	0.002898	0.004973	0.002911	0.003317	0.001199	0.00072	0.002544
W	PM25_IDLI	0	0	0	0	0.00044	0.000968	0.021915
W	PM25_PMI	0.01575	0.01575	0.01575	0.01575	0.01975	0.026784	0.048415
W	PM25_PM	0.002	0.002	0.002	0.002	0.002235	0.002491	0.002814

W	PM25_RUI	0.001768	0.003974	0.001804	0.002079	0.007171	0.013809	0.065243
W	PM25_STF	0.002671	0.004594	0.00269	0.003061	0.001101	0.000655	0.002209
W	ROG_DIUF	0.053709	0.178855	0.068757	0.088186	0.003098	0.001867	0.003323
W	ROG_HTS	0.13698	0.349483	0.170233	0.220989	0.085908	0.055694	0.136783
W	ROG_IDLE	0	0	0	0	0.030146	0.023411	0.170316
W	ROG_RES	0.04535	0.126379	0.061691	0.08257	0.001719	0.001049	0.001863
W	ROG_RUN	0.024157	0.068964	0.031993	0.059449	0.097996	0.091485	0.131739
W	ROG_RUN	0.305946	1.25333	0.562207	0.711893	0.47051	0.301799	0.555498
W	ROG_STR	0.142511	0.372459	0.204802	0.402314	0.438892	0.275201	1.179063
W	SO2_IDLE	0	0	0	0	0.000088	0.000094	0.005519
W	SO2_RUNI	0.003548	0.004103	0.004825	0.00612	0.005859	0.005581	0.00982
W	SO2_STRE	0.000769	0.00093	0.001051	0.001353	0.000548	0.000371	0.000905
W	TOG_DIUF	0.053709	0.178855	0.068757	0.088186	0.003098	0.001867	0.003323
W	TOG_HTSI	0.13698	0.349483	0.170233	0.220989	0.085908	0.055694	0.136783
W	TOG_IDLE	0	0	0	0	0.032036	0.025088	0.193891
W	TOG_RES	0.04535	0.126379	0.061691	0.08257	0.001719	0.001049	0.001863
W	TOG_RUN	0.036234	0.095046	0.048925	0.086851	0.116051	0.107647	0.151704
W	TOG_RUN	0.305946	1.25333	0.562207	0.711893	0.47051	0.301799	0.555498
W	TOG_STRI	0.152256	0.397783	0.218729	0.429673	0.468716	0.293955	1.261077

HHD	OBUS	UBUS	MCY	SBUS	MH
0.603	0	0	0	0	0
0.023843	0.01879	0	0	0.005444	0
0.010676	0.002842	0	0	0.007996	0
0	0	0	0	0	0
2.879964	2.366964	0	0	1.069962	0
1.739567	1.2617	5.173299	21.77423	4.411048	3.199194
57.96357	10.22372	10.42068	9.890293	31.6682	7.790818
557.7798	563.7421	0	0	562.5478	0
1619.399	1072.946	2068.246	146.0946	1104.923	637.8393
55.64338	35.01401	28.95247	42.23745	125.5688	30.24549
4.567347	5.547784	0	0	8.052276	0
5.628236	3.649756	12.46801	1.17358	8.198724	1.507477
3.712526	1.425207	1.198318	0.305933	2.162113	0.798175
0.010451	0.010511	0	0	0.026779	0
0.060069	0.095881	0.678998	0.036749	0.573124	0.050332
0.034759	0.010527	0.008	0.008	0.01103	0.00858
0.087886	0.042051	0.199926	0.00043	0.08899	0.025731
0.002114	0.000829	0.000771	0.001368	0.006088	0.001159
0.009614	0.00967	0	0	0.024636	0
0.025744	0.041092	0.290999	0.01575	0.245624	0.021571
0.00869	0.002632	0.002	0.002	0.002758	0.002145
0.080855	0.038687	0.183917	0.000353	0.08182	0.023662
0.001765	0.000744	0.00069	0.001102	0.005286	0.00103
0.001858	0.000987	0.005719	0.980251	0.037509	1.185462
0.090883	0.02822	0.099916	0.43971	0.261081	0.076633
0.513334	0.404538	0	0	0.117215	0
0.001266	0.000515	0.003151	0.557304	0.016205	0.469884
0.241221	0.133405	0.791125	2.433678	0.407375	0.109185
0.378	0.311099	0.738771	1.413107	2.14228	1.89872
1.83566	0.632919	0.770803	2.097114	2.113059	0.452344
0.005602	0.005661	0	0	0.005649	0
0.016278	0.010888	0.020907	0.001956	0.011245	0.006683
0.001552	0.000548	0.000492	0.000666	0.001883	0.000454
0.001858	0.000987	0.005719	0.980251	0.037509	1.185462
0.090883	0.02822	0.099916	0.43971	0.261081	0.076633
0.584392	0.460536	0	0	0.133441	0
0.001266	0.000515	0.003151	0.557304	0.016205	0.469884
0.275397	0.156641	0.881147	2.672987	0.45508	0.134329
0.378	0.311099	0.738771	1.413107	2.14228	1.89872
1.963777	0.676107	0.82348	2.253394	2.261057	0.48359
0.603	0	0	0	0	0
0.02247	0.017708	0	0	0.005131	0
0.010676	0.002842	0	0	0.007996	0
0	0	0	0	0	0
2.0927	1.719934	0	0	0.777478	0
1.75071	1.277896	5.20809	21.02654	4.406053	3.251769
47.37788	8.291718	8.780156	8.765134	27.12036	6.182978
590.9184	597.2349	0	0	595.9696	0
1619.399	1072.946	2068.246	146.0946	1104.923	637.8393
55.64338	35.01401	28.95247	42.23746	125.5688	30.24549

4.714269	5.726244	0	0	8.311301	0
5.319873	3.428148	11.74415	1.021619	7.713009	1.3814
3.562392	1.368378	1.14543	0.29	2.044587	0.766314
0.00881	0.008861	0	0	0.022575	0
0.060069	0.095881	0.678998	0.036749	0.573124	0.050332
0.034759	0.010527	0.008	0.008	0.01103	0.00858
0.087886	0.042051	0.199926	0.00043	0.08899	0.025731
0.002114	0.000829	0.000771	0.001368	0.006088	0.001159
0.008105	0.008152	0	0	0.020769	0
0.025744	0.041092	0.290999	0.01575	0.245624	0.021571
0.00869	0.002632	0.002	0.002	0.002758	0.002145
0.080855	0.038687	0.183917	0.000353	0.08182	0.023662
0.001765	0.000744	0.00069	0.001102	0.005286	0.00103
0.003037	0.001483	0.008455	1.664597	0.056828	1.819262
0.094811	0.029172	0.104006	0.530467	0.265473	0.080583
0.483769	0.38124	0	0	0.110464	0
0.002117	0.000776	0.004811	1.056666	0.025222	0.744846
0.241469	0.134347	0.800476	2.367674	0.410193	0.110631
0.375058	0.303965	0.69142	1.326578	1.97453	1.864428
1.581935	0.55862	0.690978	1.839112	1.871779	0.386175
0.005934	0.005998	0	0	0.005985	0
0.016278	0.010889	0.020908	0.001942	0.011245	0.006684
0.001378	0.000516	0.000464	0.00064	0.001804	0.000427
0.003037	0.001483	0.008455	1.664597	0.056828	1.819262
0.094811	0.029172	0.104006	0.530467	0.265473	0.080583
0.550735	0.434012	0	0	0.125755	0
0.002117	0.000776	0.004811	1.056666	0.025222	0.744846
0.275668	0.157705	0.891045	2.603517	0.458103	0.136057
0.375058	0.303965	0.69142	1.326578	1.97453	1.864428
1.692259	0.596721	0.738186	1.976022	2.002632	0.412837
0.603	0	0	0	0	0
0.02574	0.020284	0	0	0.005877	0
0.010676	0.002842	0	0	0.007996	0
0	0	0	0	0	0
3.967137	3.260483	0	0	1.473868	0
1.737107	1.257998	5.166467	21.68417	4.399888	3.186081
58.73717	10.43513	10.55601	9.943097	32.53681	7.842899
512.017	517.4901	0	0	516.3937	0
1619.399	1072.946	2068.246	146.0946	1104.923	637.8393
55.64338	35.01401	28.95247	42.23746	125.5688	30.24549
4.364456	5.301338	0	0	7.694576	0
5.536069	3.582678	12.22884	1.141789	8.062358	1.47517
3.730113	1.434141	1.204964	0.307788	2.18812	0.800783
0.012716	0.01279	0	0	0.032584	0
0.060069	0.095881	0.678998	0.036749	0.573124	0.050332
0.034759	0.010527	0.008	0.008	0.01103	0.00858
0.087886	0.042051	0.199926	0.00043	0.08899	0.025731
0.002114	0.000829	0.000771	0.001368	0.006088	0.001159
0.011699	0.011767	0	0	0.029978	0
0.025744	0.041092	0.290999	0.01575	0.245624	0.021571
0.00869	0.002632	0.002	0.002	0.002758	0.002145

0.080855	0.038687	0.183917	0.000353	0.08182	0.023662
0.001765	0.000744	0.00069	0.001102	0.005286	0.00103
0.001988	0.001041	0.006628	1.103449	0.04365	1.384586
0.111188	0.03095	0.126181	0.577915	0.322368	0.098611
0.554162	0.436713	0	0	0.126538	0
0.001302	0.000516	0.003421	0.550892	0.017375	0.503009
0.241165	0.133183	0.789208	2.436661	0.406218	0.108839
0.403444	0.332843	0.863147	1.665911	2.525708	2.005638
1.857738	0.642628	0.779579	2.115982	2.161494	0.45597
0.005142	0.005197	0	0	0.005186	0
0.016278	0.010888	0.020907	0.001955	0.011244	0.006683
0.001565	0.000552	0.000495	0.000667	0.001899	0.000455
0.001988	0.001041	0.006628	1.103449	0.04365	1.384586
0.111188	0.03095	0.126181	0.577915	0.322368	0.098611
0.630871	0.497165	0	0	0.144054	0
0.001302	0.000516	0.003421	0.550892	0.017375	0.503009
0.275337	0.156391	0.879122	2.676116	0.45385	0.133927
0.403444	0.332843	0.863147	1.665911	2.525708	2.005638
1.987399	0.686479	0.832863	2.273665	2.312901	0.487469

RoadPerce	RoadSiltLo	MaterialSilt	MaterialMc	MobileAver	MeanVehicleSpeed
100	0	4.3	0.5	20	40

Woodstove	NumberCo	NumberCa	NumberNo	NumberPe	Woodstove	WoodstoveWoodMass

tblFireplaces

FireplacesI	NumberWc	NumberGa	NumberPrc	NumberNo	FireplaceH	FireplaceD	FireplaceWoodMass

ROG_EF
0

Area_EF_F	Area_Resi	Area_EF_F	Area_Resi	Area_EF_N	Area_Nonr	Area_EF_N	Area_Nonr	Reapplicati
50	0	100	0	250	0	0	0	10

onRatePercent

NumberSn NumberSummerDays

EnergyUse	T24E	NT24E	LightingEle	T24NG	NT24NG
Parking Lo	0	0	0	0	0
Unrefrigera	0	0	0	0	0

WaterLand	WaterLand	IndoorWate	OutdoorWa	ElectricityIr	ElectricityIr	ElectricityIr	ElectricityIr	SepticTank
Parking Lo	Space	0	0	9727	111	1272	1911	10.33
Unrefrigera	1000sqft	0	0	9727	111	1272	1911	10.33

AerobicPer	Anaerobica	AnaDigest(	AnaDigestCogen	CombDigestGasPercent
87.46	2.21	100	0	
87.46	2.21	100	0	

SolidWaste	SolidWaste	SolidWaste	LandfillNo(	LandfillCap	LandfillCaptureGasEnergyRecovery
Parking Lo	Space	0	6	94	0
Unrefrigera	1000sqft	0	6	94	0

Vegetation	Vegetation	AcresBegir	AcresEnd	CO2peracre

BroadSpec	NumberOfT	CO2perTree

tblConstEquipMitigation

ConstMitig	FuelType	Tier	NumberOfI	TotalNumb	DPF	OxidationCatalyst
Graders	Diesel	No Change	0	0	No Change	0

SoilStabiliz	SoilStabiliz	SoilStabiliz	ReplaceGr	ReplaceGr	ReplaceGr	WaterExpo	WaterExpo	WaterExpo
0			0			0		

WaterExpo	WaterUnpa	WaterUnpa	WaterUnpa	WaterUnpa	CleanPavedRoadPercentReduction
	0	0			0

ProjectSett	IncreaseDe	IncreaseDe	IncreaseDe	IncreaseDi	ImproveWa	ImproveWa	ImproveDe	ImproveDe

IncreaseTr	IncreaseTr	IntegrateBe	IntegrateBe	ImprovePe	ImprovePe	ProvideTra	ProvideTra	ProvideTra

ImplementI	ImplementI	LimitParkin	LimitParkin	UnbundleP	UnbundleP	OnStreetM	OnStreetM	ProvideBR

ProvideBR	ExpandTra	ExpandTra	IncreaseTr	IncreaseTr	IncreaseTransitFrequencyHeadwaysPercentF

Reduction

Implement	Implement	Implement	TransitSub	TransitSub	TransitSub	ImplementI	ImplementI	WorkplaceI
0			0			0		0

Workplace	Workplace	Encourage	Encourage	Encourage	Encourage	MarketCon	MarketCon	Employee
		0				0		0

Employee\	Employee\	ProvideRid	ProvideRid	Implement	ImplementSchoolBusProgramPercentFamilyL
	2	0		0	

Jsing

Landscape	Landscape	Landscape	Landscape	Landscape	Landscape	UseLowVC	UseLowVC	UseLowVC
0		0		0		0	50	0

UseLowVC	UseLowVC	UseLowVC	UseLowVC	UseLowVC	HearthOnly	NoHearthC	UseLowVOCCleaningS
100	0	250	0	0	0	0	0

SuppliesCheck

ExceedTitl	ExceedTitl	InstallHighl	InstallHighl	OnSiteRen	KwhGener	KwhGener	PercentOfE	PercentOfE

ElectricityUseGenerated

tblApplianceMitigation

ApplianceT	ApplianceL	PercentImprovement
ClothWasher		30
DishWasher		15
Fan		50
Refrigerator		15

ApplyWate	ApplyWate	ApplyWate	UseReclair	PercentOu	PercentInd	UseGreyW	PercentOu	PercentInd
0			0			0		

InstallLowF	PercentRe	InstallLowF	PercentRe	InstallLowF	PercentRe	InstallLowF	PercentRe	TurfReduct
0	32	0	18	0	20	0	20	0

TurfReduct	TurfReduct	UseWaterE	UseWaterE	WaterEffici	MAWA	ETWU
		0	6.1	0		

InstituteRe	InstituteRecyclingAndCompostingServicesWastePercentReduction

OperOffRo	OperOffRo	OperHours	OperDaysF	OperHorse	OperLoadF	OperFuelType

SubModule	PhaseNam	Season	Remarks
1			
3			San Gorgonio Project Description
4			OPerations only for heavy duty trucks
5	Site Preparation		Operation only for heavy duty trucks
6			HDT operations ONLY
12			San Gorgonio Crossing Daily truck trip rate. Considers only LHDT1, l
13		A	Fleet mix for LHDT1, LHDT2, MHDT, and HHDT
13		S	Fleet mix for LHDT1, LHDT2, MHDT, and HHDT
13		W	Fleet mix for LHDT1, LHDT2, MHDT, and HHDT
14			Paved road dust for major arterial collector (silt loading 0.035 g/m2) a
17			Heavy Duty Trucks Only
18			Operations only diesel truck trips
19			Heavy Duty Trucks Only
20			Operations only heavy duty trucks
21			Operations only - heavy duty trucks
22			Heavy Duty Trucks Only

LHDT2, MHDT, and HHDT

and LHDT1, LHDT2, MHDT, and HHDT average vehicle weight

ProjectNan	LocationSc	EMFAC_IC	WindSpee	Precipitatio	ClimateZor	Urbanizatic	Operationa	UtilityComp
San Gorgo AB		SC	2.2	31	10	Urban	2017	Southern C

CO2Intens	CH4Intensi	N2OIntens	TotalPopul	TotalLotAc	UsingHistoricalEnergyUseData
630.89	0.029	0.006	0	53.85	0

PollutantSe	PollutantFu	PollutantName
1	Reactive O	ROG
1	Nitrogen O	NOX
1	Carbon Mo	CO
1	Sulfur Diox	SO2
1	Particulate	PM10
1	Particulate	PM2_5
1	Fugitive PM	PM10_FUG
1	Fugitive PM	PM25_FUG
1	Biogenic C	CO2_BIO
1	Non-Biogei	CO2_NBIO
1	Carbon Dio	CO2
1	Methane (C	CH4
1	Nitrous Oxi	N2O
1	CO2 Equiv	CO2E

tblLandUse

LandUseTy	LandUseSu	LandUseUn	LandUseSi	LotAcreage	LandUseSq	Population
Industrial	Unrefrigera	1860.76	1000sqft	42.72	1860760	0
Parking	Parking Lo	1237	Space	11.13	494800	0

tblConstructionPhase

PhaseNum	PhaseNam	PhaseType	PhaseStart	PhaseEndI	NumDaysV	NumDays	PhaseDescription
1	Site Prepar	Site Prepar	2016/01/01	2016/01/02	5	1	

tblOffRoadEquipment

PhaseNam	OffRoadEq	OffRoadEq	UsageHou	HorsePow	LoadFactor
Site Prepa	Rubber Tir	0	0	255	0.4

PhaseNam	WorkerTrip	VendorTrip	HaulingTrip	WorkerTrip	VendorTrip	HaulingTrip	WorkerVeh	VendorVeh
Site Prepa	0	0	0	14.7	6.9	20	LD_Mix	HDT_Mix

HaulingVehicleClass
HHDT

PhaseNam	WorkerPer	VendorPer	HaulingPer	RoadSiltLo	MaterialSilt	MaterialMo	AverageVe	MeanVehic
Site Prepa	100	100	100	0.1	8.5	0.5	2.4	40

:leSpeed

tblDemolition

PhaseNam	Demolition	DemolitionUnitAmount

PhaseNam	MaterialIm	MaterialEx	GradingSiz	ImportExpc	MeanVehic	AcresOfGr	MaterialMc	MaterialMc
Site Prepa	0	0		0	7.1	0	7.9	12

MaterialSiltContent
6.9

PhaseNam	Architectur	Architectur	EF_Reside	ConstArea_	EF_Reside	ConstArea_	EF_Nonres	ConstArea_

EF_Nonres ConstArea_Nonresidential_Exterior

ParkingLotAcreage

VehicleTrip	VehicleTrip	WD_TR	ST_TR	SU_TR	HW_TL	HS_TL	HO_TL	CC_TL
Parking Lo	Space	0	0	0	0	0	0	8.4
Unrefrigera	1000sqft	0.64	0.64	0.64	0	0	0	40

CW_TL	CNW_TL	PR_TP	DV_TP	PB_TP	HW_TTP	HS_TTP	HO_TTP	CC_TTP
16.6	6.9	0	0	0	0	0	0	0
40	40	100	0	0	0	0	0	0

CW_TTP	CNW_TTP
0	0
59	41

Season	EmissionTy	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD
A	FleetMix	0	0	0	0	0.168	0.052	0.177
A	CH4_IDLE	0	0	0	0	0.001298	0.001017	0.007328
A	CH4_RUNI	0.011884	0.025312	0.016673	0.02682	0.014277	0.010099	0.004747
A	CH4_STRE	0.007956	0.020703	0.011365	0.022371	0.024616	0.015462	0
A	CO_IDLEX	0	0	0	0	0.188193	0.151708	1.823498
A	CO_RUNE	0.992878	2.620723	1.406562	2.185033	1.349872	0.931397	1.023582
A	CO_STRE	1.864156	4.802795	2.746709	4.597246	4.718227	2.90638	18.18252
A	CO2_NBIC	0	0	0	0	8.115122	8.934711	598.7027
A	CO2_NBIC	283.4051	339.2945	410.9152	538.8223	560.7045	540.7827	971.8326
A	CO2_NBIC	60.02885	70.95272	85.83116	112.458	43.75753	30.09506	54.8247
A	NOX_IDLE	0	0	0	0	0.045454	0.096369	5.917678
A	NOX_RUN	0.089563	0.260435	0.159786	0.274035	1.208171	1.936313	2.772989
A	NOX_STRI	0.121766	0.277361	0.254691	0.440705	1.400237	0.937023	1.943665
A	PM10_IDLI	0	0	0	0	0.000478	0.001052	0.019577
A	PM10_PMI	0.03675	0.03675	0.03675	0.03675	0.046083	0.062496	0.112968
A	PM10_PMT	0.008	0.008	0.008	0.008	0.008941	0.009964	0.011258
A	PM10_RUI	0.001919	0.004303	0.001956	0.002256	0.007791	0.01501	0.070918
A	PM10_STF	0.002898	0.004973	0.002911	0.003317	0.001199	0.00072	0.002544
A	PM25_IDLI	0	0	0	0	0.00044	0.000968	0.018011
A	PM25_PMI	0.01575	0.01575	0.01575	0.01575	0.01975	0.026784	0.048415
A	PM25_PMT	0.002	0.002	0.002	0.002	0.002235	0.002491	0.002814
A	PM25_RUI	0.001768	0.003974	0.001804	0.002079	0.007171	0.013809	0.065243
A	PM25_STF	0.002671	0.004594	0.00269	0.003061	0.001101	0.000655	0.002209
A	ROG_DIUF	0.053495	0.172862	0.069671	0.090345	0.002861	0.001744	0.003023
A	ROG_HTS	0.123348	0.305457	0.15434	0.202355	0.074573	0.048748	0.11517
A	ROG_IDLE	0	0	0	0	0.030146	0.023411	0.157768
A	ROG_RES	0.046563	0.129693	0.063598	0.08493	0.001688	0.001044	0.001807
A	ROG_RUN	0.024545	0.070143	0.03255	0.060549	0.098398	0.091638	0.131886
A	ROG_RUN	0.272247	1.058792	0.480789	0.613006	0.433596	0.276684	0.511915
A	ROG_STR	0.139393	0.365247	0.200478	0.394599	0.43462	0.272033	1.159284
A	SO2_IDLE	0	0	0	0	0.000088	0.000094	0.006013
A	SO2_RUNI	0.003606	0.004166	0.004902	0.006216	0.005859	0.005581	0.00982
A	SO2_STRE	0.000768	0.000928	0.00105	0.00135	0.000548	0.00037	0.000898
A	TOG_DIUF	0.053495	0.172862	0.069671	0.090345	0.002861	0.001744	0.003023
A	TOG_HTSI	0.123348	0.305457	0.15434	0.202355	0.074573	0.048748	0.11517
A	TOG_IDLE	0	0	0	0	0.032036	0.025088	0.179606
A	TOG_RES	0.046563	0.129693	0.063598	0.08493	0.001688	0.001044	0.001807
A	TOG_RUN	0.03684	0.096547	0.049756	0.088307	0.116498	0.107825	0.151867
A	TOG_RUN	0.272247	1.058792	0.480789	0.613006	0.433596	0.276684	0.511915
A	TOG_STRI	0.148925	0.390083	0.214112	0.421433	0.464154	0.290572	1.239929
S	FleetMix	0	0	0	0	0.168	0.052	0.177
S	CH4_IDLE	0	0	0	0	0.001298	0.001017	0.006906
S	CH4_RUNI	0.011884	0.025312	0.016673	0.02682	0.014277	0.010099	0.004747
S	CH4_STRE	0.007956	0.020703	0.011365	0.022371	0.024616	0.015462	0
S	CO_IDLEX	0	0	0	0	0.188193	0.151708	1.325029
S	CO_RUNE	1.09511	2.856312	1.548861	2.403145	1.371923	0.939783	1.031297
S	CO_STRE	1.471132	3.792072	2.163641	3.623714	3.825592	2.374524	14.83287
S	CO2_NBIC	0	0	0	0	8.115123	8.934711	634.2726
S	CO2_NBIC	298.0286	356.0872	431.6791	566.5705	560.7045	540.7826	971.8326
S	CO2_NBIC	60.02885	70.95272	85.83116	112.458	43.75753	30.09506	54.8247

S	NOX_IDLE	0	0	0	0	0.045454	0.096369	6.108037
S	NOX_RUN	0.079171	0.228439	0.140914	0.24187	1.121099	1.821549	2.606763
S	NOX_STRI	0.113216	0.257623	0.236761	0.409537	1.347193	0.901497	1.865702
S	PM10_IDLI	0	0	0	0	0.000478	0.001052	0.016503
S	PM10_PMI	0.03675	0.03675	0.03675	0.03675	0.046083	0.062496	0.112968
S	PM10_PM	0.008	0.008	0.008	0.008	0.008941	0.009964	0.011258
S	PM10_RUI	0.001919	0.004303	0.001956	0.002256	0.007791	0.01501	0.070918
S	PM10_STF	0.002898	0.004973	0.002911	0.003317	0.001199	0.00072	0.002544
S	PM25_IDLI	0	0	0	0	0.00044	0.000968	0.015183
S	PM25_PMI	0.01575	0.01575	0.01575	0.01575	0.01975	0.026784	0.048415
S	PM25_PM	0.002	0.002	0.002	0.002	0.002235	0.002491	0.002814
S	PM25_RUI	0.001768	0.003974	0.001804	0.002079	0.007171	0.013809	0.065243
S	PM25_STF	0.002671	0.004594	0.00269	0.003061	0.001101	0.000655	0.002209
S	ROG_DIUF	0.085587	0.280555	0.111923	0.14629	0.004482	0.002706	0.00471
S	ROG_HTS	0.129679	0.330124	0.163509	0.214145	0.079929	0.052051	0.12067
S	ROG_IDLE	0	0	0	0	0.030146	0.023411	0.148681
S	ROG_RES	0.07022	0.201895	0.095863	0.128947	0.002655	0.00162	0.002835
S	ROG_RUN	0.025595	0.073707	0.034213	0.063977	0.100172	0.09225	0.132426
S	ROG_RUN	0.259926	0.992058	0.451375	0.579095	0.424123	0.26944	0.499717
S	ROG_STR	0.118216	0.310351	0.170556	0.33538	0.384721	0.24148	1.011781
S	SO2_IDLE	0	0	0	0	0.000088	0.000094	0.00637
S	SO2_RUNI	0.003795	0.004378	0.005153	0.00654	0.005859	0.005581	0.00982
S	SO2_STRE	0.000761	0.00091	0.00104	0.001333	0.000532	0.000361	0.000841
S	TOG_DIUF	0.085587	0.280555	0.111923	0.14629	0.004482	0.002706	0.00471
S	TOG_HTSI	0.129679	0.330124	0.163509	0.214145	0.079929	0.052051	0.12067
S	TOG_IDLE	0	0	0	0	0.032036	0.025088	0.169262
S	TOG_RES	0.07022	0.201895	0.095863	0.128947	0.002655	0.00162	0.002835
S	TOG_RUN	0.03862	0.101228	0.05237	0.092989	0.118486	0.108548	0.15247
S	TOG_RUN	0.259926	0.992058	0.451375	0.579095	0.424123	0.26944	0.499717
S	TOG_STRI	0.126303	0.331455	0.182155	0.358189	0.410859	0.257932	1.082091
W	FleetMix	0	0	0	0	0.168	0.052	0.177
W	CH4_IDLE	0	0	0	0	0.001298	0.001017	0.007911
W	CH4_RUNI	0.011884	0.025312	0.016673	0.02682	0.014277	0.010099	0.004747
W	CH4_STRE	0.007956	0.020703	0.011365	0.022371	0.024616	0.015462	0
W	CO_IDLEX	0	0	0	0	0.188193	0.151708	2.51186
W	CO_RUNE	0.959175	2.544368	1.360302	2.114829	1.344988	0.929085	1.021249
W	CO_STRE	1.929022	4.954291	2.841294	4.7419	4.76668	2.946828	18.58351
W	CO2_NBIC	0	0	0	0	8.115123	8.934711	549.5824
W	CO2_NBIC	278.859	334.2728	404.5325	530.6052	560.7045	540.7826	971.8326
W	CO2_NBIC	60.02885	70.95272	85.83116	112.458	43.75753	30.09506	54.8247
W	NOX_IDLE	0	0	0	0	0.045454	0.096369	5.654801
W	NOX_RUN	0.08661	0.252196	0.154536	0.264917	1.184714	1.902346	2.72115
W	NOX_STRI	0.12327	0.280566	0.257818	0.445697	1.405679	0.941267	1.956748
W	PM10_IDLI	0	0	0	0	0.000478	0.001052	0.023821
W	PM10_PMI	0.03675	0.03675	0.03675	0.03675	0.046083	0.062496	0.112968
W	PM10_PM	0.008	0.008	0.008	0.008	0.008941	0.009964	0.011258
W	PM10_RUI	0.001919	0.004303	0.001956	0.002256	0.007791	0.01501	0.070918
W	PM10_STF	0.002898	0.004973	0.002911	0.003317	0.001199	0.00072	0.002544
W	PM25_IDLI	0	0	0	0	0.00044	0.000968	0.021915
W	PM25_PMI	0.01575	0.01575	0.01575	0.01575	0.01975	0.026784	0.048415
W	PM25_PM	0.002	0.002	0.002	0.002	0.002235	0.002491	0.002814

W	PM25_RUI	0.001768	0.003974	0.001804	0.002079	0.007171	0.013809	0.065243
W	PM25_STF	0.002671	0.004594	0.00269	0.003061	0.001101	0.000655	0.002209
W	ROG_DIUF	0.053709	0.178855	0.068757	0.088186	0.003098	0.001867	0.003323
W	ROG_HTS	0.13698	0.349483	0.170233	0.220989	0.085908	0.055694	0.136783
W	ROG_IDLE	0	0	0	0	0.030146	0.023411	0.170316
W	ROG_RES	0.04535	0.126379	0.061691	0.08257	0.001719	0.001049	0.001863
W	ROG_RUN	0.024157	0.068964	0.031993	0.059449	0.097996	0.091485	0.131739
W	ROG_RUN	0.305946	1.25333	0.562207	0.711893	0.47051	0.301799	0.555498
W	ROG_STR	0.142511	0.372459	0.204802	0.402314	0.438892	0.275201	1.179063
W	SO2_IDLE	0	0	0	0	0.000088	0.000094	0.005519
W	SO2_RUNI	0.003548	0.004103	0.004825	0.00612	0.005859	0.005581	0.00982
W	SO2_STRE	0.000769	0.00093	0.001051	0.001353	0.000548	0.000371	0.000905
W	TOG_DIUF	0.053709	0.178855	0.068757	0.088186	0.003098	0.001867	0.003323
W	TOG_HTSI	0.13698	0.349483	0.170233	0.220989	0.085908	0.055694	0.136783
W	TOG_IDLE	0	0	0	0	0.032036	0.025088	0.193891
W	TOG_RES	0.04535	0.126379	0.061691	0.08257	0.001719	0.001049	0.001863
W	TOG_RUN	0.036234	0.095046	0.048925	0.086851	0.116051	0.107647	0.151704
W	TOG_RUN	0.305946	1.25333	0.562207	0.711893	0.47051	0.301799	0.555498
W	TOG_STRI	0.152256	0.397783	0.218729	0.429673	0.468716	0.293955	1.261077

HHD	OBUS	UBUS	MCY	SBUS	MH
0.603	0	0	0	0	0
0.023843	0.01879	0	0	0.005444	0
0.010676	0.002842	0	0	0.007996	0
0	0	0	0	0	0
3.03	2.366964	0	0	1.069962	0
1.352	1.2617	5.173299	21.77423	4.411048	3.199194
57.96357	10.22372	10.42068	9.890293	31.6682	7.790818
557.7798	563.7421	0	0	562.5478	0
1710	1072.946	2068.246	146.0946	1104.923	637.8393
55.64338	35.01401	28.95247	42.23745	125.5688	30.24549
4.567347	5.547784	0	0	8.052276	0
3.284	3.649756	12.46801	1.17358	8.198724	1.507477
3.712526	1.425207	1.198318	0.305933	2.162113	0.798175
0.010451	0.010511	0	0	0.026779	0
0.060069	0.095881	0.678998	0.036749	0.573124	0.050332
0.034759	0.010527	0.008	0.008	0.01103	0.00858
0.087886	0.042051	0.199926	0.00043	0.08899	0.025731
0.002114	0.000829	0.000771	0.001368	0.006088	0.001159
0.009614	0.00967	0	0	0.024636	0
0.025744	0.041092	0.290999	0.01575	0.245624	0.021571
0.00869	0.002632	0.002	0.002	0.002758	0.002145
0.080855	0.038687	0.183917	0.000353	0.08182	0.023662
0.001765	0.000744	0.00069	0.001102	0.005286	0.00103
0.001858	0.000987	0.005719	0.980251	0.037509	1.185462
0.090883	0.02822	0.099916	0.43971	0.261081	0.076633
0.513334	0.404538	0	0	0.117215	0
0.001266	0.000515	0.003151	0.557304	0.016205	0.469884
0.246	0.133405	0.791125	2.433678	0.407375	0.109185
0.378	0.311099	0.738771	1.413107	2.14228	1.89872
1.83566	0.632919	0.770803	2.097114	2.113059	0.452344
0.005602	0.005661	0	0	0.005649	0
0.016278	0.010888	0.020907	0.001956	0.011245	0.006683
0.001552	0.000548	0.000492	0.000666	0.001883	0.000454
0.001858	0.000987	0.005719	0.980251	0.037509	1.185462
0.090883	0.02822	0.099916	0.43971	0.261081	0.076633
0.584392	0.460536	0	0	0.133441	0
0.001266	0.000515	0.003151	0.557304	0.016205	0.469884
0.281	0.156641	0.881147	2.672987	0.45508	0.134329
0.378	0.311099	0.738771	1.413107	2.14228	1.89872
1.963777	0.676107	0.82348	2.253394	2.261057	0.48359
0.603	0	0	0	0	0
0.02247	0.017708	0	0	0.005131	0
0.010676	0.002842	0	0	0.007996	0
0	0	0	0	0	0
2.0927	1.719934	0	0	0.777478	0
1.352	1.277896	5.20809	21.02654	4.406053	3.251769
47.37788	8.291718	8.780156	8.765134	27.12036	6.182978
590.9184	597.2349	0	0	595.9696	0
1719	1072.946	2068.246	146.0946	1104.923	637.8393
55.64338	35.01401	28.95247	42.23746	125.5688	30.24549

4.714269	5.726244	0	0	8.311301	0
3.439	3.428148	11.74415	1.021619	7.713009	1.3814
3.562392	1.368378	1.14543	0.29	2.044587	0.766314
0.00881	0.008861	0	0	0.022575	0
0.060069	0.095881	0.678998	0.036749	0.573124	0.050332
0.034759	0.010527	0.008	0.008	0.01103	0.00858
0.087886	0.042051	0.199926	0.00043	0.08899	0.025731
0.002114	0.000829	0.000771	0.001368	0.006088	0.001159
0.008105	0.008152	0	0	0.020769	0
0.025744	0.041092	0.290999	0.01575	0.245624	0.021571
0.00869	0.002632	0.002	0.002	0.002758	0.002145
0.080855	0.038687	0.183917	0.000353	0.08182	0.023662
0.001765	0.000744	0.00069	0.001102	0.005286	0.00103
0.003037	0.001483	0.008455	1.664597	0.056828	1.819262
0.094811	0.029172	0.104006	0.530467	0.265473	0.080583
0.483769	0.38124	0	0	0.110464	0
0.002117	0.000776	0.004811	1.056666	0.025222	0.744846
0.262	0.134347	0.800476	2.367674	0.410193	0.110631
0.375058	0.303965	0.69142	1.326578	1.97453	1.864428
1.581935	0.55862	0.690978	1.839112	1.871779	0.386175
0.005934	0.005998	0	0	0.005985	0
0.016278	0.010889	0.020908	0.001942	0.011245	0.006684
0.001378	0.000516	0.000464	0.00064	0.001804	0.000427
0.003037	0.001483	0.008455	1.664597	0.056828	1.819262
0.094811	0.029172	0.104006	0.530467	0.265473	0.080583
0.550735	0.434012	0	0	0.125755	0
0.002117	0.000776	0.004811	1.056666	0.025222	0.744846
0.298	0.157705	0.891045	2.603517	0.458103	0.136057
0.375058	0.303965	0.69142	1.326578	1.97453	1.864428
1.692259	0.596721	0.738186	1.976022	2.002632	0.412837
0.603	0	0	0	0	0
0.02574	0.020284	0	0	0.005877	0
0.010676	0.002842	0	0	0.007996	0
0	0	0	0	0	0
3.967137	3.260483	0	0	1.473868	0
1.352	1.257998	5.166467	21.68417	4.399888	3.186081
58.73717	10.43513	10.55601	9.943097	32.53681	7.842899
512.017	517.4901	0	0	516.3937	0
1719	1072.946	2068.246	146.0946	1104.923	637.8393
55.64338	35.01401	28.95247	42.23746	125.5688	30.24549
4.364456	5.301338	0	0	7.694576	0
3.575	3.582678	12.22884	1.141789	8.062358	1.47517
3.730113	1.434141	1.204964	0.307788	2.18812	0.800783
0.012716	0.01279	0	0	0.032584	0
0.060069	0.095881	0.678998	0.036749	0.573124	0.050332
0.034759	0.010527	0.008	0.008	0.01103	0.00858
0.087886	0.042051	0.199926	0.00043	0.08899	0.025731
0.002114	0.000829	0.000771	0.001368	0.006088	0.001159
0.011699	0.011767	0	0	0.029978	0
0.025744	0.041092	0.290999	0.01575	0.245624	0.021571
0.00869	0.002632	0.002	0.002	0.002758	0.002145

0.080855	0.038687	0.183917	0.000353	0.08182	0.023662
0.001765	0.000744	0.00069	0.001102	0.005286	0.00103
0.001988	0.001041	0.006628	1.103449	0.04365	1.384586
0.111188	0.03095	0.126181	0.577915	0.322368	0.098611
0.554162	0.436713	0	0	0.126538	0
0.001302	0.000516	0.003421	0.550892	0.017375	0.503009
0.262	0.133183	0.789208	2.436661	0.406218	0.108839
0.403444	0.332843	0.863147	1.665911	2.525708	2.005638
1.857738	0.642628	0.779579	2.115982	2.161494	0.45597
0.005142	0.005197	0	0	0.005186	0
0.016278	0.010888	0.020907	0.001955	0.011244	0.006683
0.001565	0.000552	0.000495	0.000667	0.001899	0.000455
0.001988	0.001041	0.006628	1.103449	0.04365	1.384586
0.111188	0.03095	0.126181	0.577915	0.322368	0.098611
0.630871	0.497165	0	0	0.144054	0
0.001302	0.000516	0.003421	0.550892	0.017375	0.503009
0.298	0.156391	0.879122	2.676116	0.45385	0.133927
0.403444	0.332843	0.863147	1.665911	2.525708	2.005638
1.987399	0.686479	0.832863	2.273665	2.312901	0.487469

RoadPerce	RoadSiltLo	MaterialSilt	MaterialMc	MobileAver	MeanVehicleSpeed
100	0	4.3	0.5	20	40

tblWoodstoves

Woodstove	NumberCo	NumberCa	NumberNo	NumberPe	Woodstove	WoodstoveWoodMass

tblFireplaces

FireplacesI	NumberWc	NumberGa	NumberPrc	NumberNo	FireplaceH	FireplaceD	FireplaceWoodMass

ROG_EF
0

Area_EF_F	Area_Resi	Area_EF_F	Area_Resi	Area_EF_N	Area_Nonr	Area_EF_N	Area_Nonr	Reapplicati
50	0	100	0	250	0	250	0	10

onRatePercent

NumberSn NumberSummerDays

EnergyUse	T24E	NT24E	LightingEle	T24NG	NT24NG
Parking Lo	0	0	0	0	0
Unrefrigera	0	0	0	0	0

WaterLand	WaterLand	IndoorWate	OutdoorWa	ElectricityIr	ElectricityIr	ElectricityIr	ElectricityIr	SepticTank
Parking Lo	Space	0	0	9727	111	1272	1911	10.33
Unrefrigera	1000sqft	0	0	9727	111	1272	1911	10.33

AerobicPer	Anaerobica	AnaDigest(	AnaDigestCogen	CombDigestGasPercent
87.46	2.21	100	0	
87.46	2.21	100	0	

SolidWaste	SolidWaste	SolidWaste	LandfillNo(	LandfillCap	LandfillCaptureGasEnergyRecovery
Parking Lo	Space	0	6	94	0
Unrefrigera	1000sqft	0	6	94	0

Vegetation	Vegetation	AcresBegin	AcresEnd	CO2peracre

BroadSpec	NumberOfT	CO2perTree

tblConstEquipMitigation

ConstMitig	FuelType	Tier	NumberOff	TotalNumb	DPF	OxidationCatalyst
Rubber Tir	Diesel	No Change	0	0	No Change	0

SoilStabiliz	SoilStabiliz	SoilStabiliz	ReplaceGr	ReplaceGr	ReplaceGr	WaterExpo	WaterExpo	WaterExpo
0			0			0		

WaterExpo	WaterUnpa	WaterUnpa	WaterUnpa	WaterUnpa	CleanPavedRoadPercentReduction
	0	0			0

ProjectSett	IncreaseDe	IncreaseDe	IncreaseDe	IncreaseDi	ImproveWa	ImproveWa	ImproveDe	ImproveDe

IncreaseTr	IncreaseTr	IntegrateBe	IntegrateBe	ImprovePe	ImprovePe	ProvideTra	ProvideTra	ProvideTra

ImplementI	ImplementI	LimitParkin	LimitParkin	UnbundleP	UnbundleP	OnStreetM	OnStreetM	ProvideBR

ProvideBR	ExpandTra	ExpandTra	IncreaseTr	IncreaseTr	IncreaseTransitFrequencyHeadwaysPercentF

Reduction

Implement	Implement	Implement	TransitSub	TransitSub	TransitSub	ImplementI	ImplementI	WorkplaceI
0			0			0		0

Workplace	Workplace	Encourage	Encourage	Encourage	Encourage	MarketCon	MarketCon	Employee
		0				0		0

Employee\	Employee\	ProvideRid	ProvideRid	Implement	ImplementSchoolBusProgramPercentFamilyL
	2	0		0	

Jsing

Landscape	Landscape	Landscape	Landscape	Landscape	Landscape	UseLowVC	UseLowVC	UseLowVC
0		0		0		0	50	0

UseLowVC	UseLowVC	UseLowVC	UseLowVC	UseLowVC	HearthOnly	NoHearthC	UseLowVOC	CleaningS
100	0	250	0	250	0	0	0	

SuppliesCheck

ExceedTitl	ExceedTitl	InstallHighl	InstallHighl	OnSiteRen	KwhGener	KwhGener	PercentOfE	PercentOfE

ElectricityUseGenerated

ApplianceT	ApplianceL	PercentImprovement
ClothWasher		30
DishWasher		15
Fan		50
Refrigerator		15

ApplyWate	ApplyWate	ApplyWate	UseReclair	PercentOu	PercentInd	UseGreyW	PercentOu	PercentInd
0			0			0		

InstallLowF	PercentRe	InstallLowF	PercentRe	InstallLowF	PercentRe	InstallLowF	PercentRe	TurfReduct
0	32	0	18	0	20	0	20	0

TurfReduct	TurfReduct	UseWaterE	UseWaterE	WaterEffici	MAWA	ETWU
		0	6.1	0		

InstituteRe	InstituteRecyclingAndCompostingServicesWastePercentReduction

OperOffRo	OperOffRo	OperHours	OperDaysF	OperHorse	OperLoadF	OperFuelType

SubModule	PhaseNam	Season	Remarks
1			
3			Land use taken from project description
4			Project HDT operations ONLY
5	Site Preparation		Project HDT operations ONLY
12			Trip generation rate taken from the project traffic sudy; trip length bas
13		A	Fleet mix derived from the project traffic study; HHDT emission factor
13		S	Fleet mix derived from the project traffic study; HHDT emission factor
13		W	Fleet mix derived from the project traffic study; HHDT emission factor
14			Road silt loading for a major arterial collector roadway; average vehic
17			Project HDT operations ONLY
18			Project HDT operations ONLY
19			Project HDT operations ONLY
20			Project HDT operations ONLY
21			Project HDT operations ONLY
22			Project HDT operations ONLY

sed on guidance from the SCAQMD regaring trip lengths for warehouses
rs reflect MY2007 rates
rs reflect MY2007 rates
rs reflect MY2007 rates
cle weight for the HDT vehicle classes

ProjectNan	LocationSc	EMFAC_IC	WindSpee	Precipitatio	ClimateZor	Urbanizatic	Operationa	UtilityComp
San Gorgo AB		SC	2.2	31	10	Urban	2017	Southern C

CO2Intens	CH4Intensi	N2OIntens	TotalPopul	TotalLotAc	UsingHistoricalEnergyUseData
630.89	0.029	0.006	0	53.85	0

PollutantSe	PollutantFu	PollutantName
1	Reactive O	ROG
1	Nitrogen O	NOX
1	Carbon Mo	CO
1	Sulfur Diox	SO2
1	Particulate	PM10
1	Particulate	PM2_5
1	Fugitive PM	PM10_FUG
1	Fugitive PM	PM25_FUG
1	Biogenic C	CO2_BIO
1	Non-Biogei	CO2_NBIO
1	Carbon Dio	CO2
1	Methane (C	CH4
1	Nitrous Oxi	N2O
1	CO2 Equiv	CO2E

tblLandUse

LandUseTy	LandUseSu	LandUseUn	LandUseSi	LotAcreage	LandUseSq	Population
Industrial	Unrefrigera	1860.76	1000sqft	42.72	1860760	0
Parking	Parking Lo	1237	Space	11.13	494800	0

tblConstructionPhase

PhaseNum	PhaseNam	PhaseType	PhaseStart	PhaseEndD	NumDaysW	NumDays	PhaseDescription
1	Site Prepar	Site Prepar	2016/01/01	2016/01/04	5	2	

tblOffRoadEquipment

PhaseNam	OffRoadEq	OffRoadEq	UsageHou	HorsePow	LoadFactor
Site Prepa	Rubber Tir	0	0	255	0.4

PhaseNam	WorkerTrip	VendorTrip	HaulingTrip	WorkerTrip	VendorTrip	HaulingTrip	WorkerVeh	VendorVeh
Site Prepa	0	0	0	14.7	6.9	20	LD_Mix	HDT_Mix

HaulingVehicleClass
HHDT

PhaseNam	WorkerPer	VendorPer	HaulingPer	RoadSiltLo	MaterialSilt	MaterialMo	AverageVe	MeanVehic
Site Prepa	100	100	100	0.1	8.5	0.5	2.4	40

:leSpeed

tblDemolition

PhaseNam	Demolition	DemolitionUnitAmount

PhaseNam	MaterialIm	MaterialEx	GradingSiz	ImportExpc	MeanVehic	AcresOfGr	MaterialMc	MaterialMc
Site Prepa	0	0		0	7.1	0	7.9	12

MaterialSiltContent
6.9

PhaseNam	Architectur	Architectur	EF_Reside	ConstArea_	EF_Reside	ConstArea_	EF_Nonres	ConstArea_

EF_Nonres	ConstArea_Nonresidential_Exterior

ParkingLotAcreage

VehicleTrip	VehicleTrip	WD_TR	ST_TR	SU_TR	HW_TL	HS_TL	HO_TL	CC_TL
Parking Lo	Space	0	0	0	0	0	0	8.4
Unrefrigera	1000sqft	1.04	1.04	1.04	0	0	0	8.4

CW_TL	CNW_TL	PR_TP	DV_TP	PB_TP	HW_TTP	HS_TTP	HO_TTP	CC_TTP
16.6	6.9	0	0	0	0	0	0	0
16.6	6.9	92	5	3	0	0	0	0

CW_TTP	CNW_TTP
0	0
59	41

Season	EmissionTy	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD
A	FleetMix	0.558	0.079	0.249	0.115	0	0	0
A	CH4_IDLE	0	0	0	0	0.001298	0.001017	0.007328
A	CH4_RUNI	0.011884	0.025312	0.016673	0.02682	0.014277	0.010099	0.004747
A	CH4_STRE	0.007956	0.020703	0.011365	0.022371	0.024616	0.015462	0
A	CO_IDLEX	0	0	0	0	0.188193	0.151708	1.823498
A	CO_RUNE	0.992878	2.620723	1.406562	2.185033	1.349872	0.931397	1.023582
A	CO_STRE	1.864156	4.802795	2.746709	4.597246	4.718227	2.90638	18.18252
A	CO2_NBIC	0	0	0	0	8.115122	8.934711	598.7027
A	CO2_NBIC	283.4051	339.2945	410.9152	538.8223	560.7045	540.7827	971.8326
A	CO2_NBIC	60.02885	70.95272	85.83116	112.458	43.75753	30.09506	54.8247
A	NOX_IDLE	0	0	0	0	0.045454	0.096369	5.917678
A	NOX_RUN	0.089563	0.260435	0.159786	0.274035	1.208171	1.936313	2.772989
A	NOX_STRI	0.121766	0.277361	0.254691	0.440705	1.400237	0.937023	1.943665
A	PM10_IDLI	0	0	0	0	0.000478	0.001052	0.019577
A	PM10_PMI	0.03675	0.03675	0.03675	0.03675	0.046083	0.062496	0.112968
A	PM10_PMT	0.008	0.008	0.008	0.008	0.008941	0.009964	0.011258
A	PM10_RUN	0.001919	0.004303	0.001956	0.002256	0.007791	0.01501	0.070918
A	PM10_STF	0.002898	0.004973	0.002911	0.003317	0.001199	0.00072	0.002544
A	PM25_IDLI	0	0	0	0	0.00044	0.000968	0.018011
A	PM25_PMI	0.01575	0.01575	0.01575	0.01575	0.01975	0.026784	0.048415
A	PM25_PMT	0.002	0.002	0.002	0.002	0.002235	0.002491	0.002814
A	PM25_RUN	0.001768	0.003974	0.001804	0.002079	0.007171	0.013809	0.065243
A	PM25_STF	0.002671	0.004594	0.00269	0.003061	0.001101	0.000655	0.002209
A	ROG_DIUF	0.053495	0.172862	0.069671	0.090345	0.002861	0.001744	0.003023
A	ROG_HTS	0.123348	0.305457	0.15434	0.202355	0.074573	0.048748	0.11517
A	ROG_IDLE	0	0	0	0	0.030146	0.023411	0.157768
A	ROG_RES	0.046563	0.129693	0.063598	0.08493	0.001688	0.001044	0.001807
A	ROG_RUN	0.024545	0.070143	0.03255	0.060549	0.098398	0.091638	0.131886
A	ROG_RUN	0.272247	1.058792	0.480789	0.613006	0.433596	0.276684	0.511915
A	ROG_STR	0.139393	0.365247	0.200478	0.394599	0.43462	0.272033	1.159284
A	SO2_IDLE	0	0	0	0	0.000088	0.000094	0.006013
A	SO2_RUNI	0.003606	0.004166	0.004902	0.006216	0.005859	0.005581	0.00982
A	SO2_STRE	0.000768	0.000928	0.00105	0.00135	0.000548	0.00037	0.000898
A	TOG_DIUF	0.053495	0.172862	0.069671	0.090345	0.002861	0.001744	0.003023
A	TOG_HTSI	0.123348	0.305457	0.15434	0.202355	0.074573	0.048748	0.11517
A	TOG_IDLE	0	0	0	0	0.032036	0.025088	0.179606
A	TOG_RES	0.046563	0.129693	0.063598	0.08493	0.001688	0.001044	0.001807
A	TOG_RUN	0.03684	0.096547	0.049756	0.088307	0.116498	0.107825	0.151867
A	TOG_RUN	0.272247	1.058792	0.480789	0.613006	0.433596	0.276684	0.511915
A	TOG_STRI	0.148925	0.390083	0.214112	0.421433	0.464154	0.290572	1.239929
S	FleetMix	0.558	0.079	0.249	0.115	0	0	0
S	CH4_IDLE	0	0	0	0	0.001298	0.001017	0.006906
S	CH4_RUNI	0.011884	0.025312	0.016673	0.02682	0.014277	0.010099	0.004747
S	CH4_STRE	0.007956	0.020703	0.011365	0.022371	0.024616	0.015462	0
S	CO_IDLEX	0	0	0	0	0.188193	0.151708	1.325029
S	CO_RUNE	1.09511	2.856312	1.548861	2.403145	1.371923	0.939783	1.031297
S	CO_STRE	1.471132	3.792072	2.163641	3.623714	3.825592	2.374524	14.83287
S	CO2_NBIC	0	0	0	0	8.115123	8.934711	634.2726
S	CO2_NBIC	298.0286	356.0872	431.6791	566.5705	560.7045	540.7826	971.8326
S	CO2_NBIC	60.02885	70.95272	85.83116	112.458	43.75753	30.09506	54.8247

S	NOX_IDLE	0	0	0	0	0.045454	0.096369	6.108037
S	NOX_RUN	0.079171	0.228439	0.140914	0.24187	1.121099	1.821549	2.606763
S	NOX_STRI	0.113216	0.257623	0.236761	0.409537	1.347193	0.901497	1.865702
S	PM10_IDLI	0	0	0	0	0.000478	0.001052	0.016503
S	PM10_PMI	0.03675	0.03675	0.03675	0.03675	0.046083	0.062496	0.112968
S	PM10_PM	0.008	0.008	0.008	0.008	0.008941	0.009964	0.011258
S	PM10_RUI	0.001919	0.004303	0.001956	0.002256	0.007791	0.01501	0.070918
S	PM10_STF	0.002898	0.004973	0.002911	0.003317	0.001199	0.00072	0.002544
S	PM25_IDLI	0	0	0	0	0.00044	0.000968	0.015183
S	PM25_PMI	0.01575	0.01575	0.01575	0.01575	0.01975	0.026784	0.048415
S	PM25_PM	0.002	0.002	0.002	0.002	0.002235	0.002491	0.002814
S	PM25_RUI	0.001768	0.003974	0.001804	0.002079	0.007171	0.013809	0.065243
S	PM25_STF	0.002671	0.004594	0.00269	0.003061	0.001101	0.000655	0.002209
S	ROG_DIUF	0.085587	0.280555	0.111923	0.14629	0.004482	0.002706	0.00471
S	ROG_HTS	0.129679	0.330124	0.163509	0.214145	0.079929	0.052051	0.12067
S	ROG_IDLE	0	0	0	0	0.030146	0.023411	0.148681
S	ROG_RES	0.07022	0.201895	0.095863	0.128947	0.002655	0.00162	0.002835
S	ROG_RUN	0.025595	0.073707	0.034213	0.063977	0.100172	0.09225	0.132426
S	ROG_RUN	0.259926	0.992058	0.451375	0.579095	0.424123	0.26944	0.499717
S	ROG_STR	0.118216	0.310351	0.170556	0.33538	0.384721	0.24148	1.011781
S	SO2_IDLE	0	0	0	0	0.000088	0.000094	0.00637
S	SO2_RUNI	0.003795	0.004378	0.005153	0.00654	0.005859	0.005581	0.00982
S	SO2_STRE	0.000761	0.00091	0.00104	0.001333	0.000532	0.000361	0.000841
S	TOG_DIUF	0.085587	0.280555	0.111923	0.14629	0.004482	0.002706	0.00471
S	TOG_HTSI	0.129679	0.330124	0.163509	0.214145	0.079929	0.052051	0.12067
S	TOG_IDLE	0	0	0	0	0.032036	0.025088	0.169262
S	TOG_RES	0.07022	0.201895	0.095863	0.128947	0.002655	0.00162	0.002835
S	TOG_RUN	0.03862	0.101228	0.05237	0.092989	0.118486	0.108548	0.15247
S	TOG_RUN	0.259926	0.992058	0.451375	0.579095	0.424123	0.26944	0.499717
S	TOG_STRI	0.126303	0.331455	0.182155	0.358189	0.410859	0.257932	1.082091
W	FleetMix	0.558	0.079	0.249	0.115	0	0	0
W	CH4_IDLE	0	0	0	0	0.001298	0.001017	0.007911
W	CH4_RUNI	0.011884	0.025312	0.016673	0.02682	0.014277	0.010099	0.004747
W	CH4_STRE	0.007956	0.020703	0.011365	0.022371	0.024616	0.015462	0
W	CO_IDLEX	0	0	0	0	0.188193	0.151708	2.51186
W	CO_RUNE	0.959175	2.544368	1.360302	2.114829	1.344988	0.929085	1.021249
W	CO_STRE	1.929022	4.954291	2.841294	4.7419	4.76668	2.946828	18.58351
W	CO2_NBIC	0	0	0	0	8.115123	8.934711	549.5824
W	CO2_NBIC	278.859	334.2728	404.5325	530.6052	560.7045	540.7826	971.8326
W	CO2_NBIC	60.02885	70.95272	85.83116	112.458	43.75753	30.09506	54.8247
W	NOX_IDLE	0	0	0	0	0.045454	0.096369	5.654801
W	NOX_RUN	0.08661	0.252196	0.154536	0.264917	1.184714	1.902346	2.72115
W	NOX_STRI	0.12327	0.280566	0.257818	0.445697	1.405679	0.941267	1.956748
W	PM10_IDLI	0	0	0	0	0.000478	0.001052	0.023821
W	PM10_PMI	0.03675	0.03675	0.03675	0.03675	0.046083	0.062496	0.112968
W	PM10_PM	0.008	0.008	0.008	0.008	0.008941	0.009964	0.011258
W	PM10_RUI	0.001919	0.004303	0.001956	0.002256	0.007791	0.01501	0.070918
W	PM10_STF	0.002898	0.004973	0.002911	0.003317	0.001199	0.00072	0.002544
W	PM25_IDLI	0	0	0	0	0.00044	0.000968	0.021915
W	PM25_PMI	0.01575	0.01575	0.01575	0.01575	0.01975	0.026784	0.048415
W	PM25_PM	0.002	0.002	0.002	0.002	0.002235	0.002491	0.002814

W	PM25_RUI	0.001768	0.003974	0.001804	0.002079	0.007171	0.013809	0.065243
W	PM25_STF	0.002671	0.004594	0.00269	0.003061	0.001101	0.000655	0.002209
W	ROG_DIUF	0.053709	0.178855	0.068757	0.088186	0.003098	0.001867	0.003323
W	ROG_HTS	0.13698	0.349483	0.170233	0.220989	0.085908	0.055694	0.136783
W	ROG_IDLE	0	0	0	0	0.030146	0.023411	0.170316
W	ROG_RES	0.04535	0.126379	0.061691	0.08257	0.001719	0.001049	0.001863
W	ROG_RUN	0.024157	0.068964	0.031993	0.059449	0.097996	0.091485	0.131739
W	ROG_RUN	0.305946	1.25333	0.562207	0.711893	0.47051	0.301799	0.555498
W	ROG_STR	0.142511	0.372459	0.204802	0.402314	0.438892	0.275201	1.179063
W	SO2_IDLE	0	0	0	0	0.000088	0.000094	0.005519
W	SO2_RUNI	0.003548	0.004103	0.004825	0.00612	0.005859	0.005581	0.00982
W	SO2_STRE	0.000769	0.00093	0.001051	0.001353	0.000548	0.000371	0.000905
W	TOG_DIUF	0.053709	0.178855	0.068757	0.088186	0.003098	0.001867	0.003323
W	TOG_HTSI	0.13698	0.349483	0.170233	0.220989	0.085908	0.055694	0.136783
W	TOG_IDLE	0	0	0	0	0.032036	0.025088	0.193891
W	TOG_RES	0.04535	0.126379	0.061691	0.08257	0.001719	0.001049	0.001863
W	TOG_RUN	0.036234	0.095046	0.048925	0.086851	0.116051	0.107647	0.151704
W	TOG_RUN	0.305946	1.25333	0.562207	0.711893	0.47051	0.301799	0.555498
W	TOG_STRI	0.152256	0.397783	0.218729	0.429673	0.468716	0.293955	1.261077

HHD	OBUS	UBUS	MCY	SBUS	MH
0	0	0	0	0	0
0.023843	0.01879	0	0	0.005444	0
0.010676	0.002842	0	0	0.007996	0
0	0	0	0	0	0
2.879964	2.366964	0	0	1.069962	0
1.739567	1.2617	5.173299	21.77423	4.411048	3.199194
57.96357	10.22372	10.42068	9.890293	31.6682	7.790818
557.7798	563.7421	0	0	562.5478	0
1619.399	1072.946	2068.246	146.0946	1104.923	637.8393
55.64338	35.01401	28.95247	42.23745	125.5688	30.24549
4.567347	5.547784	0	0	8.052276	0
5.628236	3.649756	12.46801	1.17358	8.198724	1.507477
3.712526	1.425207	1.198318	0.305933	2.162113	0.798175
0.010451	0.010511	0	0	0.026779	0
0.060069	0.095881	0.678998	0.036749	0.573124	0.050332
0.034759	0.010527	0.008	0.008	0.01103	0.00858
0.087886	0.042051	0.199926	0.00043	0.08899	0.025731
0.002114	0.000829	0.000771	0.001368	0.006088	0.001159
0.009614	0.00967	0	0	0.024636	0
0.025744	0.041092	0.290999	0.01575	0.245624	0.021571
0.00869	0.002632	0.002	0.002	0.002758	0.002145
0.080855	0.038687	0.183917	0.000353	0.08182	0.023662
0.001765	0.000744	0.00069	0.001102	0.005286	0.00103
0.001858	0.000987	0.005719	0.980251	0.037509	1.185462
0.090883	0.02822	0.099916	0.43971	0.261081	0.076633
0.513334	0.404538	0	0	0.117215	0
0.001266	0.000515	0.003151	0.557304	0.016205	0.469884
0.241221	0.133405	0.791125	2.433678	0.407375	0.109185
0.378	0.311099	0.738771	1.413107	2.14228	1.89872
1.83566	0.632919	0.770803	2.097114	2.113059	0.452344
0.005602	0.005661	0	0	0.005649	0
0.016278	0.010888	0.020907	0.001956	0.011245	0.006683
0.001552	0.000548	0.000492	0.000666	0.001883	0.000454
0.001858	0.000987	0.005719	0.980251	0.037509	1.185462
0.090883	0.02822	0.099916	0.43971	0.261081	0.076633
0.584392	0.460536	0	0	0.133441	0
0.001266	0.000515	0.003151	0.557304	0.016205	0.469884
0.275397	0.156641	0.881147	2.672987	0.45508	0.134329
0.378	0.311099	0.738771	1.413107	2.14228	1.89872
1.963777	0.676107	0.82348	2.253394	2.261057	0.48359
0	0	0	0	0	0
0.02247	0.017708	0	0	0.005131	0
0.010676	0.002842	0	0	0.007996	0
0	0	0	0	0	0
2.0927	1.719934	0	0	0.777478	0
1.75071	1.277896	5.20809	21.02654	4.406053	3.251769
47.37788	8.291718	8.780156	8.765134	27.12036	6.182978
590.9184	597.2349	0	0	595.9696	0
1619.399	1072.946	2068.246	146.0946	1104.923	637.8393
55.64338	35.01401	28.95247	42.23746	125.5688	30.24549

4.714269	5.726244	0	0	8.311301	0
5.319873	3.428148	11.74415	1.021619	7.713009	1.3814
3.562392	1.368378	1.14543	0.29	2.044587	0.766314
0.00881	0.008861	0	0	0.022575	0
0.060069	0.095881	0.678998	0.036749	0.573124	0.050332
0.034759	0.010527	0.008	0.008	0.01103	0.00858
0.087886	0.042051	0.199926	0.00043	0.08899	0.025731
0.002114	0.000829	0.000771	0.001368	0.006088	0.001159
0.008105	0.008152	0	0	0.020769	0
0.025744	0.041092	0.290999	0.01575	0.245624	0.021571
0.00869	0.002632	0.002	0.002	0.002758	0.002145
0.080855	0.038687	0.183917	0.000353	0.08182	0.023662
0.001765	0.000744	0.00069	0.001102	0.005286	0.00103
0.003037	0.001483	0.008455	1.664597	0.056828	1.819262
0.094811	0.029172	0.104006	0.530467	0.265473	0.080583
0.483769	0.38124	0	0	0.110464	0
0.002117	0.000776	0.004811	1.056666	0.025222	0.744846
0.241469	0.134347	0.800476	2.367674	0.410193	0.110631
0.375058	0.303965	0.69142	1.326578	1.97453	1.864428
1.581935	0.55862	0.690978	1.839112	1.871779	0.386175
0.005934	0.005998	0	0	0.005985	0
0.016278	0.010889	0.020908	0.001942	0.011245	0.006684
0.001378	0.000516	0.000464	0.00064	0.001804	0.000427
0.003037	0.001483	0.008455	1.664597	0.056828	1.819262
0.094811	0.029172	0.104006	0.530467	0.265473	0.080583
0.550735	0.434012	0	0	0.125755	0
0.002117	0.000776	0.004811	1.056666	0.025222	0.744846
0.275668	0.157705	0.891045	2.603517	0.458103	0.136057
0.375058	0.303965	0.69142	1.326578	1.97453	1.864428
1.692259	0.596721	0.738186	1.976022	2.002632	0.412837
0	0	0	0	0	0
0.02574	0.020284	0	0	0.005877	0
0.010676	0.002842	0	0	0.007996	0
0	0	0	0	0	0
3.967137	3.260483	0	0	1.473868	0
1.737107	1.257998	5.166467	21.68417	4.399888	3.186081
58.73717	10.43513	10.55601	9.943097	32.53681	7.842899
512.017	517.4901	0	0	516.3937	0
1619.399	1072.946	2068.246	146.0946	1104.923	637.8393
55.64338	35.01401	28.95247	42.23746	125.5688	30.24549
4.364456	5.301338	0	0	7.694576	0
5.536069	3.582678	12.22884	1.141789	8.062358	1.47517
3.730113	1.434141	1.204964	0.307788	2.18812	0.800783
0.012716	0.01279	0	0	0.032584	0
0.060069	0.095881	0.678998	0.036749	0.573124	0.050332
0.034759	0.010527	0.008	0.008	0.01103	0.00858
0.087886	0.042051	0.199926	0.00043	0.08899	0.025731
0.002114	0.000829	0.000771	0.001368	0.006088	0.001159
0.011699	0.011767	0	0	0.029978	0
0.025744	0.041092	0.290999	0.01575	0.245624	0.021571
0.00869	0.002632	0.002	0.002	0.002758	0.002145

0.080855	0.038687	0.183917	0.000353	0.08182	0.023662
0.001765	0.000744	0.00069	0.001102	0.005286	0.00103
0.001988	0.001041	0.006628	1.103449	0.04365	1.384586
0.111188	0.03095	0.126181	0.577915	0.322368	0.098611
0.554162	0.436713	0	0	0.126538	0
0.001302	0.000516	0.003421	0.550892	0.017375	0.503009
0.241165	0.133183	0.789208	2.436661	0.406218	0.108839
0.403444	0.332843	0.863147	1.665911	2.525708	2.005638
1.857738	0.642628	0.779579	2.115982	2.161494	0.45597
0.005142	0.005197	0	0	0.005186	0
0.016278	0.010888	0.020907	0.001955	0.011244	0.006683
0.001565	0.000552	0.000495	0.000667	0.001899	0.000455
0.001988	0.001041	0.006628	1.103449	0.04365	1.384586
0.111188	0.03095	0.126181	0.577915	0.322368	0.098611
0.630871	0.497165	0	0	0.144054	0
0.001302	0.000516	0.003421	0.550892	0.017375	0.503009
0.275337	0.156391	0.879122	2.676116	0.45385	0.133927
0.403444	0.332843	0.863147	1.665911	2.525708	2.005638
1.987399	0.686479	0.832863	2.273665	2.312901	0.487469

RoadPerce	RoadSiltLo	MaterialSilt	MaterialMc	MobileAver	MeanVehicleSpeed
100	0	4.3	0.5	2.7	40

Woodstove	NumberCo	NumberCa	NumberNo	NumberPe	Woodstove	WoodstoveWoodMass

tblFireplaces

FireplacesI	NumberWc	NumberGa	NumberPrc	NumberNo	FireplaceH	FireplaceD	FireplaceWoodMass

ROG_EF
1.98E-05

Area_EF_F	Area_Resi	Area_EF_F	Area_Resi	Area_EF_N	Area_Nonr	Area_EF_N	Area_Nonr	Reapplicati
50	0	100	0	250	777000	250	934508	10

onRatePercent

NumberSn	NumberSummerDays
0	250

EnergyUse	T24E	NT24E	LightingEle	T24NG	NT24NG
Parking Lo	0	0	0.88	0	0
Unrefrigera	0.45	0.82	1.75	2.11	0.03

WaterLand	WaterLand	IndoorWate	OutdoorWa	ElectricityIr	ElectricityIr	ElectricityIr	ElectricityIr	SepticTank
Parking Lo	Space	0	0	9727	111	1272	1911	10.33
Unrefrigera	1000sqft	11140000	8810000	9727	111	1272	1911	10.33

AerobicPer	Anaerobica	AnaDigest(	AnaDigestCogen	CombDigestGasPercent
87.46	2.21	100	0	
87.46	2.21	100	0	

SolidWaste	SolidWaste	SolidWaste	LandfillNo(	LandfillCap	LandfillCaptureGasEnergyRecovery
Parking Lo	Space	0	6	94	0
Unrefrigera	1000sqft	1714.33	6	94	0

Vegetation	Vegetation	AcresBegir	AcresEnd	CO2peracre
Grassland	Grassland	144	144	4.31

BroadSpec	NumberOfT	CO2perTree

tblConstEquipMitigation

ConstMitig	FuelType	Tier	NumberOff	TotalNumb	DPF	OxidationCatalyst
Rubber Tir	Diesel	No Change	0	0	No Change	0

SoilStabiliz	SoilStabiliz	SoilStabiliz	ReplaceGr	ReplaceGr	ReplaceGr	WaterExpo	WaterExpo	WaterExpo
0			0			0		

WaterExpo	WaterUnpa	WaterUnpa	WaterUnpa	WaterUnpa	CleanPavedRoadPercentReduction
	0	0			0

ProjectSett	IncreaseDe	IncreaseDe	IncreaseDe	IncreaseDi	ImproveWa	ImproveWa	ImproveDe	ImproveDe

IncreaseTr	IncreaseTr	IntegrateBe	IntegrateBe	ImprovePe	ImprovePe	ProvideTra	ProvideTra	ProvideTra

ImplementI	ImplementI	LimitParkin	LimitParkin	UnbundleP	UnbundleP	OnStreetM	OnStreetM	ProvideBR

ProvideBR	ExpandTra	ExpandTra	IncreaseTr	IncreaseTr	IncreaseTransitFrequencyHeadwaysPercentF

Reduction

Implement	Implement	Implement	TransitSub	TransitSub	TransitSub	ImplementI	ImplementI	WorkplaceI
0			0			0		0

Workplace	Workplace	Encourage	Encourage	Encourage	Encourage	MarketCon	MarketCon	Employee
		0				0		0

Employee\	Employee\	ProvideRid	ProvideRid	Implement	ImplementSchoolBusProgramPercentFamilyL
	2	0		0	

Jsing

Landscape	Landscape	Landscape	Landscape	Landscape	Landscape	UseLowVC	UseLowVC	UseLowVC
0	0	0	0	0	0	0	50	0

UseLowVC	UseLowVC	UseLowVC	UseLowVC	UseLowVC	HearthOnly	NoHearthC	UseLowVOC	CleaningS
100	1	100	1	100	0	1	1	

SuppliesCheck

ExceedTitl	ExceedTitl	InstallHighI	InstallHighl	OnSiteRen	KwhGener	KwhGener	PercentOfE	PercentOfE
0	0	0	0	1	0	0	1	23

ElectricityUseGenerated

tblApplianceMitigation

ApplianceT	ApplianceL	PercentImprovement
ClothWasher		30
DishWasher		15
Fan		50
Refrigerator		15

ApplyWate	ApplyWate	ApplyWate	UseReclair	PercentOu	PercentInd	UseGreyW	PercentOu	PercentInd
0	0	0	0	0	0	0	0	0

InstallLowF	PercentRe	InstallLowF	PercentRe	InstallLowF	PercentRe	InstallLowF	PercentRe	TurfReduct
1	32	1	18	1	20	1	20	0

TurfReduct	TurfReduct	UseWaterE	UseWaterE	WaterEffici	MAWA	ETWU
0	0	0	6.1	0	0	0

InstituteRe	InstituteRecyclingAndCompostingServicesWastePercentReduction

OperOffRo	OperOffRo	OperHours	OperDaysF	OperHorse	OperLoadF	OperFuelType

SubModule	PhaseNam	Season	Remarks
1			
3			Project Description
4			Operations only.
5	Site Preparation		Operations only
6			OPerations Only
10			
12			Passenger cars only as per the traffic study
13		A	Passenger Vehicles only
13		S	Passenger Vehicles only
13		W	Passenger Vehicles only
14			Gasoline vehicles along a arterial collector road; silt loading = 0.035 g
17			
18			See separate architectural coating worksheet for building square foot
20			Project electrical report - RPM Engineers, Inc. See accompanying ele
21			Water Report from Jurupa Valley Water District Water Supply Study -
22			CalRecycle Waste Characterization - Industrial Sector: Estimated Sc
23			
29			MItigation Measure MM AQ-3
30			Solar commitment by the project: 23% of electrical requirements.
32			
33			
34			Number if equipment as per SCAQMD recommendations: 3.6 trucks/

g/m2

tage
ectrical consumption worksheet.
- 10/2013 scaled to the project land use building square footage (2,560,000 sq feet in the original project
olid Waste Generation Rates. Website: http://www.calrecycle.ca.gov/WasteChar/WasteGenRates/Indus

million sqyare feet

t to 1,823,760 square feet in the current project
trial.htm

San Gorgonio Crossing Construction Only

South Coast Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	1,860.76	1000sqft	42.72	1,860,760.00	0
Parking Lot	1,237.00	Space	11.13	494,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Land Use Provided by Project Applicant

Construction Phase - Site preparation dates provided by CalEEMod default estimate; remainder of schedule provided by project applicant

Off-road Equipment - Equipment Inventory provided by project applicant

Off-road Equipment - Equipment Inventory provided by project applicant

Off-road Equipment - Equipment inventory provided by project applicant

Off-road Equipment - Equipment inventory provided by project applicant

Off-road Equipment - Equipment Inventory provided by project applicant

Trips and VMT - Haul trips added to account for offroad construction equipment delivery while traveling onsite

Grading -

Architectural Coating - See separate spreadsheet for estimates of architectural coating

Vehicle Trips - Construction ONLY

Vechicle Emission Factors -

Consumer Products - Construction ONLY

Area Coating - Construction ONLY

Landscape Equipment - Construction ONLY

Energy Use - Construction ONLY

Water And Wastewater - Construction ONLY

Solid Waste - Construction ONLY

Construction Off-road Equipment Mitigation - Assumed offroad construction mitigation of Tier 3. Fugitivce dust reductions required to meet SCAQMD Rule 403.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	937,802.00	717,000.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	2,813,406.00	777,000.00
tblAreaCoating	Area_Nonresidential_Exterior	937802	0
tblAreaCoating	Area_Nonresidential_Interior	2813406	0
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	75.00	110.00
tblConstructionPhase	NumDays	1,110.00	262.00
tblConstructionPhase	NumDays	110.00	65.00
tblConstructionPhase	NumDays	75.00	20.00
tblConstructionPhase	NumDays	40.00	120.00
tblConstructionPhase	PhaseEndDate	2/20/2018	6/3/2017
tblConstructionPhase	PhaseEndDate	6/30/2017	6/28/2017
tblConstructionPhase	PhaseStartDate	9/20/2017	1/2/2017
tblConstructionPhase	PhaseStartDate	6/4/2017	6/1/2017
tblConsumerProducts	ROG_EF	1.98E-05	1E-11
tblEnergyUse	LightingElect	0.88	0.00
tblEnergyUse	LightingElect	1.75	0.00
tblEnergyUse	NT24E	0.82	0.00
tblEnergyUse	NT24NG	0.03	0.00
tblEnergyUse	T24E	0.45	0.00
tblEnergyUse	T24NG	2.11	0.00
tblOffRoadEquipment	HorsePower	162.00	81.00
tblOffRoadEquipment	HorsePower	361.00	255.00
tblOffRoadEquipment	LoadFactor	0.38	0.73

tblOffRoadEquipment	LoadFactor	0.48	0.40
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblSolidWaste	SolidWasteGenerationRate	1,749.11	0.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	386.00	344.00
tblTripsAndVMT	WorkerTripNumber	989.00	882.00
tblTripsAndVMT	WorkerTripNumber	198.00	176.00
tblVehicleTrips	ST_TR	2.59	0.00
tblVehicleTrips	SU_TR	2.59	0.00
tblVehicleTrips	WD_TR	2.59	0.00
tblWater	IndoorWaterUseRate	430,300,750.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					

2016	0.9329	8.6309	8.6290	0.0135	1.7556	0.4060	2.1616	0.7432	0.3749	1.1181	0.0000	1,176.2360	1,176.2360	0.1855	0.0000	1,180.1319
2017	9.6993	6.6422	11.1298	0.0232	1.2106	0.2921	1.5027	0.3254	0.2771	0.6025	0.0000	1,867.9380	1,867.9380	0.1208	0.0000	1,870.4756
Total	**10.6322**	**15.2731**	**19.7587**	**0.0367**	**2.9662**	**0.6981**	**3.6643**	**1.0686**	**0.6520**	**1.7206**	**0.0000**	**3,044.1739**	**3,044.1739**	**0.3064**	**0.0000**	**3,050.6075**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.4199	4.3793	7.2643	0.0135	0.9682	0.1728	1.1410	0.3661	0.1711	0.5372	0.0000	1,176.2353	1,176.2353	0.1855	0.0000	1,180.1312
2017	9.3889	5.0450	11.1430	0.0232	1.2106	0.1736	1.3842	0.3254	0.1697	0.4951	0.0000	1,867.9376	1,867.9376	0.1208	0.0000	1,870.4752
Total	**9.8088**	**9.4243**	**18.4073**	**0.0367**	**2.1788**	**0.3464**	**2.5252**	**0.6915**	**0.3407**	**1.0323**	**0.0000**	**3,044.1729**	**3,044.1729**	**0.3064**	**0.0000**	**3,050.6064**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**7.74**	**38.29**	**6.84**	**0.00**	**26.54**	**50.38**	**31.09**	**35.29**	**47.74**	**40.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description

1	Site Preparation	Site Preparation	1/2/2016	6/17/2016	5	120
2	Grading	Grading	6/18/2016	9/16/2016	5	65
3	Building Construction	Building Construction	9/17/2016	9/19/2017	5	262
4	Tenant Improvements - Architectural Coating	Architectural Coating	1/2/2017	6/3/2017	5	110
5	Paving	Paving	6/1/2017	6/28/2017	5	20

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 390

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 777,000; Non-Residential Outdoor: 717,000 (Architectural Coating

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	81	0.73
Grading	Off-Highway Trucks	2	4.00	400	0.38
Grading	Scrapers	6	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Trenchers	1	8.00	80	0.50
Building Construction	Welders	1	8.00	46	0.45
Tenant Improvements - Architectural Coating	Air Compressors	5	8.00	78	0.48
Paving	Pavers	2	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	12	30.00	0.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	882.00	344.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Tenant Improvements - Architectural Coating	5	176.00	0.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.0840	0.0000	1.0840	0.5958	0.0000	0.5958	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3046	3.2779	2.4663	2.3400e-003		0.1763	0.1763		0.1622	0.1622	0.0000	221.2626	221.2626	0.0667	0.0000	222.6642
Total	**0.3046**	**3.2779**	**2.4663**	**2.3400e-003**	**1.0840**	**0.1763**	**1.2603**	**0.5958**	**0.1622**	**0.7581**	**0.0000**	**221.2626**	**221.2626**	**0.0667**	**0.0000**	**222.6642**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	1.5000e-004	1.1000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0337	0.0337	0.0000	0.0000	0.0337
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.3300e-003	6.3600e-003	0.0662	1.5000e-004	0.0119	1.0000e-004	0.0120	3.1500e-003	9.0000e-005	3.2400e-003	0.0000	11.1013	11.1013	6.0000e-004	0.0000	11.1138
Total	**4.3400e-003**	**6.5100e-003**	**0.0663**	**1.5000e-004**	**0.0119**	**1.0000e-004**	**0.0120**	**3.1500e-003**	**9.0000e-005**	**3.2400e-003**	**0.0000**	**11.1350**	**11.1350**	**6.0000e-004**	**0.0000**	**11.1476**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4228	0.0000	0.4228	0.2324	0.0000	0.2324	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0571	1.1675	1.4040	2.3400e-003		0.0577	0.0577		0.0577	0.0577	0.0000	221.2624	221.2624	0.0667	0.0000	222.6639
Total	**0.0571**	**1.1675**	**1.4040**	**2.3400e-003**	**0.4228**	**0.0577**	**0.4804**	**0.2324**	**0.0577**	**0.2900**	**0.0000**	**221.2624**	**221.2624**	**0.0667**	**0.0000**	**222.6639**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	1.0000e-005	1.5000e-004	1.1000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0337	0.0337	0.0000	0.0000	0.0337
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.3300e-003	6.3600e-003	0.0662	1.5000e-004	0.0119	1.0000e-004	0.0120	3.1500e-003	9.0000e-005	3.2400e-003	0.0000	11.1013	11.1013	6.0000e-004	0.0000	11.1138
Total	**4.3400e-003**	**6.5100e-003**	**0.0663**	**1.5000e-004**	**0.0119**	**1.0000e-004**	**0.0120**	**3.1500e-003**	**9.0000e-005**	**3.2400e-003**	**0.0000**	**11.1350**	**11.1350**	**6.0000e-004**	**0.0000**	**11.1476**

3.3 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2068	0.0000	0.2068	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2437	2.9031	1.8343	2.6700e-003		0.1343	0.1343		0.1236	0.1236	0.0000	251.3336	251.3336	0.0758	0.0000	252.9256
Total	**0.2437**	**2.9031**	**1.8343**	**2.6700e-003**	**0.2068**	**0.1343**	**0.3411**	**0.0223**	**0.1236**	**0.1459**	**0.0000**	**251.3336**	**251.3336**	**0.0758**	**0.0000**	**252.9256**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	1.5000e-004	1.1000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0337	0.0337	0.0000	0.0000	0.0337
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9100e-003	5.7400e-003	0.0597	1.3000e-004	0.0107	9.0000e-005	0.0108	2.8400e-003	8.0000e-005	2.9200e-003	0.0000	10.0220	10.0220	5.4000e-004	0.0000	10.0333
Total	**3.9200e-003**	**5.8900e-003**	**0.0598**	**1.3000e-004**	**0.0107**	**9.0000e-005**	**0.0108**	**2.8400e-003**	**8.0000e-005**	**2.9200e-003**	**0.0000**	**10.0557**	**10.0557**	**5.4000e-004**	**0.0000**	**10.0671**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0807	0.0000	0.0807	8.7100e-003	0.0000	8.7100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0656	1.3145	1.5417	2.6700e-003		0.0595	0.0595		0.0595	0.0595	0.0000	251.3333	251.3333	0.0758	0.0000	252.9253
Total	**0.0656**	**1.3145**	**1.5417**	**2.6700e-003**	**0.0807**	**0.0595**	**0.1401**	**8.7100e-003**	**0.0595**	**0.0682**	**0.0000**	**251.3333**	**251.3333**	**0.0758**	**0.0000**	**252.9253**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	1.5000e-004	1.1000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0337	0.0337	0.0000	0.0000	0.0337
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.9100e-003	5.7400e-003	0.0597	1.3000e-004	0.0107	9.0000e-005	0.0108	2.8400e-003	8.0000e-005	2.9200e-003	0.0000	10.0220	10.0220	5.4000e-004	0.0000	10.0333
Total	**3.9200e-003**	**5.8900e-003**	**0.0598**	**1.3000e-004**	**0.0107**	**9.0000e-005**	**0.0108**	**2.8400e-003**	**8.0000e-005**	**2.9200e-003**	**0.0000**	**10.0557**	**10.0557**	**5.4000e-004**	**0.0000**	**10.0671**

3.4 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1289	1.0715	0.6730	9.8000e-004		0.0738	0.0738		0.0693	0.0693	0.0000	88.0107	88.0107	0.0217	0.0000	88.4660
Total	**0.1289**	**1.0715**	**0.6730**	**9.8000e-004**		**0.0738**	**0.0738**		**0.0693**	**0.0693**	**0.0000**	**88.0107**	**88.0107**	**0.0217**	**0.0000**	**88.4660**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	4.0000e-005	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	9.6500e-003	9.6500e-003	0.0000	0.0000	9.6500e-003
Vendor	0.1148	1.1711	1.5034	2.8000e-003	0.0794	0.0183	0.0976	0.0227	0.0168	0.0395	0.0000	254.4514	254.4514	1.8500e-003	0.0000	254.4904
Worker	0.1326	0.1947	2.0258	4.4600e-003	0.3629	3.0900e-003	0.3660	0.0964	2.8400e-003	0.0992	0.0000	339.9772	339.9772	0.0183	0.0000	340.3615
Total	**0.2474**	**1.3659**	**3.5293**	**7.2600e-003**	**0.4423**	**0.0214**	**0.4636**	**0.1190**	**0.0196**	**0.1387**	**0.0000**	**594.4383**	**594.4383**	**0.0202**	**0.0000**	**594.8615**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0416	0.5190	0.6633	9.8000e-004		0.0341	0.0341		0.0341	0.0341	0.0000	88.0106	88.0106	0.0217	0.0000	88.4659

Total	**0.0416**	**0.5190**	**0.6633**	**9.8000e-004**		**0.0341**	**0.0341**		**0.0341**	**0.0341**	**0.0000**	**88.0106**	**88.0106**	**0.0217**	**0.0000**	**88.4659**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	4.0000e-005	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	9.6500e-003	9.6500e-003	0.0000	0.0000	9.6500e-003
Vendor	0.1148	1.1711	1.5034	2.8000e-003	0.0794	0.0183	0.0976	0.0227	0.0168	0.0395	0.0000	254.4514	254.4514	1.8500e-003	0.0000	254.4904
Worker	0.1326	0.1947	2.0258	4.4600e-003	0.3629	3.0900e-003	0.3660	0.0964	2.8400e-003	0.0992	0.0000	339.9772	339.9772	0.0183	0.0000	340.3615
Total	**0.2474**	**1.3659**	**3.5293**	**7.2600e-003**	**0.4423**	**0.0214**	**0.4636**	**0.1190**	**0.0196**	**0.1387**	**0.0000**	**594.4383**	**594.4383**	**0.0202**	**0.0000**	**594.8615**

3.4 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2947	2.4897	1.6442	2.4300e-003		0.1682	0.1682		0.1580	0.1580	0.0000	217.0770	217.0770	0.0530	0.0000	218.1903
Total	**0.2947**	**2.4897**	**1.6442**	**2.4300e-003**		**0.1682**	**0.1682**		**0.1580**	**0.1580**	**0.0000**	**217.0770**	**217.0770**	**0.0530**	**0.0000**	**218.1903**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	1.0000e-004	8.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0237	0.0237	0.0000	0.0000	0.0237
Vendor	0.2617	2.6573	3.5523	6.9800e-003	0.1980	0.0406	0.2386	0.0565	0.0374	0.0939	0.0000	624.1607	624.1607	4.4800e-003	0.0000	624.2547
Worker	0.2962	0.4384	4.5575	0.0111	0.9048	7.4100e-003	0.9122	0.2403	6.8400e-003	0.2471	0.0000	815.1342	815.1342	0.0421	0.0000	816.0184
Total	**0.5580**	**3.0959**	**8.1099**	**0.0181**	**1.1027**	**0.0481**	**1.1508**	**0.2968**	**0.0442**	**0.3410**	**0.0000**	**1,439.3186**	**1,439.3186**	**0.0466**	**0.0000**	**1,440.2967**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0979	1.2884	1.6485	2.4300e-003		0.0838	0.0838		0.0838	0.0838	0.0000	217.0768	217.0768	0.0530	0.0000	218.1901
Total	**0.0979**	**1.2884**	**1.6485**	**2.4300e-003**		**0.0838**	**0.0838**		**0.0838**	**0.0838**	**0.0000**	**217.0768**	**217.0768**	**0.0530**	**0.0000**	**218.1901**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	1.0000e-005	1.0000e-004	8.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0237	0.0237	0.0000	0.0000	0.0237
Vendor	0.2617	2.6573	3.5523	6.9800e-003	0.1980	0.0406	0.2386	0.0565	0.0374	0.0939	0.0000	624.1607	624.1607	4.4800e-003	0.0000	624.2547
Worker	0.2962	0.4384	4.5575	0.0111	0.9048	7.4100e-003	0.9122	0.2403	6.8400e-003	0.2471	0.0000	815.1342	815.1342	0.0421	0.0000	816.0184
Total	**0.5580**	**3.0959**	**8.1099**	**0.0181**	**1.1027**	**0.0481**	**1.1508**	**0.2968**	**0.0442**	**0.3410**	**0.0000**	**1,439.3186**	**1,439.3186**	**0.0466**	**0.0000**	**1,440.2967**

3.5 Tenant Improvements - Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	8.6559					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1219	0.8012	0.6850	1.0900e-003		0.0636	0.0636		0.0636	0.0636	0.0000	93.6193	93.6193	9.8800e-003	0.0000	93.8269
Total	**8.7777**	**0.8012**	**0.6850**	**1.0900e-003**		**0.0636**	**0.0636**		**0.0636**	**0.0636**	**0.0000**	**93.6193**	**93.6193**	**9.8800e-003**	**0.0000**	**93.8269**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	1.3000e-004	1.1000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0332	0.0332	0.0000	0.0000	0.0332
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0348	0.0515	0.5350	1.3000e-003	0.1062	8.7000e-004	0.1071	0.0282	8.0000e-004	0.0290	0.0000	95.6807	95.6807	4.9400e-003	0.0000	95.7845
Total	**0.0348**	**0.0516**	**0.5351**	**1.3000e-003**	**0.1062**	**8.7000e-004**	**0.1071**	**0.0282**	**8.0000e-004**	**0.0290**	**0.0000**	**95.7138**	**95.7138**	**4.9400e-003**	**0.0000**	**95.8176**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	8.6559					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0218	0.4976	0.6719	1.0900e-003		0.0349	0.0349		0.0349	0.0349	0.0000	93.6192	93.6192	9.8800e-003	0.0000	93.8268
Total	**8.6777**	**0.4976**	**0.6719**	**1.0900e-003**		**0.0349**	**0.0349**		**0.0349**	**0.0349**	**0.0000**	**93.6192**	**93.6192**	**9.8800e-003**	**0.0000**	**93.8268**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	1.3000e-004	1.1000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0332	0.0332	0.0000	0.0000	0.0332
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0348	0.0515	0.5350	1.3000e-003	0.1062	8.7000e-004	0.1071	0.0282	8.0000e-004	0.0290	0.0000	95.6807	95.6807	4.9400e-003	0.0000	95.7845
Total	**0.0348**	**0.0516**	**0.5351**	**1.3000e-003**	**0.1062**	**8.7000e-004**	**0.1071**	**0.0282**	**8.0000e-004**	**0.0290**	**0.0000**	**95.7138**	**95.7138**	**4.9400e-003**	**0.0000**	**95.8176**

3.6 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0191	0.2030	0.1473	2.2000e-004		0.0114	0.0114		0.0105	0.0105	0.0000	20.6934	20.6934	6.3400e-003	0.0000	20.8266
Paving	0.0146					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0337**	**0.2030**	**0.1473**	**2.2000e-004**		**0.0114**	**0.0114**		**0.0105**	**0.0105**	**0.0000**	**20.6934**	**20.6934**	**6.3400e-003**	**0.0000**	**20.8266**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	1.3000e-004	1.1000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0332	0.0332	0.0000	0.0000	0.0332
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.4000e-004	8.0000e-004	8.2900e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4827	1.4827	8.0000e-005	0.0000	1.4843
Total	**5.5000e-004**	**9.3000e-004**	**8.4000e-003**	**2.0000e-005**	**1.6600e-003**	**1.0000e-005**	**1.6700e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.5158**	**1.5158**	**8.0000e-005**	**0.0000**	**1.5174**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.4900e-003	0.1106	0.1693	2.2000e-004		5.9800e-003	5.9800e-003		5.9800e-003	5.9800e-003	0.0000	20.6934	20.6934	6.3400e-003	0.0000	20.8265

Paving	0.0146					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0201**	**0.1106**	**0.1693**	**2.2000e-004**		**5.9800e-003**	**5.9800e-003**		**5.9800e-003**	**5.9800e-003**	**0.0000**	**20.6934**	**20.6934**	**6.3400e-003**	**0.0000**	**20.8265**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	1.3000e-004	1.1000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0332	0.0332	0.0000	0.0000	0.0332
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.4000e-004	8.0000e-004	8.2900e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.4827	1.4827	8.0000e-005	0.0000	1.4843
Total	**5.5000e-004**	**9.3000e-004**	**8.4000e-003**	**2.0000e-005**	**1.6600e-003**	**1.0000e-005**	**1.6700e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.5158**	**1.5158**	**8.0000e-005**	**0.0000**	**1.5174**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	16.60	8.40	6.90	59.00	0.00	41.00	92	5	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.514315	0.060290	0.180146	0.139458	0.042007	0.006636	0.015782	0.029894	0.001929	0.002512	0.004343	0.000595	0.002093

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Mitigated	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e

Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000

Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

San Gorgonio Crossing Construction Only

South Coast Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	1,860.76	1000sqft	42.72	1,860,760.00	0
Parking Lot	1,237.00	Space	11.13	494,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Land Use Provided by Project Applicant

Construction Phase - Site preparation dates provided by CalEEMod default estimate; remainder of schedule provided by project applicant

Off-road Equipment - Equipment Inventory provided by project applicant

Off-road Equipment - Equipment Inventory provided by project applicant

Off-road Equipment - Equipment inventory provided by project applicant

Off-road Equipment - Equipment inventory provided by project applicant

Off-road Equipment - Equipment Inventory provided by project applicant

Trips and VMT - Haul trips added to account for offroad construction equipment delivery while traveling onsite

Grading -

Architectural Coating - See separate spreadsheet for estimates of architectural coating

Vehicle Trips - Construction ONLY

Vechicle Emission Factors -

Consumer Products - Construction ONLY

Area Coating - Construction ONLY

Landscape Equipment - Construction ONLY

Energy Use - Construction ONLY

Water And Wastewater - Construction ONLY

Solid Waste - Construction ONLY

Construction Off-road Equipment Mitigation - Assumed offroad construction mitigation of Tier 3. Fugitivce dust reductions required to meet SCAQMD Rule 403.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	934,508.00	717,000.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	2,803,524.00	777,000.00
tblAreaCoating	Area_Nonresidential_Interior	2803524	0
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	55.00	110.00
tblConstructionPhase	NumDays	740.00	262.00
tblConstructionPhase	NumDays	75.00	65.00
tblConstructionPhase	NumDays	55.00	20.00
tblConstructionPhase	NumDays	30.00	120.00
tblConstructionPhase	PhaseEndDate	2/20/2018	6/3/2017
tblConstructionPhase	PhaseEndDate	6/30/2017	6/28/2017
tblConstructionPhase	PhaseStartDate	9/20/2017	1/2/2017
tblConstructionPhase	PhaseStartDate	6/4/2017	6/1/2017
tblEnergyUse	LightingElect	0.88	0.00
tblEnergyUse	LightingElect	1.75	0.00
tblEnergyUse	NT24E	0.82	0.00
tblEnergyUse	NT24NG	0.03	0.00
tblEnergyUse	T24E	0.45	0.00
tblEnergyUse	T24NG	2.11	0.00
tblOffRoadEquipment	HorsePower	162.00	81.00
tblOffRoadEquipment	HorsePower	361.00	255.00
tblOffRoadEquipment	LoadFactor	0.38	0.73
tblOffRoadEquipment	LoadFactor	0.48	0.40
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	UsageHours	6.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblSolidWaste	SolidWasteGenerationRate	1,749.11	0.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	350.00	344.00
tblTripsAndVMT	WorkerTripNumber	897.00	882.00
tblTripsAndVMT	WorkerTripNumber	179.00	176.00
tblVehicleTrips	ST_TR	2.59	0.00
tblVehicleTrips	SU_TR	2.59	0.00
tblVehicleTrips	WD_TR	2.59	0.00
tblWater	IndoorWaterUseRate	430,300,750.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					

2016	9.9826	89.4878	109.4690	0.2258	18.2676	4.1361	21.2080	9.9841	3.8052	12.6892	0.0000	20,585.4843	20,585.4843	2.5896	0.0000	20,639.8661
2017	172.7624	93.7541	140.0368	0.2949	14.1453	4.6229	18.7682	3.7936	4.3799	8.1735	0.0000	26,381.4841	26,381.4841	2.1780	0.0000	26,427.2225
Total	**182.7450**	**183.2418**	**249.5058**	**0.5207**	**32.4129**	**8.7590**	**39.9762**	**13.7777**	**8.1851**	**20.8627**	**0.0000**	**46,966.9683**	**46,966.9683**	**4.7676**	**0.0000**	**47,067.0886**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	7.6535	48.3093	109.2105	0.2258	12.0087	1.8322	13.4865	3.9264	1.8319	4.8890	0.0000	20,585.4843	20,585.4843	2.5896	0.0000	20,639.8661
2017	167.4801	66.1539	142.0456	0.2949	14.1453	2.6577	16.8029	3.7936	2.6154	6.4090	0.0000	26,381.4841	26,381.4841	2.1780	0.0000	26,427.2225
Total	**175.1336**	**114.4632**	**251.2561**	**0.5207**	**26.1540**	**4.4898**	**30.2894**	**7.7200**	**4.4474**	**11.2980**	**0.0000**	**46,966.9683**	**46,966.9683**	**4.7676**	**0.0000**	**47,067.0886**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**4.17**	**37.53**	**-0.70**	**0.00**	**19.31**	**48.74**	**24.23**	**43.97**	**45.67**	**45.85**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/2/2016	6/17/2016	5	120	
2	Grading	Grading	6/18/2016	9/16/2016	5	65	
3	Building Construction	Building Construction	9/17/2016	9/19/2017	5	262	
4	Tenant Improvements - Architectural Coating	Architectural Coating	1/2/2017	6/3/2017	5	110	

5	Paving	Paving	6/1/2017	6/28/2017	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 390

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 777,000; Non-Residential Outdoor: 717,000 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	81	0.73
Grading	Off-Highway Trucks	2	4.00	400	0.38
Grading	Scrapers	6	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Trenchers	1	8.00	80	0.50
Building Construction	Welders	1	8.00	46	0.45
Tenant Improvements - Architectural Coating	Air Compressors	5	8.00	78	0.48
Paving	Pavers	2	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Grading	12	30.00	0.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	882.00	344.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Tenant Improvements - Architectural Coating	5	176.00	0.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	5.0771	54.6323	41.1053	0.0391		2.9387	2.9387		2.7036	2.7036		4,065.0053	4,065.0053	1.2262		4,090.7544
Total	**5.0771**	**54.6323**	**41.1053**	**0.0391**	**18.0663**	**2.9387**	**21.0049**	**9.9307**	**2.7036**	**12.6343**		**4,065.0053**	**4,065.0053**	**1.2262**		**4,090.7544**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	1.4000e-004	2.3100e-003	1.6200e-003	1.0000e-005	1.5000e-004	4.0000e-005	1.8000e-004	4.0000e-005	3.0000e-005	7.0000e-005		0.6200	0.6200	0.0000		0.6201
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0749	0.0937	1.1675	2.5500e-003	0.2012	1.6800e-003	0.2029	0.0534	1.5500e-003	0.0549		214.1249	214.1249	0.0110		214.3554
Total	**0.0751**	**0.0960**	**1.1692**	**2.5600e-003**	**0.2014**	**1.7200e-003**	**0.2031**	**0.0534**	**1.5800e-003**	**0.0550**		**214.7449**	**214.7449**	**0.0110**		**214.9755**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0458	0.0000	7.0458	3.8730	0.0000	3.8730			0.0000			0.0000
Off-Road	0.9515	19.4584	23.4003	0.0391		0.9611	0.9611		0.9611	0.9611	0.0000	4,065.0053	4,065.0053	1.2262		4,090.7544
Total	**0.9515**	**19.4584**	**23.4003**	**0.0391**	**7.0458**	**0.9611**	**8.0069**	**3.8730**	**0.9611**	**4.8340**	**0.0000**	**4,065.0053**	**4,065.0053**	**1.2262**		**4,090.7544**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.4000e-004	2.3100e-003	1.6200e-003	1.0000e-005	1.5000e-004	4.0000e-005	1.8000e-004	4.0000e-005	3.0000e-005	7.0000e-005		0.6200	0.6200	0.0000		0.6201
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0749	0.0937	1.1675	2.5500e-003	0.2012	1.6800e-003	0.2029	0.0534	1.5500e-003	0.0549		214.1249	214.1249	0.0110		214.3554
Total	**0.0751**	**0.0960**	**1.1692**	**2.5600e-003**	**0.2014**	**1.7200e-003**	**0.2031**	**0.0534**	**1.5800e-003**	**0.0550**		**214.7449**	**214.7449**	**0.0110**		**214.9755**

3.3 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.3630	0.0000	6.3630	0.6871	0.0000	0.6871			0.0000			0.0000
Off-Road	7.4978	89.3273	56.4406	0.0820		4.1332	4.1332		3.8026	3.8026		8,524.5489	8,524.5489	2.5713		8,578.5464
Total	**7.4978**	**89.3273**	**56.4406**	**0.0820**	**6.3630**	**4.1332**	**10.4962**	**0.6871**	**3.8026**	**4.4896**		**8,524.5489**	**8,524.5489**	**2.5713**		**8,578.5464**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.7000e-004	4.2600e-003	2.9900e-003	1.0000e-005	2.7000e-004	7.0000e-005	3.3000e-004	7.0000e-005	6.0000e-005	1.3000e-004		1.1447	1.1447	1.0000e-005		1.1449
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1249	0.1562	1.9459	4.2500e-003	0.3353	2.8000e-003	0.3381	0.0889	2.5800e-003	0.0915		356.8748	356.8748	0.0183		357.2590
Total	**0.1252**	**0.1605**	**1.9489**	**4.2600e-003**	**0.3356**	**2.8700e-003**	**0.3385**	**0.0890**	**2.6400e-003**	**0.0916**		**358.0195**	**358.0195**	**0.0183**		**358.4038**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.4816	0.0000	2.4816	0.2680	0.0000	0.2680			0.0000			0.0000
Off-Road	2.0192	40.4449	47.4355	0.0820		1.8293	1.8293		1.8293	1.8293	0.0000	8,524.5489	8,524.5489	2.5713		8,578.5463
Total	**2.0192**	**40.4449**	**47.4355**	**0.0820**	**2.4816**	**1.8293**	**4.3109**	**0.2680**	**1.8293**	**2.0973**	**0.0000**	**8,524.5489**	**8,524.5489**	**2.5713**		**8,578.5463**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.7000e-004	4.2600e-003	2.9900e-003	1.0000e-005	2.7000e-004	7.0000e-005	3.3000e-004	7.0000e-005	6.0000e-005	1.3000e-004		1.1447	1.1447	1.0000e-005		1.1449
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1249	0.1562	1.9459	4.2500e-003	0.3353	2.8000e-003	0.3381	0.0889	2.5800e-003	0.0915		356.8748	356.8748	0.0183		357.2590
Total	**0.1252**	**0.1605**	**1.9489**	**4.2600e-003**	**0.3356**	**2.8700e-003**	**0.3385**	**0.0890**	**2.6400e-003**	**0.0916**		**358.0195**	**358.0195**	**0.0183**		**358.4038**

3.4 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4372	28.5742	17.9462	0.0260		1.9667	1.9667		1.8478	1.8478		2,587.0726	2,587.0726	0.6372		2,600.4545

Total	**3.4372**	**28.5742**	**17.9462**	**0.0260**		**1.9667**	**1.9667**		**1.8478**	**1.8478**		**2,587.0726**	**2,587.0726**	**0.6372**		**2,600.4545**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.0000e-005	1.0600e-003	7.4000e-004	0.0000	1.9000e-004	2.0000e-005	2.1000e-004	5.0000e-005	2.0000e-005	6.0000e-005		0.2840	0.2840	0.0000		0.2840
Vendor	2.8736	29.8750	34.3126	0.0749	2.1499	0.4851	2.6350	0.6123	0.4461	1.0584		7,506.0094	7,506.0094	0.0539		7,507.1403
Worker	3.6718	4.5921	57.2094	0.1249	9.8587	0.0824	9.9411	2.6146	0.0758	2.6903		10,492.1183	10,492.1183	0.5379		10,503.4134
Total	**6.5454**	**34.4682**	**91.5228**	**0.1998**	**12.0087**	**0.5675**	**12.5763**	**3.2269**	**0.5219**	**3.7487**		**17,998.4117**	**17,998.4117**	**0.5917**		**18,010.8378**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1081	13.8411	17.6878	0.0260		0.9102	0.9102		0.9102	0.9102	0.0000	2,587.0726	2,587.0726	0.6372		2,600.4545
Total	**1.1081**	**13.8411**	**17.6878**	**0.0260**		**0.9102**	**0.9102**		**0.9102**	**0.9102**	**0.0000**	**2,587.0726**	**2,587.0726**	**0.6372**		**2,600.4545**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.0000e-005	1.0600e-003	7.4000e-004	0.0000	1.9000e-004	2.0000e-005	2.1000e-004	5.0000e-005	2.0000e-005	6.0000e-005		0.2840	0.2840	0.0000		0.2840
Vendor	2.8736	29.8750	34.3126	0.0749	2.1499	0.4851	2.6350	0.6123	0.4461	1.0584		7,506.0094	7,506.0094	0.0539		7,507.1403
Worker	3.6718	4.5921	57.2094	0.1249	9.8587	0.0824	9.9411	2.6146	0.0758	2.6903		10,492.1183	10,492.1183	0.5379		10,503.4134
Total	**6.5454**	**34.4682**	**91.5228**	**0.1998**	**12.0087**	**0.5675**	**12.5763**	**3.2269**	**0.5219**	**3.7487**		**17,998.4117**	**17,998.4117**	**0.5917**		**18,010.8378**

3.4 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1515	26.6276	17.5850	0.0260		1.7993	1.7993		1.6896	1.6896		2,559.2134	2,559.2134	0.6250		2,572.3385
Total	**3.1515**	**26.6276**	**17.5850**	**0.0260**		**1.7993**	**1.7993**		**1.6896**	**1.6896**		**2,559.2134**	**2,559.2134**	**0.6250**		**2,572.3385**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	6.0000e-005	9.7000e-004	7.1000e-004	0.0000	9.0000e-005	1.0000e-005	1.0000e-004	2.0000e-005	1.0000e-005	4.0000e-005		0.2793	0.2793	0.0000		0.2794
Vendor	2.6340	27.2023	32.2705	0.0748	2.1505	0.4329	2.5834	0.6125	0.3981	1.0107		7,384.5502	7,384.5502	0.0521		7,385.6439
Worker	3.3009	4.1469	51.7765	0.1249	9.8587	0.0793	9.9380	2.6146	0.0731	2.6877		10,090.5875	10,090.5875	0.4964		10,101.0118
Total	**5.9350**	**31.3502**	**84.0476**	**0.1997**	**12.0093**	**0.5122**	**12.5215**	**3.2271**	**0.4713**	**3.6984**		**17,475.4170**	**17,475.4170**	**0.5485**		**17,486.9350**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0468	13.7798	17.6308	0.0260		0.8960	0.8960		0.8960	0.8960	0.0000	2,559.2134	2,559.2134	0.6250		2,572.3385
Total	**1.0468**	**13.7798**	**17.6308**	**0.0260**		**0.8960**	**0.8960**		**0.8960**	**0.8960**	**0.0000**	**2,559.2134**	**2,559.2134**	**0.6250**		**2,572.3385**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	6.0000e-005	9.7000e-004	7.1000e-004	0.0000	9.0000e-005	1.0000e-005	1.0000e-004	2.0000e-005	1.0000e-005	4.0000e-005		0.2793	0.2793	0.0000		0.2794
Vendor	2.6340	27.2023	32.2705	0.0748	2.1505	0.4329	2.5834	0.6125	0.3981	1.0107		7,384.5502	7,384.5502	0.0521		7,385.6439
Worker	3.3009	4.1469	51.7765	0.1249	9.8587	0.0793	9.9380	2.6146	0.0731	2.6877		10,090.5875	10,090.5875	0.4964		10,101.0118
Total	**5.9350**	**31.3502**	**84.0476**	**0.1997**	**12.0093**	**0.5122**	**12.5215**	**3.2271**	**0.4713**	**3.6984**		**17,475.4170**	**17,475.4170**	**0.5485**		**17,486.9350**

3.5 Tenant Improvements - Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	157.3793					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	2.2154	14.5669	12.4538	0.0198		1.1556	1.1556		1.1556	1.1556		1,876.3203	1,876.3203	0.1981		1,880.4804
Total	**159.5947**	**14.5669**	**12.4538**	**0.0198**		**1.1556**	**1.1556**		**1.1556**	**1.1556**		**1,876.3203**	**1,876.3203**	**0.1981**		**1,880.4804**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.5000e-004	2.3100e-003	1.7000e-003	1.0000e-005	1.6000e-004	4.0000e-005	1.9000e-004	4.0000e-005	3.0000e-005	8.0000e-005		0.6653	0.6653	0.0000		0.6654
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.6587	0.8275	10.3318	0.0249	1.9673	0.0158	1.9831	0.5217	0.0146	0.5363		2,013.5413	2,013.5413	0.0991		2,015.6214
Total	**0.6588**	**0.8298**	**10.3335**	**0.0249**	**1.9674**	**0.0159**	**1.9833**	**0.5218**	**0.0146**	**0.5364**		**2,014.2066**	**2,014.2066**	**0.0991**		**2,016.2868**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	157.3793					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3962	9.0465	12.2161	0.0198		0.6339	0.6339		0.6339	0.6339	0.0000	1,876.3203	1,876.3203	0.1981		1,880.4804
Total	**157.7755**	**9.0465**	**12.2161**	**0.0198**		**0.6339**	**0.6339**		**0.6339**	**0.6339**	**0.0000**	**1,876.3203**	**1,876.3203**	**0.1981**		**1,880.4804**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.5000e-004	2.3100e-003	1.7000e-003	1.0000e-005	1.6000e-004	4.0000e-005	1.9000e-004	4.0000e-005	3.0000e-005	8.0000e-005		0.6653	0.6653	0.0000		0.6654
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.6587	0.8275	10.3318	0.0249	1.9673	0.0158	1.9831	0.5217	0.0146	0.5363		2,013.5413	2,013.5413	0.0991		2,015.6214
Total	**0.6588**	**0.8298**	**10.3335**	**0.0249**	**1.9674**	**0.0159**	**1.9833**	**0.5218**	**0.0146**	**0.5364**		**2,014.2066**	**2,014.2066**	**0.0991**		**2,016.2868**

3.6 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9074	20.2964	14.7270	0.0223		1.1384	1.1384		1.0473	1.0473		2,281.0588	2,281.0588	0.6989		2,295.7360

Paving	1.4580					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.3654**	**20.2964**	**14.7270**	**0.0223**		**1.1384**	**1.1384**		**1.0473**	**1.0473**		**2,281.0588**	**2,281.0588**	**0.6989**		**2,295.7360**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.1000e-004	0.0127	9.3300e-003	4.0000e-005	8.7000e-004	2.0000e-004	1.0700e-003	2.4000e-004	1.8000e-004	4.2000e-004		3.6593	3.6593	3.0000e-005		3.6598
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0561	0.0705	0.8806	2.1200e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2400e-003	0.0457		171.6086	171.6086	8.4400e-003		171.7859
Total	**0.0570**	**0.0832**	**0.8899**	**2.1600e-003**	**0.1685**	**1.5500e-003**	**0.1701**	**0.0447**	**1.4200e-003**	**0.0461**		**175.2679**	**175.2679**	**8.4700e-003**		**175.4457**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5490	11.0645	16.9276	0.0223		0.5982	0.5982		0.5982	0.5982	0.0000	2,281.0588	2,281.0588	0.6989		2,295.7360
Paving	1.4580					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.0070**	**11.0645**	**16.9276**	**0.0223**		**0.5982**	**0.5982**		**0.5982**	**0.5982**	**0.0000**	**2,281.0588**	**2,281.0588**	**0.6989**		**2,295.7360**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.1000e-004	0.0127	9.3300e-003	4.0000e-005	8.7000e-004	2.0000e-004	1.0700e-003	2.4000e-004	1.8000e-004	4.2000e-004		3.6593	3.6593	3.0000e-005		3.6598
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0561	0.0705	0.8806	2.1200e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2400e-003	0.0457		171.6086	171.6086	8.4400e-003		171.7859
Total	**0.0570**	**0.0832**	**0.8899**	**2.1600e-003**	**0.1685**	**1.5500e-003**	**0.1701**	**0.0447**	**1.4200e-003**	**0.0461**		**175.2679**	**175.2679**	**8.4700e-003**		**175.4457**

San Gorgonio Crossing Construction Only

South Coast Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	1,860.76	1000sqft	42.72	1,860,760.00	0
Parking Lot	1,237.00	Space	11.13	494,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Land Use Provided by Project Applicant

Construction Phase - Site preparation dates provided by CalEEMod default estimate; remainder of schedule provided by project applicant

Off-road Equipment - Equipment Inventory provided by project applicant

Off-road Equipment - Equipment Inventory provided by project applicant

Off-road Equipment - Equipment inventory provided by project applicant

Off-road Equipment - Equipment inventory provided by project applicant

Off-road Equipment - Equipment Inventory provided by project applicant

Trips and VMT - Haul trips added to account for offroad construction equipment delivery while traveling onsite

Grading -

Architectural Coating - See separate spreadsheet for estimates of architectural coating

Vehicle Trips - Construction ONLY

Vechicle Emission Factors -

Consumer Products - Construction ONLY

Area Coating - Construction ONLY

Landscape Equipment - Construction ONLY

Energy Use - Construction ONLY

Water And Wastewater - Construction ONLY

Solid Waste - Construction ONLY

Construction Off-road Equipment Mitigation - Assumed offroad construction mitigation of Tier 3. Fugitivce dust reductions required to meet SCAQMD Rule 403

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	937,802.00	717,000.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	2,813,406.00	777,000.00
tblAreaCoating	Area_Nonresidential_Exterior	937802	0
tblAreaCoating	Area_Nonresidential_Interior	2813406	0
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
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tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	75.00	110.00
tblConstructionPhase	NumDays	1,110.00	262.00
tblConstructionPhase	NumDays	110.00	65.00
tblConstructionPhase	NumDays	75.00	20.00
tblConstructionPhase	NumDays	40.00	120.00
tblConstructionPhase	PhaseEndDate	2/20/2018	6/3/2017
tblConstructionPhase	PhaseEndDate	6/30/2017	6/28/2017
tblConstructionPhase	PhaseStartDate	9/20/2017	1/2/2017
tblConstructionPhase	PhaseStartDate	6/4/2017	6/1/2017
tblConsumerProducts	ROG_EF	1.98E-05	1E-11
tblEnergyUse	LightingElect	0.88	0.00
tblEnergyUse	LightingElect	1.75	0.00
tblEnergyUse	NT24E	0.82	0.00
tblEnergyUse	NT24NG	0.03	0.00
tblEnergyUse	T24E	0.45	0.00
tblEnergyUse	T24NG	2.11	0.00
tblOffRoadEquipment	HorsePower	162.00	81.00
tblOffRoadEquipment	HorsePower	361.00	255.00

tblOffRoadEquipment	LoadFactor	0.38	0.73
tblOffRoadEquipment	LoadFactor	0.48	0.40
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2016
tblSolidWaste	SolidWasteGenerationRate	1,749.11	0.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	386.00	344.00
tblTripsAndVMT	WorkerTripNumber	989.00	882.00
tblTripsAndVMT	WorkerTripNumber	198.00	176.00
tblVehicleTrips	ST_TR	2.59	0.00
tblVehicleTrips	SU_TR	2.59	0.00
tblVehicleTrips	WD_TR	2.59	0.00
tblWater	IndoorWaterUseRate	430,300,750.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					

2016	10.3406	89.5033	111.8755	0.2174	18.2676	4.1361	21.2080	9.9841	3.8052	12.6892	0.0000	19,870.8961	19,870.8961	2.5896	0.0000	19,925.2779
2017	173.0858	94.9210	141.7357	0.2848	14.1453	4.6272	18.7724	3.7936	4.3838	8.1774	0.0000	25,555.3388	25,555.3388	2.1796	0.0000	25,601.1112
Total	**183.4265**	**184.4243**	**253.6112**	**0.5022**	**32.4129**	**8.7633**	**39.9804**	**13.7777**	**8.1890**	**20.8666**	**0.0000**	**45,426.2349**	**45,426.2349**	**4.7693**	**0.0000**	**45,526.3891**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	8.0116	49.5159	111.6171	0.2174	12.0087	1.8322	13.4915	3.9264	1.8319	4.8890	0.0000	19,870.8961	19,870.8961	2.5896	0.0000	19,925.2779
2017	167.8035	67.3209	143.7444	0.2848	14.1453	2.6619	16.8072	3.7936	2.6193	6.4129	0.0000	25,555.3388	25,555.3388	2.1796	0.0000	25,601.1112
Total	**175.8151**	**116.8368**	**255.3615**	**0.5022**	**26.1540**	**4.4941**	**30.2987**	**7.7200**	**4.4513**	**11.3019**	**0.0000**	**45,426.2349**	**45,426.2349**	**4.7693**	**0.0000**	**45,526.3891**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**4.15**	**36.65**	**-0.69**	**0.00**	**19.31**	**48.72**	**24.22**	**43.97**	**45.64**	**45.84**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0317	3.1100e-003	0.3244	2.0000e-005		1.1700e-003	1.1700e-003		1.1700e-003	1.1700e-003		0.6780	0.6780	1.9200e-003		0.7183
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0317**	**3.1100e-003**	**0.3244**	**2.0000e-005**	**0.0000**	**1.1700e-003**	**1.1700e-003**	**0.0000**	**1.1700e-003**	**1.1700e-003**		**0.6780**	**0.6780**	**1.9200e-003**	**0.0000**	**0.7183**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0317	3.1100e-003	0.3244	2.0000e-005		1.1700e-003	1.1700e-003		1.1700e-003	1.1700e-003		0.6780	0.6780	1.9200e-003		0.7183
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0317**	**3.1100e-003**	**0.3244**	**2.0000e-005**	**0.0000**	**1.1700e-003**	**1.1700e-003**	**0.0000**	**1.1700e-003**	**1.1700e-003**		**0.6780**	**0.6780**	**1.9200e-003**	**0.0000**	**0.7183**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/2/2016	6/17/2016	5	120	
2	Grading	Grading	6/18/2016	9/16/2016	5	65	
3	Building Construction	Building Construction	9/17/2016	9/19/2017	5	262	
4	Tenant Improvements - Architectural Coating	Architectural Coating	1/2/2017	6/3/2017	5	110	
5	Paving	Paving	6/1/2017	6/28/2017	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 390

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 777,000; Non-Residential Outdoor: 717,000 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	81	0.73
Grading	Off-Highway Trucks	2	4.00	400	0.38
Grading	Scrapers	6	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Trenchers	1	8.00	80	0.50
Building Construction	Welders	1	8.00	46	0.45
Tenant Improvements - Architectural Coating	Air Compressors	5	8.00	78	0.48
Paving	Pavers	2	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	12	30.00	0.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Building Construction	8	882.00	344.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Tenant Improvements - Architectural Coating	5	176.00	0.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	5.0771	54.6323	41.1053	0.0391		2.9387	2.9387		2.7036	2.7036		4,065.0053	4,065.0053	1.2262		4,090.7544
Total	**5.0771**	**54.6323**	**41.1053**	**0.0391**	**18.0663**	**2.9387**	**21.0049**	**9.9307**	**2.7036**	**12.6343**		**4,065.0053**	**4,065.0053**	**1.2262**		**4,090.7544**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.5000e-004	2.3900e-003	1.8600e-003	1.0000e-005	1.5000e-004	4.0000e-005	1.8000e-004	4.0000e-005	3.0000e-005	7.0000e-005		0.6186	0.6186	0.0000		0.6187

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0766	0.1029	1.0764	2.3900e-003	0.2012	1.6800e-003	0.2029	0.0534	1.5500e-003	0.0549		200.8251	200.8251	0.0110		201.0556
Total	**0.0768**	**0.1053**	**1.0783**	**2.4000e-003**	**0.2014**	**1.7200e-003**	**0.2031**	**0.0534**	**1.5800e-003**	**0.0550**		**201.4437**	**201.4437**	**0.0110**		**201.6743**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.0458	0.0000	7.0458	3.8730	0.0000	3.8730			0.0000			0.0000
Off-Road	0.9515	19.4584	23.4003	0.0391		0.9611	0.9611		0.9611	0.9611	0.0000	4,065.0053	4,065.0053	1.2262		4,090.7544
Total	**0.9515**	**19.4584**	**23.4003**	**0.0391**	**7.0458**	**0.9611**	**8.0069**	**3.8730**	**0.9611**	**4.8340**	**0.0000**	**4,065.0053**	**4,065.0053**	**1.2262**		**4,090.7544**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.5000e-004	2.3900e-003	1.8600e-003	1.0000e-005	1.5000e-004	4.0000e-005	1.8000e-004	4.0000e-005	3.0000e-005	7.0000e-005		0.6186	0.6186	0.0000		0.6187
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0766	0.1029	1.0764	2.3900e-003	0.2012	1.6800e-003	0.2029	0.0534	1.5500e-003	0.0549		200.8251	200.8251	0.0110		201.0556
Total	**0.0768**	**0.1053**	**1.0783**	**2.4000e-003**	**0.2014**	**1.7200e-003**	**0.2031**	**0.0534**	**1.5800e-003**	**0.0550**		**201.4437**	**201.4437**	**0.0110**		**201.6743**

3.3 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.3630	0.0000	6.3630	0.6871	0.0000	0.6871			0.0000			0.0000
Off-Road	7.4978	89.3273	56.4406	0.0820		4.1332	4.1332		3.8026	3.8026		8,524.5489	8,524.5489	2.5713		8,578.5464
Total	**7.4978**	**89.3273**	**56.4406**	**0.0820**	**6.3630**	**4.1332**	**10.4962**	**0.6871**	**3.8026**	**4.4896**		**8,524.5489**	**8,524.5489**	**2.5713**		**8,578.5464**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.8000e-004	4.4100e-003	3.4300e-003	1.0000e-005	2.7000e-004	7.0000e-005	3.3000e-004	7.0000e-005	6.0000e-005	1.3000e-004		1.1420	1.1420	1.0000e-005		1.1421
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1277	0.1716	1.7940	3.9800e-003	0.3353	2.8000e-003	0.3381	0.0889	2.5800e-003	0.0915		334.7086	334.7086	0.0183		335.0927
Total	**0.1280**	**0.1760**	**1.7974**	**3.9900e-003**	**0.3356**	**2.8700e-003**	**0.3385**	**0.0890**	**2.6400e-003**	**0.0916**		**335.8505**	**335.8505**	**0.0183**		**336.2349**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Fugitive Dust					2.4816	0.0000	2.4816	0.2680	0.0000	0.2680			0.0000			0.0000
Off-Road	2.0192	40.4449	47.4355	0.0820		1.8293	1.8293		1.8293	1.8293	0.0000	8,524.5489	8,524.5489	2.5713		8,578.5463
Total	**2.0192**	**40.4449**	**47.4355**	**0.0820**	**2.4816**	**1.8293**	**4.3109**	**0.2680**	**1.8293**	**2.0973**	**0.0000**	**8,524.5489**	**8,524.5489**	**2.5713**		**8,578.5463**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.8000e-004	4.4100e-003	3.4300e-003	1.0000e-005	2.7000e-004	7.0000e-005	3.3000e-004	7.0000e-005	6.0000e-005	1.3000e-004		1.1420	1.1420	1.0000e-005		1.1421
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1277	0.1716	1.7940	3.9800e-003	0.3353	2.8000e-003	0.3381	0.0889	2.5800e-003	0.0915		334.7086	334.7086	0.0183		335.0927
Total	**0.1280**	**0.1760**	**1.7974**	**3.9900e-003**	**0.3356**	**2.8700e-003**	**0.3385**	**0.0890**	**2.6400e-003**	**0.0916**		**335.8505**	**335.8505**	**0.0183**		**336.2349**

3.4 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4372	28.5742	17.9462	0.0260		1.9667	1.9667		1.8478	1.8478		2,587.0726	2,587.0726	0.6372		2,600.4545
Total	**3.4372**	**28.5742**	**17.9462**	**0.0260**		**1.9667**	**1.9667**		**1.8478**	**1.8478**		**2,587.0726**	**2,587.0726**	**0.6372**		**2,600.4545**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.0000e-005	1.0900e-003	8.5000e-004	0.0000	1.9000e-004	2.0000e-005	2.1000e-004	5.0000e-005	2.0000e-005	6.0000e-005		0.2833	0.2833	0.0000		0.2834
Vendor	3.1497	30.6296	41.1847	0.0743	2.1499	0.4901	2.6400	0.6123	0.4507	1.0630		7,443.1089	7,443.1089	0.0555		7,444.2733
Worker	3.7537	5.0442	52.7438	0.1171	9.8587	0.0824	9.9411	2.6146	0.0758	2.6903		9,840.4313	9,840.4313	0.5379		9,851.7265
Total	**6.9035**	**35.6748**	**93.9293**	**0.1914**	**12.0087**	**0.5725**	**12.5813**	**3.2269**	**0.5265**	**3.7534**		**17,283.8235**	**17,283.8235**	**0.5933**		**17,296.2832**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1081	13.8411	17.6878	0.0260		0.9102	0.9102		0.9102	0.9102	0.0000	2,587.0726	2,587.0726	0.6372		2,600.4545
Total	**1.1081**	**13.8411**	**17.6878**	**0.0260**		**0.9102**	**0.9102**		**0.9102**	**0.9102**	**0.0000**	**2,587.0726**	**2,587.0726**	**0.6372**		**2,600.4545**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.0000e-005	1.0900e-003	8.5000e-004	0.0000	1.9000e-004	2.0000e-005	2.1000e-004	5.0000e-005	2.0000e-005	6.0000e-005		0.2833	0.2833	0.0000		0.2834
Vendor	3.1497	30.6296	41.1847	0.0743	2.1499	0.4901	2.6400	0.6123	0.4507	1.0630		7,443.1089	7,443.1089	0.0555		7,444.2733
Worker	3.7537	5.0442	52.7438	0.1171	9.8587	0.0824	9.9411	2.6146	0.0758	2.6903		9,840.4313	9,840.4313	0.5379		9,851.7265
Total	**6.9035**	**35.6748**	**93.9293**	**0.1914**	**12.0087**	**0.5725**	**12.5813**	**3.2269**	**0.5265**	**3.7534**		**17,283.8235**	**17,283.8235**	**0.5933**		**17,296.2832**

3.4 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1515	26.6276	17.5850	0.0260		1.7993	1.7993		1.6896	1.6896		2,559.2134	2,559.2134	0.6250		2,572.3385
Total	**3.1515**	**26.6276**	**17.5850**	**0.0260**		**1.7993**	**1.7993**		**1.6896**	**1.6896**		**2,559.2134**	**2,559.2134**	**0.6250**		**2,572.3385**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	7.0000e-005	1.0000e-003	8.2000e-004	0.0000	9.0000e-005	1.0000e-005	1.0000e-004	2.0000e-005	1.0000e-005	4.0000e-005		0.2787	0.2787	0.0000		0.2787
Vendor	2.8770	27.8734	39.0981	0.0743	2.1505	0.4371	2.5877	0.6125	0.4021	1.0146		7,322.5171	7,322.5171	0.0537		7,323.6448
Worker	3.3671	4.5541	47.5592	0.1170	9.8587	0.0793	9.9380	2.6146	0.0731	2.6877		9,462.5006	9,462.5006	0.4964		9,472.9249
Total	**6.2441**	**32.4284**	**86.6581**	**0.1913**	**12.0093**	**0.5164**	**12.5257**	**3.2271**	**0.4752**	**3.7023**		**16,785.2963**	**16,785.2963**	**0.5501**		**16,796.8483**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0468	13.7798	17.6308	0.0260		0.8960	0.8960		0.8960	0.8960	0.0000	2,559.2134	2,559.2134	0.6250		2,572.3385
Total	**1.0468**	**13.7798**	**17.6308**	**0.0260**		**0.8960**	**0.8960**		**0.8960**	**0.8960**	**0.0000**	**2,559.2134**	**2,559.2134**	**0.6250**		**2,572.3385**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.0000e-005	1.0000e-003	8.2000e-004	0.0000	9.0000e-005	1.0000e-005	1.0000e-004	2.0000e-005	1.0000e-005	4.0000e-005		0.2787	0.2787	0.0000		0.2787
Vendor	2.8770	27.8734	39.0981	0.0743	2.1505	0.4371	2.5877	0.6125	0.4021	1.0146		7,322.5171	7,322.5171	0.0537		7,323.6448
Worker	3.3671	4.5541	47.5592	0.1170	9.8587	0.0793	9.9380	2.6146	0.0731	2.6877		9,462.5006	9,462.5006	0.4964		9,472.9249
Total	**6.2441**	**32.4284**	**86.6581**	**0.1913**	**12.0093**	**0.5164**	**12.5257**	**3.2271**	**0.4752**	**3.7023**		**16,785.2963**	**16,785.2963**	**0.5501**		**16,796.8483**

3.5 Tenant Improvements - Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	157.3793					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	2.2154	14.5669	12.4538	0.0198		1.1556	1.1556		1.1556	1.1556		1,876.3203	1,876.3203	0.1981		1,880.4804
Total	**159.5947**	**14.5669**	**12.4538**	**0.0198**		**1.1556**	**1.1556**		**1.1556**	**1.1556**		**1,876.3203**	**1,876.3203**	**0.1981**		**1,880.4804**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.6000e-004	2.3900e-003	1.9600e-003	1.0000e-005	1.6000e-004	4.0000e-005	1.9000e-004	4.0000e-005	3.0000e-005	8.0000e-005		0.6637	0.6637	0.0000		0.6638
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.6719	0.9088	9.4903	0.0234	1.9673	0.0158	1.9831	0.5217	0.0146	0.5363		1,888.2087	1,888.2087	0.0991		1,890.2889
Total	**0.6720**	**0.9111**	**9.4922**	**0.0234**	**1.9674**	**0.0159**	**1.9833**	**0.5218**	**0.0146**	**0.5364**		**1,888.8725**	**1,888.8725**	**0.0991**		**1,890.9527**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	157.3793					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3962	9.0465	12.2161	0.0198		0.6339	0.6339		0.6339	0.6339	0.0000	1,876.3203	1,876.3203	0.1981		1,880.4804
Total	**157.7755**	**9.0465**	**12.2161**	**0.0198**		**0.6339**	**0.6339**		**0.6339**	**0.6339**	**0.0000**	**1,876.3203**	**1,876.3203**	**0.1981**		**1,880.4804**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.6000e-004	2.3900e-003	1.9600e-003	1.0000e-005	1.6000e-004	4.0000e-005	1.9000e-004	4.0000e-005	3.0000e-005	8.0000e-005		0.6637	0.6637	0.0000		0.6638
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.6719	0.9088	9.4903	0.0234	1.9673	0.0158	1.9831	0.5217	0.0146	0.5363		1,888.2087	1,888.2087	0.0991		1,890.2889
Total	**0.6720**	**0.9111**	**9.4922**	**0.0234**	**1.9674**	**0.0159**	**1.9833**	**0.5218**	**0.0146**	**0.5364**		**1,888.8725**	**1,888.8725**	**0.0991**		**1,890.9527**

3.6 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9074	20.2964	14.7270	0.0223		1.1384	1.1384		1.0473	1.0473		2,281.0588	2,281.0588	0.6989		2,295.7360

Paving	1.4580					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.3654**	**20.2964**	**14.7270**	**0.0223**		**1.1384**	**1.1384**		**1.0473**	**1.0473**		**2,281.0588**	**2,281.0588**	**0.6989**		**2,295.7360**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.6000e-004	0.0132	0.0108	4.0000e-005	8.7000e-004	2.0000e-004	1.0700e-003	2.4000e-004	1.8000e-004	4.2000e-004		3.6506	3.6506	3.0000e-005		3.6511
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0573	0.0775	0.8088	1.9900e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2400e-003	0.0457		160.9269	160.9269	8.4400e-003		161.1042
Total	**0.0581**	**0.0906**	**0.8196**	**2.0300e-003**	**0.1685**	**1.5500e-003**	**0.1701**	**0.0447**	**1.4200e-003**	**0.0461**		**164.5775**	**164.5775**	**8.4700e-003**		**164.7553**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5490	11.0645	16.9276	0.0223		0.5982	0.5982		0.5982	0.5982	0.0000	2,281.0588	2,281.0588	0.6989		2,295.7360
Paving	1.4580					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.0070**	**11.0645**	**16.9276**	**0.0223**		**0.5982**	**0.5982**		**0.5982**	**0.5982**	**0.0000**	**2,281.0588**	**2,281.0588**	**0.6989**		**2,295.7360**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	8.6000e-004	0.0132	0.0108	4.0000e-005	8.7000e-004	2.0000e-004	1.0700e-003	2.4000e-004	1.8000e-004	4.2000e-004		3.6506	3.6506	3.0000e-005		3.6511
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0573	0.0775	0.8088	1.9900e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2400e-003	0.0457		160.9269	160.9269	8.4400e-003		161.1042
Total	**0.0581**	**0.0906**	**0.8196**	**2.0300e-003**	**0.1685**	**1.5500e-003**	**0.1701**	**0.0447**	**1.4200e-003**	**0.0461**		**164.5775**	**164.5775**	**8.4700e-003**		**164.7553**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	16.60	8.40	6.90	59.00	0.00	41.00	92	5	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.514315	0.060290	0.180146	0.139458	0.042007	0.006636	0.015782	0.029894	0.001929	0.002512	0.004343	0.000595	0.002093

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Unmitigated	0.0317	3.1100e-003	0.3244	2.0000e-005		1.1700e-003	1.1700e-003		1.1700e-003	1.1700e-003		0.6780	0.6780	1.9200e-003		0.7183

Mitigated	0.0317	3.1100e-003	0.3244	2.0000e-005		1.1700e-003	1.1700e-003		1.1700e-003	1.1700e-003		0.6780	0.6780	1.9200e-003		0.7183

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0316	3.1100e-003	0.3244	2.0000e-005		1.1700e-003	1.1700e-003		1.1700e-003	1.1700e-003		0.6780	0.6780	1.9200e-003		0.7183
Total	**0.0317**	**3.1100e-003**	**0.3244**	**2.0000e-005**		**1.1700e-003**	**1.1700e-003**		**1.1700e-003**	**1.1700e-003**		**0.6780**	**0.6780**	**1.9200e-003**		**0.7183**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0316	3.1100e-003	0.3244	2.0000e-005		1.1700e-003	1.1700e-003		1.1700e-003	1.1700e-003		0.6780	0.6780	1.9200e-003		0.7183
Total	**0.0317**	**3.1100e-003**	**0.3244**	**2.0000e-005**		**1.1700e-003**	**1.1700e-003**		**1.1700e-003**	**1.1700e-003**		**0.6780**	**0.6780**	**1.9200e-003**		**0.7183**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

San Gorgonio Crossing Heavy Duty Trucks - 2017

South Coast Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	1,860.76	1000sqft	42.72	1,860,760.00	0
Parking Lot	1,237.00	Space	11.13	494,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - San Gorgonio Project Description

Construction Phase - OPerations only for heavy duty trucks

Off-road Equipment - Operation only for heavy duty trucks

Trips and VMT - HDT operations ONLY

Vehicle Trips - San Gorgonio Crossing Daily truck trip rate. Considers only LHDT1, LHDT2, MHDT, and HHDT

Vechicle Emission Factors - Fleet mix for LHDT1, LHDT2, MHDT, and HHDT

Vechicle Emission Factors - Fleet mix for LHDT1, LHDT2, MHDT, and HHDT

Vechicle Emission Factors - Fleet mix for LHDT1, LHDT2, MHDT, and HHDT

Road Dust - Paved road dust for major arterial collector (silt loading 0.035 g/m2) and LHDT1, LHDT2, MHDT, and HHDT average vehicle weight

Consumer Products - Heavy Duty Trucks Only

Area Coating - Operations only diesel truck trips

Landscape Equipment - Heavy Duty Trucks Only

Energy Use - Operations only heavy duty trucks

Water And Wastewater - Operations only - heavy duty trucks

Solid Waste - Heavy Duty Trucks Only

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	0
tblAreaCoating	Area_Nonresidential_Exterior	937802	0
tblAreaCoating	Area_Nonresidential_Interior	2813406	0
tblConstructionPhase	NumDays	40.00	1.00
tblConsumerProducts	ROG_EF	1.98E-05	1E-11
tblEnergyUse	LightingElect	0.88	0.00
tblEnergyUse	LightingElect	1.75	0.00
tblEnergyUse	NT24E	0.82	0.00
tblEnergyUse	NT24NG	0.03	0.00
tblEnergyUse	T24E	0.45	0.00
tblEnergyUse	T24NG	2.11	0.00
tblOffRoadEquipment	LoadFactor	0.41	0.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblRoadDust	MobileAverageVehicleWeight	2.4	20
tblRoadDust	RoadSiltLoading	0.1	0
tblSolidWaste	SolidWasteGenerationRate	1,749.11	0.00
tblVehicleEF	HHD	0.03	0.60
tblVehicleEF	HHD	0.03	0.60
tblVehicleEF	HHD	0.03	0.60
tblVehicleEF	LDA	0.51	0.00
tblVehicleEF	LDA	0.51	0.00
tblVehicleEF	LDA	0.51	0.00
tblVehicleEF	LDT1	0.06	0.00

tblVehicleEF	LDT1	0.06	0.00
tblVehicleEF	LDT1	0.06	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LHD1	0.04	0.17
tblVehicleEF	LHD1	0.04	0.17
tblVehicleEF	LHD1	0.04	0.17
tblVehicleEF	LHD2	6.6300e-003	0.05
tblVehicleEF	LHD2	6.6300e-003	0.05
tblVehicleEF	LHD2	6.6300e-003	0.05
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MDV	0.14	0.00
tblVehicleEF	MDV	0.14	0.00
tblVehicleEF	MDV	0.14	0.00
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MHD	0.02	0.18
tblVehicleEF	MHD	0.02	0.18
tblVehicleEF	MHD	0.02	0.18
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	UBUS	2.5060e-003	0.00

tblVehicleEF	UBUS	2.5060e-003	0.00
tblVehicleEF	UBUS	2.5060e-003	0.00
tblVehicleTrips	CC_TL	8.40	40.00
tblVehicleTrips	CNW_TL	6.90	40.00
tblVehicleTrips	CNW_TTP	41.00	0.00
tblVehicleTrips	CW_TL	16.60	40.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	ST_TR	2.59	0.64
tblVehicleTrips	SU_TR	2.59	0.64
tblVehicleTrips	WD_TR	2.59	0.64
tblWater	IndoorWaterUseRate	430,300,750.00	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	4.4600	77.7546	46.4697	0.2311	1.6431	1.2098	2.8529	0.6247	1.1130	1.7377	0.0000	20,740.0327	20,740.0327	0.1738	0.0000	20,743.6827
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.4600**	**77.7546**	**46.4697**	**0.2311**	**1.6431**	**1.2098**	**2.8529**	**0.6247**	**1.1130**	**1.7377**	**0.0000**	**20,740.0327**	**20,740.0327**	**0.1738**	**0.0000**	**20,743.6827**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	4.4600	77.7546	46.4697	0.2311	1.6431	1.2098	2.8529	0.6247	1.1130	1.7377	0.0000	20,740.0327	20,740.0327	0.1738	0.0000	20,743.6827
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.4600**	**77.7546**	**46.4697**	**0.2311**	**1.6431**	**1.2098**	**2.8529**	**0.6247**	**1.1130**	**1.7377**	**0.0000**	**20,740.0327**	**20,740.0327**	**0.1738**	**0.0000**	**20,743.6827**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.4600	77.7546	46.4697	0.2311	1.6431	1.2098	2.8529	0.6247	1.1130	1.7377	0.0000	20,740.0327	20,740.0327	0.1738	0.0000	20,743.6827

Unmitigated	4.4600	77.7546	46.4697	0.2311	1.6431	1.2098	2.8529	0.6247	1.1130	1.7377	0.0000	20,740.0327	20,740.0327	0.1738	0.0000	20,743.6827

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	1,190.89	1,190.89	1190.89	16,170,203	16,170,203
Total	1,190.89	1,190.89	1,190.89	16,170,203	16,170,203

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	40.00	40.00	40.00	100.00	0.00	0.00	92	5	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.000000	0.000000	0.000000	0.000000	0.168000	0.052000	0.177000	0.603000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Mitigated	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e

Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Unmitigated	0.0000	0.0000	0.0000	0.0000
Mitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000

Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

San Gorgonio Crossing - HDT Vehicle Classes with Mitigation - 2017

South Coast Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	1,860.76	1000sqft	42.72	1,860,760.00	0
Parking Lot	1,237.00	Space	11.13	494,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Land use taken from project description

Construction Phase - Project HDT operations ONLY

Off-road Equipment - Project HDT operations ONLY

Vehicle Trips - Trip generation rate taken from the project traffic sudy; trip length based on guidance from the SCAQMD regaring trip lengths for warehouses

Vechicle Emission Factors - Fleet mix derived from the project traffic study; HHDT emission factors reflect MY2007 rates

Vechicle Emission Factors - Fleet mix derived from the project traffic study; HHDT emission factors reflect MY2007 rates

Vechicle Emission Factors - Fleet mix derived from the project traffic study; HHDT emission factors reflect MY2007 rates

Road Dust - Road silt loading for a major arterial collector roadway; average vehicle weight for the HDT vehicle classes

Consumer Products - Project HDT operations ONLY

Area Coating - Project HDT operations ONLY

Landscape Equipment - Project HDT operations ONLY

Energy Use - Project HDT operations ONLY

Water And Wastewater - Project HDT operations ONLY

Solid Waste - Project HDT operations ONLY

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	934508	0
tblAreaCoating	Area_Nonresidential_Interior	2803524	0
tblConstructionPhase	NumDays	30.00	1.00
tblConstructionPhase	PhaseEndDate	1/1/2016	1/2/2016
tblConsumerProducts	ROG_EF	1.98E-05	1E-12
tblEnergyUse	LightingElect	0.88	0.00
tblEnergyUse	LightingElect	1.75	0.00
tblEnergyUse	NT24E	0.82	0.00
tblEnergyUse	NT24NG	0.03	0.00
tblEnergyUse	T24E	0.45	0.00
tblEnergyUse	T24NG	2.11	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblRoadDust	MobileAverageVehicleWeight	2.4	20
tblRoadDust	RoadSiltLoading	0.1	0
tblSolidWaste	SolidWasteGenerationRate	1,749.11	0.00
tblVehicleEF	HHD	2.88	3.03
tblVehicleEF	HHD	1.74	1.35
tblVehicleEF	HHD	1,619.40	1,710.00
tblVehicleEF	HHD	0.03	0.60
tblVehicleEF	HHD	5.63	3.28
tblVehicleEF	HHD	0.24	0.25
tblVehicleEF	HHD	0.28	0.28

tblVehicleEF	HHD	1.75	1.35
tblVehicleEF	HHD	1,619.40	1,719.00
tblVehicleEF	HHD	0.03	0.60
tblVehicleEF	HHD	5.32	3.44
tblVehicleEF	HHD	0.24	0.26
tblVehicleEF	HHD	0.28	0.30
tblVehicleEF	HHD	1.74	1.35
tblVehicleEF	HHD	1,619.40	1,719.00
tblVehicleEF	HHD	0.03	0.60
tblVehicleEF	HHD	5.54	3.58
tblVehicleEF	HHD	0.24	0.26
tblVehicleEF	HHD	0.28	0.30
tblVehicleEF	LDA	0.51	0.00
tblVehicleEF	LDA	0.51	0.00
tblVehicleEF	LDA	0.51	0.00
tblVehicleEF	LDT1	0.06	0.00
tblVehicleEF	LDT1	0.06	0.00
tblVehicleEF	LDT1	0.06	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LHD1	0.04	0.17
tblVehicleEF	LHD1	0.04	0.17
tblVehicleEF	LHD1	0.04	0.17
tblVehicleEF	LHD2	6.6300e-003	0.05
tblVehicleEF	LHD2	6.6300e-003	0.05
tblVehicleEF	LHD2	6.6300e-003	0.05
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MCY	4.3480e-003	0.00

tblVehicleEF	MDV	0.14	0.00
tblVehicleEF	MDV	0.14	0.00
tblVehicleEF	MDV	0.14	0.00
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MHD	0.02	0.18
tblVehicleEF	MHD	0.02	0.18
tblVehicleEF	MHD	0.02	0.18
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	UBUS	2.5060e-003	0.00
tblVehicleEF	UBUS	2.5060e-003	0.00
tblVehicleEF	UBUS	2.5060e-003	0.00
tblVehicleTrips	CC_TL	8.40	40.00
tblVehicleTrips	CNW_TL	6.90	40.00
tblVehicleTrips	CW_TL	16.60	40.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	2.59	0.64
tblVehicleTrips	SU_TR	2.59	0.64
tblVehicleTrips	WD_TR	2.59	0.64
tblWater	IndoorWaterUseRate	430,300,750.00	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	4.7601	56.1598	43.9890	0.2476	1.7619	1.2969	3.0588	0.6699	1.1931	1.8630	0.0000	23,170.1628	23,170.1628	0.1857	0.0000	23,174.0629
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.7601**	**56.1598**	**43.9890**	**0.2476**	**1.7619**	**1.2969**	**3.0588**	**0.6699**	**1.1931**	**1.8630**	**0.0000**	**23,170.1628**	**23,170.1628**	**0.1857**	**0.0000**	**23,174.0629**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	4.7601	56.1598	43.9890	0.2476	1.7619	1.2969	3.0588	0.6699	1.1931	1.8630	0.0000	23,170.1628	23,170.1628	0.1857	0.0000	23,174.0629
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Total	**4.7601**	**56.1598**	**43.9890**	**0.2476**	**1.7619**	**1.2969**	**3.0588**	**0.6699**	**1.1931**	**1.8630**	**0.0000**	**23,170.1628**	**23,170.1628**	**0.1857**	**0.0000**	**23,174.0629**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.7601	56.1598	43.9890	0.2476	1.7619	1.2969	3.0588	0.6699	1.1931	1.8630	0.0000	23,170.1628	23,170.1628	0.1857	0.0000	23,174.0629
Unmitigated	4.7601	56.1598	43.9890	0.2476	1.7619	1.2969	3.0588	0.6699	1.1931	1.8630	0.0000	23,170.1628	23,170.1628	0.1857	0.0000	23,174.0629

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	1,190.89	1,190.89	1190.89	17,339,306	17,339,306
Total	1,190.89	1,190.89	1,190.89	17,339,306	17,339,306

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

Unrefrigerated Warehouse-No	40.00	40.00	40.00	59.00	0.00	41.00	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.000000	0.000000	0.000000	0.000000	0.168000	0.052000	0.177000	0.603000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					

Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**					**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Unmitigated	0.0000	0.0000	0.0000	0.0000
Mitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			

Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

San Gorgonio Crossing Heavy Duty Trucks - 2017

South Coast Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	1,860.76	1000sqft	42.72	1,860,760.00	0
Parking Lot	1,237.00	Space	11.13	494,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - San Gorgonio Project Description

Construction Phase - OPerations only for heavy duty trucks

Off-road Equipment - Operation only for heavy duty trucks

Trips and VMT - HDT operations ONLY

Vehicle Trips - San Gorgonio Crossing Daily truck trip rate. Considers only LHDT1, LHDT2, MHDT, and HHDT

Vechicle Emission Factors - Fleet mix for LHDT1, LHDT2, MHDT, and HHDT

Vechicle Emission Factors - Fleet mix for LHDT1, LHDT2, MHDT, and HHDT

Vechicle Emission Factors - Fleet mix for LHDT1, LHDT2, MHDT, and HHDT

Road Dust - Paved road dust for major arterial collector (silt loading 0.035 g/m2) and LHDT1, LHDT2, MHDT, and HHDT average vehicle weight

Consumer Products - Heavy Duty Trucks Only

Area Coating - Operations only diesel truck trips

Landscape Equipment - Heavy Duty Trucks Only

Energy Use - Operations only heavy duty trucks

Water And Wastewater - Operations only - heavy duty trucks

Solid Waste - Heavy Duty Trucks Only

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	0
tblAreaCoating	Area_Nonresidential_Exterior	937802	0
tblAreaCoating	Area_Nonresidential_Interior	2813406	0
tblConstructionPhase	NumDays	40.00	1.00
tblConsumerProducts	ROG_EF	1.98E-05	1E-11
tblEnergyUse	LightingElect	0.88	0.00
tblEnergyUse	LightingElect	1.75	0.00
tblEnergyUse	NT24E	0.82	0.00
tblEnergyUse	NT24NG	0.03	0.00
tblEnergyUse	T24E	0.45	0.00
tblEnergyUse	T24NG	2.11	0.00
tblOffRoadEquipment	LoadFactor	0.41	0.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblRoadDust	MobileAverageVehicleWeight	2.4	20
tblRoadDust	RoadSiltLoading	0.1	0
tblSolidWaste	SolidWasteGenerationRate	1,749.11	0.00
tblVehicleEF	HHD	0.03	0.60
tblVehicleEF	HHD	0.03	0.60
tblVehicleEF	HHD	0.03	0.60
tblVehicleEF	LDA	0.51	0.00
tblVehicleEF	LDA	0.51	0.00
tblVehicleEF	LDA	0.51	0.00
tblVehicleEF	LDT1	0.06	0.00

tblVehicleEF	LDT1	0.06	0.00
tblVehicleEF	LDT1	0.06	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LHD1	0.04	0.17
tblVehicleEF	LHD1	0.04	0.17
tblVehicleEF	LHD1	0.04	0.17
tblVehicleEF	LHD2	6.6300e-003	0.05
tblVehicleEF	LHD2	6.6300e-003	0.05
tblVehicleEF	LHD2	6.6300e-003	0.05
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MDV	0.14	0.00
tblVehicleEF	MDV	0.14	0.00
tblVehicleEF	MDV	0.14	0.00
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MHD	0.02	0.18
tblVehicleEF	MHD	0.02	0.18
tblVehicleEF	MHD	0.02	0.18
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	UBUS	2.5060e-003	0.00

tblVehicleEF	UBUS	2.5060e-003	0.00
tblVehicleEF	UBUS	2.5060e-003	0.00
tblVehicleTrips	CC_TL	8.40	40.00
tblVehicleTrips	CNW_TL	6.90	40.00
tblVehicleTrips	CNW_TTP	41.00	0.00
tblVehicleTrips	CW_TL	16.60	40.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	ST_TR	2.59	0.64
tblVehicleTrips	SU_TR	2.59	0.64
tblVehicleTrips	WD_TR	2.59	0.64
tblWater	IndoorWaterUseRate	430,300,750.00	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	23.9943	404.6414	236.5700	1.2716	9.0280	6.6513	15.6793	3.4324	6.1189	9.5513		125,833.8370	125,833.8370	1.0516		125,855.9200
Total	**24.0254**	**404.6444**	**236.8922**	**1.2717**	**9.0280**	**6.6525**	**15.6805**	**3.4324**	**6.1201**	**9.5525**		**125,834.5149**	**125,834.5149**	**1.0535**	**0.0000**	**125,856.6376**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	23.9943	404.6414	236.5700	1.2716	9.0280	6.6513	15.6793	3.4324	6.1189	9.5513		125,833.8370	125,833.8370	1.0516		125,855.9200
Total	**24.0254**	**404.6444**	**236.8922**	**1.2717**	**9.0280**	**6.6525**	**15.6805**	**3.4324**	**6.1201**	**9.5525**		**125,834.5149**	**125,834.5149**	**1.0535**	**0.0000**	**125,856.6376**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	23.9943	404.6414	236.5700	1.2716	9.0280	6.6513	15.6793	3.4324	6.1189	9.5513		125,833.8370	125,833.8370	1.0516		125,855.9200
Unmitigated	23.9943	404.6414	236.5700	1.2716	9.0280	6.6513	15.6793	3.4324	6.1189	9.5513		125,833.8370	125,833.8370	1.0516		125,855.9200

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	1,190.89	1,190.89	1190.89	16,170,203	16,170,203
Total	1,190.89	1,190.89	1,190.89	16,170,203	16,170,203

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	40.00	40.00	40.00	100.00	0.00	0.00	92	5	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.000000	0.000000	0.000000	0.000000	0.168000	0.052000	0.177000	0.603000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Mitigated	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Unmitigated	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Total	**0.0311**	**3.0500e-003**	**0.3223**	**2.0000e-005**		**1.1600e-003**	**1.1600e-003**		**1.1600e-003**	**1.1600e-003**		**0.6780**	**0.6780**	**1.8900e-003**		**0.7176**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176

Total	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

San Gorgonio Crossing - HDT Vehicle Classes with Mitigation - 2017

South Coast Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	1,860.76	1000sqft	42.72	1,860,760.00	0
Parking Lot	1,237.00	Space	11.13	494,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Land use taken from project description

Construction Phase - Project HDT operations ONLY

Off-road Equipment - Project HDT operations ONLY

Vehicle Trips - Trip generation rate taken from the project traffic sudy; trip length based on guidance from the SCAQMD regaring trip lengths for warehouses

Vechicle Emission Factors - Fleet mix derived from the project traffic study; HHDT emission factors reflect MY2007 rates

Vechicle Emission Factors - Fleet mix derived from the project traffic study; HHDT emission factors reflect MY2007 rates

Vechicle Emission Factors - Fleet mix derived from the project traffic study; HHDT emission factors reflect MY2007 rates

Road Dust - Road silt loading for a major arterial collector roadway; average vehicle weight for the HDT vehicle classes

Consumer Products - Project HDT operations ONLY

Area Coating - Project HDT operations ONLY

Landscape Equipment - Project HDT operations ONLY

Energy Use - Project HDT operations ONLY

Water And Wastewater - Project HDT operations ONLY

Solid Waste - Project HDT operations ONLY

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Exterior	934508	0
tblAreaCoating	Area_Nonresidential_Interior	2803524	0
tblConstructionPhase	NumDays	30.00	1.00
tblConstructionPhase	PhaseEndDate	1/1/2016	1/2/2016
tblConsumerProducts	ROG_EF	1.98E-05	1E-12
tblEnergyUse	LightingElect	0.88	0.00
tblEnergyUse	LightingElect	1.75	0.00
tblEnergyUse	NT24E	0.82	0.00
tblEnergyUse	NT24NG	0.03	0.00
tblEnergyUse	T24E	0.45	0.00
tblEnergyUse	T24NG	2.11	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblRoadDust	MobileAverageVehicleWeight	2.4	20
tblRoadDust	RoadSiltLoading	0.1	0
tblSolidWaste	SolidWasteGenerationRate	1,749.11	0.00
tblVehicleEF	HHD	2.88	3.03
tblVehicleEF	HHD	1.74	1.35
tblVehicleEF	HHD	1,619.40	1,710.00
tblVehicleEF	HHD	0.03	0.60
tblVehicleEF	HHD	5.63	3.28
tblVehicleEF	HHD	0.24	0.25
tblVehicleEF	HHD	0.28	0.28

tblVehicleEF	HHD	1.75	1.35
tblVehicleEF	HHD	1,619.40	1,719.00
tblVehicleEF	HHD	0.03	0.60
tblVehicleEF	HHD	5.32	3.44
tblVehicleEF	HHD	0.24	0.26
tblVehicleEF	HHD	0.28	0.30
tblVehicleEF	HHD	1.74	1.35
tblVehicleEF	HHD	1,619.40	1,719.00
tblVehicleEF	HHD	0.03	0.60
tblVehicleEF	HHD	5.54	3.58
tblVehicleEF	HHD	0.24	0.26
tblVehicleEF	HHD	0.28	0.30
tblVehicleEF	LDA	0.51	0.00
tblVehicleEF	LDA	0.51	0.00
tblVehicleEF	LDA	0.51	0.00
tblVehicleEF	LDT1	0.06	0.00
tblVehicleEF	LDT1	0.06	0.00
tblVehicleEF	LDT1	0.06	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LHD1	0.04	0.17
tblVehicleEF	LHD1	0.04	0.17
tblVehicleEF	LHD1	0.04	0.17
tblVehicleEF	LHD2	6.6300e-003	0.05
tblVehicleEF	LHD2	6.6300e-003	0.05
tblVehicleEF	LHD2	6.6300e-003	0.05
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MCY	4.3480e-003	0.00

tblVehicleEF	MDV	0.14	0.00
tblVehicleEF	MDV	0.14	0.00
tblVehicleEF	MDV	0.14	0.00
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MHD	0.02	0.18
tblVehicleEF	MHD	0.02	0.18
tblVehicleEF	MHD	0.02	0.18
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	UBUS	2.5060e-003	0.00
tblVehicleEF	UBUS	2.5060e-003	0.00
tblVehicleEF	UBUS	2.5060e-003	0.00
tblVehicleTrips	CC_TL	8.40	40.00
tblVehicleTrips	CNW_TL	6.90	40.00
tblVehicleTrips	CW_TL	16.60	40.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	2.59	0.64
tblVehicleTrips	SU_TR	2.59	0.64
tblVehicleTrips	WD_TR	2.59	0.64
tblWater	IndoorWaterUseRate	430,300,750.00	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	26.6422	313.5193	222.0670	1.3625	9.6807	7.1303	16.8110	3.6806	6.5595	10.2401		141,139.7613	141,139.7613	1.1238		141,163.3613
Total	**26.6733**	**313.5223**	**222.3892**	**1.3625**	**9.6807**	**7.1314**	**16.8121**	**3.6806**	**6.5607**	**10.2413**		**141,140.4393**	**141,140.4393**	**1.1257**	**0.0000**	**141,164.0789**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	26.6422	313.5193	222.0670	1.3625	9.6807	7.1303	16.8110	3.6806	6.5595	10.2401		141,139.7613	141,139.7613	1.1238		141,163.3613
Total	**26.6733**	**313.5223**	**222.3892**	**1.3625**	**9.6807**	**7.1314**	**16.8121**	**3.6806**	**6.5607**	**10.2413**		**141,140.4393**	**141,140.4393**	**1.1257**	**0.0000**	**141,164.0789**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	26.6422	313.5193	222.0670	1.3625	9.6807	7.1303	16.8110	3.6806	6.5595	10.2401		141,139.7613	141,139.7613	1.1238		141,163.3613
Unmitigated	26.6422	313.5193	222.0670	1.3625	9.6807	7.1303	16.8110	3.6806	6.5595	10.2401		141,139.7613	141,139.7613	1.1238		141,163.3613

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	1,190.89	1,190.89	1190.89	17,339,306	17,339,306
Total	1,190.89	1,190.89	1,190.89	17,339,306	17,339,306

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	40.00	40.00	40.00	59.00	0.00	41.00	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.000000	0.000000	0.000000	0.000000	0.168000	0.052000	0.177000	0.603000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Unmitigated	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					

Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Total	**0.0311**	**3.0500e-003**	**0.3223**	**2.0000e-005**		**1.1600e-003**	**1.1600e-003**		**1.1600e-003**	**1.1600e-003**		**0.6780**	**0.6780**	**1.8900e-003**		**0.7176**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Total	**0.0311**	**3.0500e-003**	**0.3223**	**2.0000e-005**		**1.1600e-003**	**1.1600e-003**		**1.1600e-003**	**1.1600e-003**		**0.6780**	**0.6780**	**1.8900e-003**		**0.7176**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

San Gorgonio Crossing Heavy Duty Trucks - 2017

South Coast Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	1,860.76	1000sqft	42.72	1,860,760.00	0
Parking Lot	1,237.00	Space	11.13	494,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - San Gorgonio Project Description

Construction Phase - OPerations only for heavy duty trucks

Off-road Equipment - Operation only for heavy duty trucks

Trips and VMT - HDT operations ONLY

Vehicle Trips - San Gorgonio Crossing Daily truck trip rate. Considers only LHDT1, LHDT2, MHDT, and HHDT

Vechicle Emission Factors - Fleet mix for LHDT1, LHDT2, MHDT, and HHDT

Vechicle Emission Factors - Fleet mix for LHDT1, LHDT2, MHDT, and HHDT

Vechicle Emission Factors - Fleet mix for LHDT1, LHDT2, MHDT, and HHDT

Road Dust - Paved road dust for major arterial collector (silt loading 0.035 g/m2) and LHDT1, LHDT2, MHDT, and HHDT average vehicle weight

Consumer Products - Heavy Duty Trucks Only

Area Coating - Operations only diesel truck trips

Landscape Equipment - Heavy Duty Trucks Only

Energy Use - Operations only heavy duty trucks

Water And Wastewater - Operations only - heavy duty trucks

Solid Waste - Heavy Duty Trucks Only

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	0
tblAreaCoating	Area_Nonresidential_Exterior	937802	0
tblAreaCoating	Area_Nonresidential_Interior	2813406	0
tblConstructionPhase	NumDays	40.00	1.00
tblConsumerProducts	ROG_EF	1.98E-05	1E-12
tblEnergyUse	LightingElect	0.88	0.00
tblEnergyUse	LightingElect	1.75	0.00
tblEnergyUse	NT24E	0.82	0.00
tblEnergyUse	NT24NG	0.03	0.00
tblEnergyUse	T24E	0.45	0.00
tblEnergyUse	T24NG	2.11	0.00
tblOffRoadEquipment	LoadFactor	0.41	0.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblRoadDust	MobileAverageVehicleWeight	2.4	20
tblRoadDust	RoadSiltLoading	0.1	0
tblSolidWaste	SolidWasteGenerationRate	1,749.11	0.00
tblVehicleEF	HHD	0.03	0.60
tblVehicleEF	HHD	0.03	0.60
tblVehicleEF	HHD	0.03	0.60
tblVehicleEF	LDA	0.51	0.00
tblVehicleEF	LDA	0.51	0.00
tblVehicleEF	LDA	0.51	0.00
tblVehicleEF	LDT1	0.06	0.00

tblVehicleEF	LDT1	0.06	0.00
tblVehicleEF	LDT1	0.06	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LHD1	0.04	0.17
tblVehicleEF	LHD1	0.04	0.17
tblVehicleEF	LHD1	0.04	0.17
tblVehicleEF	LHD2	6.6300e-003	0.05
tblVehicleEF	LHD2	6.6300e-003	0.05
tblVehicleEF	LHD2	6.6300e-003	0.05
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MDV	0.14	0.00
tblVehicleEF	MDV	0.14	0.00
tblVehicleEF	MDV	0.14	0.00
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MHD	0.02	0.18
tblVehicleEF	MHD	0.02	0.18
tblVehicleEF	MHD	0.02	0.18
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	UBUS	2.5060e-003	0.00

tblVehicleEF	UBUS	2.5060e-003	0.00
tblVehicleEF	UBUS	2.5060e-003	0.00
tblVehicleTrips	CC_TL	8.40	40.00
tblVehicleTrips	CNW_TL	6.90	40.00
tblVehicleTrips	CNW_TTP	41.00	0.00
tblVehicleTrips	CW_TL	16.60	40.00
tblVehicleTrips	CW_TTP	59.00	100.00
tblVehicleTrips	ST_TR	2.59	0.64
tblVehicleTrips	SU_TR	2.59	0.64
tblVehicleTrips	WD_TR	2.59	0.64
tblWater	IndoorWaterUseRate	430,300,750.00	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	24.7155	420.4248	258.8335	1.2703	9.0280	6.6609	15.6889	3.4324	6.1277	9.5601		125,669.5682	125,669.5682	1.0572		125,691.7698
Total	**24.7466**	**420.4279**	**259.1557**	**1.2703**	**9.0280**	**6.6621**	**15.6901**	**3.4324**	**6.1289**	**9.5613**		**125,670.2461**	**125,670.2461**	**1.0591**	**0.0000**	**125,692.4873**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	24.7155	420.4248	258.8335	1.2703	9.0280	6.6609	15.6889	3.4324	6.1277	9.5601		125,669.5682	125,669.5682	1.0572		125,691.7698
Total	**24.7466**	**420.4279**	**259.1557**	**1.2703**	**9.0280**	**6.6621**	**15.6901**	**3.4324**	**6.1289**	**9.5613**		**125,670.2461**	**125,670.2461**	**1.0591**	**0.0000**	**125,692.4873**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	24.7155	420.4248	258.8335	1.2703	9.0280	6.6609	15.6889	3.4324	6.1277	9.5601		125,669.5682	125,669.5682	1.0572		125,691.7698
Unmitigated	24.7155	420.4248	258.8335	1.2703	9.0280	6.6609	15.6889	3.4324	6.1277	9.5601		125,669.5682	125,669.5682	1.0572		125,691.7698

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	1,190.89	1,190.89	1190.89	16,170,203	16,170,203
Total	1,190.89	1,190.89	1,190.89	16,170,203	16,170,203

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No	40.00	40.00	40.00	100.00	0.00	0.00	92	5	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.000000	0.000000	0.000000	0.000000	0.168000	0.052000	0.177000	0.603000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Unrefrigerated Warehouse-No Rail	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Mitigated	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Unmitigated	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Total	**0.0311**	**3.0500e-003**	**0.3223**	**2.0000e-005**		**1.1600e-003**	**1.1600e-003**		**1.1600e-003**	**1.1600e-003**		**0.6780**	**0.6780**	**1.8900e-003**		**0.7176**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176

Total	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

San Gorgonio Crossing Gas Vehicles + Area + Energy + Water - 2017

South Coast Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	1,860.76	1000sqft	42.72	1,860,760.00	0
Parking Lot	1,237.00	Space	11.13	494,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project Description

Construction Phase - Operations only.

Off-road Equipment - Operations only

Trips and VMT - OPerations Only

Architectural Coating -

Vehicle Trips - Passenger cars only as per the traffic study

Vechicle Emission Factors - Passenger Vehicles only

Vechicle Emission Factors - Passenger Vehicles only

Vechicle Emission Factors - Passenger Vehicles only

Road Dust - Gasoline vehicles along a arterial collector road; silt loading = 0.035 g/m2

Consumer Products -

Area Coating - See separate architectural coating worksheet for building square footage

Energy Use - Project electrical report - RPM Engineers, Inc. See accompanying electrical consumption worksheet.

Water And Wastewater - Water Report from Jurupa Valley Water District Water Supply Study - 10/2013 scaled to the project land use building square footage

Solid Waste - CalRecycle Waste Characterization - Industrial Sector: Estimated Solid Waste Generation Rates. Website: http://www.calrecycle.ca.gov/WasteChar/WasteGenRates/Industrial.htm

Land Use Change -

Area Mitigation - MItigation Measure MM AQ-3

Energy Mitigation - Solar commitment by the project: 23% of electrical requirements.

Water Mitigation -

Waste Mitigation -

Operational Off-Road Equipment - Number if equipment as per SCAQMD recommendations: 3.6 trucks/million sqyare feet

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Interior	2803524	777000
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	250	100
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	250	100
tblConstructionPhase	NumDays	30.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblRoadDust	MobileAverageVehicleWeight	2.4	2.7
tblRoadDust	RoadSiltLoading	0.1	0
tblSolidWaste	SolidWasteGenerationRate	1,749.11	1,714.33
tblVehicleEF	HHD	0.03	0.00
tblVehicleEF	HHD	0.03	0.00
tblVehicleEF	HHD	0.03	0.00
tblVehicleEF	LDA	0.51	0.56
tblVehicleEF	LDA	0.51	0.56
tblVehicleEF	LDA	0.51	0.56
tblVehicleEF	LDT1	0.06	0.08

tblVehicleEF	LDT1	0.06	0.08
tblVehicleEF	LDT1	0.06	0.08
tblVehicleEF	LDT2	0.18	0.25
tblVehicleEF	LDT2	0.18	0.25
tblVehicleEF	LDT2	0.18	0.25
tblVehicleEF	LHD1	0.04	0.00
tblVehicleEF	LHD1	0.04	0.00
tblVehicleEF	LHD1	0.04	0.00
tblVehicleEF	LHD2	6.6300e-003	0.00
tblVehicleEF	LHD2	6.6300e-003	0.00
tblVehicleEF	LHD2	6.6300e-003	0.00
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MDV	0.14	0.12
tblVehicleEF	MDV	0.14	0.12
tblVehicleEF	MDV	0.14	0.12
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MHD	0.02	0.00
tblVehicleEF	MHD	0.02	0.00
tblVehicleEF	MHD	0.02	0.00
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	UBUS	2.5060e-003	0.00

tblVehicleEF	UBUS	2.5060e-003	0.00
tblVehicleEF	UBUS	2.5060e-003	0.00
tblVehicleTrips	ST_TR	2.59	1.04
tblVehicleTrips	SU_TR	2.59	1.04
tblVehicleTrips	WD_TR	2.59	1.04
tblWater	IndoorWaterUseRate	430,300,750.00	11,140,000.00
tblWater	OutdoorWaterUseRate	0.00	8,810,000.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	9.5073	3.8000e-004	0.0403	0.0000		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	0.0769	0.0769	2.1000e-004	0.0000	0.0814
Energy	0.0215	0.1952	0.1640	1.1700e-003		0.0148	0.0148		0.0148	0.0148	0.0000	1,945.2135	1,945.2135	0.0837	0.0204	1,953.2877
Mobile	1.0245	1.4535	14.4836	0.0398	0.4095	0.0221	0.4316	0.1624	0.0204	0.1828	0.0000	2,944.5752	2,944.5752	0.1395	0.0000	2,947.5049
Waste						0.0000	0.0000		0.0000	0.0000	347.9935	0.0000	347.9935	20.5658	0.0000	779.8759
Water						0.0000	0.0000		0.0000	0.0000	3.5342	69.5194	73.0536	0.3662	9.2300e-003	83.6057
Total	**10.5532**	**1.6491**	**14.6878**	**0.0409**	**0.4095**	**0.0371**	**0.4466**	**0.1624**	**0.0354**	**0.1978**	**351.5277**	**4,959.3849**	**5,310.9126**	**21.1555**	**0.0296**	**5,764.3556**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	8.9124	3.8000e-004	0.0403	0.0000		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	0.0769	0.0769	2.1000e-004	0.0000	0.0814
Energy	0.0215	0.1952	0.1640	1.1700e-003		0.0148	0.0148		0.0148	0.0148	0.0000	1,546.6885	1,546.6885	0.0654	0.0166	1,553.2031
Mobile	1.0245	1.4535	14.4836	0.0398	0.4095	0.0221	0.4316	0.1624	0.0204	0.1828	0.0000	2,944.5752	2,944.5752	0.1395	0.0000	2,947.5049
Waste						0.0000	0.0000		0.0000	0.0000	347.9935	0.0000	347.9935	20.5658	0.0000	779.8759
Water						0.0000	0.0000		0.0000	0.0000	2.8274	61.2175	64.0448	0.2932	7.4300e-003	72.5039
Total	**9.9583**	**1.6491**	**14.6878**	**0.0409**	**0.4095**	**0.0371**	**0.4466**	**0.1624**	**0.0354**	**0.1978**	**350.8209**	**4,552.5580**	**4,903.3789**	**21.0641**	**0.0240**	**5,353.1691**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**5.64**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.20**	**8.20**	**7.67**	**0.43**	**18.89**	**7.13**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
Vegetation Land Change	0.0000
Total	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Unmitigated	1.0245	1.4535	14.4836	0.0398	0.4095	0.0221	0.4316	0.1624	0.0204	0.1828	0.0000	2,944.5752	2,944.5752	0.1395	0.0000	2,947.5049
Mitigated	1.0245	1.4535	14.4836	0.0398	0.4095	0.0221	0.4316	0.1624	0.0204	0.1828	0.0000	2,944.5752	2,944.5752	0.1395	0.0000	2,947.5049

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	1,935.19	1,935.19	1935.19	8,293,678	8,293,678
Total	1,935.19	1,935.19	1,935.19	8,293,678	8,293,678

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	16.60	8.40	6.90	59.00	0.00	41.00	92	5	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.558000	0.079000	0.249000	0.115000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,334.1924	1,334.1924	0.0613	0.0127	1,339.4138
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,732.7174	1,732.7174	0.0797	0.0165	1,739.4984
NaturalGas Mitigated	0.0215	0.1952	0.1640	1.1700e-003		0.0148	0.0148		0.0148	0.0148	0.0000	212.4961	212.4961	4.0700e-003	3.9000e-003	213.7893
NaturalGas Unmitigated	0.0215	0.1952	0.1640	1.1700e-003		0.0148	0.0148		0.0148	0.0148	0.0000	212.4961	212.4961	4.0700e-003	3.9000e-003	213.7893

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	3.98203e+006	0.0215	0.1952	0.1640	1.1700e-003		0.0148	0.0148		0.0148	0.0148	0.0000	212.4961	212.4961	4.0700e-003	3.9000e-003	213.7893
Total		**0.0215**	**0.1952**	**0.1640**	**1.1700e-003**		**0.0148**	**0.0148**		**0.0148**	**0.0148**	**0.0000**	**212.4961**	**212.4961**	**4.0700e-003**	**3.9000e-003**	**213.7893**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Unrefrigerated Warehouse-No Rail	3.98203e+006	0.0215	0.1952	0.1640	1.1700e-003		0.0148	0.0148		0.0148	0.0148	0.0000	212.4961	212.4961	4.0700e-003	3.9000e-003	213.7893
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0215**	**0.1952**	**0.1640**	**1.1700e-003**		**0.0148**	**0.0148**		**0.0148**	**0.0148**	**0.0000**	**212.4961**	**212.4961**	**4.0700e-003**	**3.9000e-003**	**213.7893**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	435424	124.6039	5.7300e-003	1.1900e-003	125.0916
Unrefrigerated Warehouse-No Rail	5.6195e+006	1,608.1135	0.0739	0.0153	1,614.4069
Total		**1,732.7174**	**0.0797**	**0.0165**	**1,739.4984**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	335276	95.9450	4.4100e-003	9.1000e-004	96.3205
Unrefrigerated Warehouse-No Rail	4.32701e+006	1,238.2474	0.0569	0.0118	1,243.0933

Total		**1,334.1924**	**0.0613**	**0.0127**	**1,339.4138**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Unmitigated	9.5073	3.8000e-004	0.0403	0.0000		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	0.0769	0.0769	2.1000e-004	0.0000	0.0814
Mitigated	8.9124	3.8000e-004	0.0403	0.0000		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	0.0769	0.0769	2.1000e-004	0.0000	0.0814

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.9916					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	8.5118					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Landscaping	3.8900e-003	3.8000e-004	0.0403	0.0000		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	0.0769	0.0769	2.1000e-004	0.0000	0.0814
Total	**9.5073**	**3.8000e-004**	**0.0403**	**0.0000**		**1.5000e-004**	**1.5000e-004**		**1.5000e-004**	**1.5000e-004**	**0.0000**	**0.0769**	**0.0769**	**2.1000e-004**	**0.0000**	**0.0814**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.3966					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	8.5118					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.8900e-003	3.8000e-004	0.0403	0.0000		1.5000e-004	1.5000e-004		1.5000e-004	1.5000e-004	0.0000	0.0769	0.0769	2.1000e-004	0.0000	0.0814
Total	**8.9124**	**3.8000e-004**	**0.0403**	**0.0000**		**1.5000e-004**	**1.5000e-004**		**1.5000e-004**	**1.5000e-004**	**0.0000**	**0.0769**	**0.0769**	**2.1000e-004**	**0.0000**	**0.0814**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Unmitigated	73.0536	0.3662	9.2300e-003	83.6057

Mitigated	64.0448	0.2932	7.4300e-003	72.5039

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	11.14 / 8.81	73.0536	0.3662	9.2300e-003	83.6057
Total		**73.0536**	**0.3662**	**9.2300e-003**	**83.6057**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	8.912 / 8.81	64.0448	0.2932	7.4300e-003	72.5039
Total		**64.0448**	**0.2932**	**7.4300e-003**	**72.5039**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	347.9935	20.5658	0.0000	779.8759
Unmitigated	347.9935	20.5658	0.0000	779.8759

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	1714.33	347.9935	20.5658	0.0000	779.8759
Total		**347.9935**	**20.5658**	**0.0000**	**779.8759**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			

Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No	1714.33	347.9935	20.5658	0.0000	779.8759
Total		**347.9935**	**20.5658**	**0.0000**	**779.8759**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	0.0000	0.0000	0.0000	0.0000

10.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Grassland	144 / 144	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

San Gorgonio Crossing Gas Vehicles + Area + Energy + Water - 2017

South Coast Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	1,860.76	1000sqft	42.72	1,860,760.00	0
Parking Lot	1,237.00	Space	11.13	494,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project Description

Construction Phase - Operations only.

Off-road Equipment - Operations only

Trips and VMT - OPerations Only

Architectural Coating -

Vehicle Trips - Passenger cars only as per the traffic study

Vechicle Emission Factors - Passenger Vehicles only

Vechicle Emission Factors - Passenger Vehicles only

Vechicle Emission Factors - Passenger Vehicles only

Road Dust - Gasoline vehicles along a arterial collector road; silt loading = 0.035 g/m2

Consumer Products -

Area Coating - See separate architectural coating worksheet for building square footage

Energy Use - Project electrical report - RPM Engineers, Inc. See accompanying electrical consumption worksheet.

Water And Wastewater - Water Report from Jurupa Valley Water District Water Supply Study - 10/2013 scaled to the project land use building square footage

Solid Waste - CalRecycle Waste Characterization - Industrial Sector: Estimated Solid Waste Generation Rates. Website: http://www.calrecycle.ca.gov/WasteChar/WasteGenRates/Industrial.htm

Land Use Change -

Area Mitigation - MItigation Measure MM AQ-3

Energy Mitigation - Solar commitment by the project: 23% of electrical requirements.

Water Mitigation -

Waste Mitigation -

Operational Off-Road Equipment - Number if equipment as per SCAQMD recommendations: 3.6 trucks/million sqyare feet

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Interior	2803524	777000
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	250	100
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	250	100
tblConstructionPhase	NumDays	30.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblRoadDust	MobileAverageVehicleWeight	2.4	2.7
tblRoadDust	RoadSiltLoading	0.1	0
tblSolidWaste	SolidWasteGenerationRate	1,749.11	1,714.33
tblVehicleEF	HHD	0.03	0.00
tblVehicleEF	HHD	0.03	0.00
tblVehicleEF	HHD	0.03	0.00
tblVehicleEF	LDA	0.51	0.56
tblVehicleEF	LDA	0.51	0.56
tblVehicleEF	LDA	0.51	0.56
tblVehicleEF	LDT1	0.06	0.08

tblVehicleEF	LDT1	0.06	0.08
tblVehicleEF	LDT1	0.06	0.08
tblVehicleEF	LDT2	0.18	0.25
tblVehicleEF	LDT2	0.18	0.25
tblVehicleEF	LDT2	0.18	0.25
tblVehicleEF	LHD1	0.04	0.00
tblVehicleEF	LHD1	0.04	0.00
tblVehicleEF	LHD1	0.04	0.00
tblVehicleEF	LHD2	6.6300e-003	0.00
tblVehicleEF	LHD2	6.6300e-003	0.00
tblVehicleEF	LHD2	6.6300e-003	0.00
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MDV	0.14	0.12
tblVehicleEF	MDV	0.14	0.12
tblVehicleEF	MDV	0.14	0.12
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MHD	0.02	0.00
tblVehicleEF	MHD	0.02	0.00
tblVehicleEF	MHD	0.02	0.00
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	UBUS	2.5060e-003	0.00

tblVehicleEF	UBUS	2.5060e-003	0.00
tblVehicleEF	UBUS	2.5060e-003	0.00
tblVehicleTrips	ST_TR	2.59	1.04
tblVehicleTrips	SU_TR	2.59	1.04
tblVehicleTrips	WD_TR	2.59	1.04
tblWater	IndoorWaterUseRate	430,300,750.00	11,140,000.00
tblWater	OutdoorWaterUseRate	0.00	8,810,000.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	52.1046	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Energy	0.1177	1.0696	0.8984	6.4200e-003		0.0813	0.0813		0.0813	0.0813		1,283.4896	1,283.4896	0.0246	0.0235	1,291.3007
Mobile	5.8387	7.0942	84.1418	0.2299	2.2501	0.1217	2.3718	0.8925	0.1122	1.0047		18,752.0491	18,752.0491	0.8460		18,769.8148
Total	**58.0609**	**8.1668**	**85.3625**	**0.2363**	**2.2501**	**0.2041**	**2.4542**	**0.8925**	**0.1946**	**1.0871**		**20,036.2166**	**20,036.2166**	**0.8725**	**0.0235**	**20,061.8331**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Area	48.8446	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Energy	0.1177	1.0696	0.8984	6.4200e-003		0.0813	0.0813		0.0813	0.0813		1,283.4896	1,283.4896	0.0246	0.0235	1,291.3007
Mobile	5.8387	7.0942	84.1418	0.2299	2.2501	0.1217	2.3718	0.8925	0.1122	1.0047		18,752.0491	18,752.0491	0.8460		18,769.8148
Total	**54.8009**	**8.1668**	**85.3625**	**0.2363**	**2.2501**	**0.2041**	**2.4542**	**0.8925**	**0.1946**	**1.0871**		**20,036.2166**	**20,036.2166**	**0.8725**	**0.0235**	**20,061.8331**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**5.61**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Unmitigated	5.8387	7.0942	84.1418	0.2299	2.2501	0.1217	2.3718	0.8925	0.1122	1.0047		18,752.0491	18,752.0491	0.8460		18,769.8148
Mitigated	5.8387	7.0942	84.1418	0.2299	2.2501	0.1217	2.3718	0.8925	0.1122	1.0047		18,752.0491	18,752.0491	0.8460		18,769.8148

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	1,935.19	1,935.19	1935.19	8,293,678	8,293,678
Total	1,935.19	1,935.19	1,935.19	8,293,678	8,293,678

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	16.60	8.40	6.90	59.00	0.00	41.00	92	5	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.558000	0.079000	0.249000	0.115000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1177	1.0696	0.8984	6.4200e-003		0.0813	0.0813		0.0813	0.0813		1,283.4896	1,283.4896	0.0246	0.0235	1,291.3007
NaturalGas Unmitigated	0.1177	1.0696	0.8984	6.4200e-003		0.0813	0.0813		0.0813	0.0813		1,283.4896	1,283.4896	0.0246	0.0235	1,291.3007

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	10909.7	0.1177	1.0696	0.8984	6.4200e-003		0.0813	0.0813		0.0813	0.0813		1,283.4896	1,283.4896	0.0246	0.0235	1,291.3007
Total		**0.1177**	**1.0696**	**0.8984**	**6.4200e-003**		**0.0813**	**0.0813**		**0.0813**	**0.0813**		**1,283.4896**	**1,283.4896**	**0.0246**	**0.0235**	**1,291.3007**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Unrefrigerated Warehouse-No Rail	10.9097	0.1177	1.0696	0.8984	6.4200e-003		0.0813	0.0813		0.0813	0.0813		1,283.4896	1,283.4896	0.0246	0.0235	1,291.3007
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.1177**	**1.0696**	**0.8984**	**6.4200e-003**		**0.0813**	**0.0813**		**0.0813**	**0.0813**		**1,283.4896**	**1,283.4896**	**0.0246**	**0.0235**	**1,291.3007**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Unmitigated	52.1046	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Mitigated	48.8446	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	5.4335					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	46.6401					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Total	**52.1046**	**3.0500e-003**	**0.3223**	**2.0000e-005**		**1.1600e-003**	**1.1600e-003**		**1.1600e-003**	**1.1600e-003**		**0.6780**	**0.6780**	**1.8900e-003**		**0.7176**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.1734					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	46.6401					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Landscaping	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Total	**48.8446**	**3.0500e-003**	**0.3223**	**2.0000e-005**		**1.1600e-003**	**1.1600e-003**		**1.1600e-003**	**1.1600e-003**		**0.6780**	**0.6780**	**1.8900e-003**		**0.7176**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

San Gorgonio Crossing Gas Vehicles + Area + Energy + Water - 2017

South Coast Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	1,860.76	1000sqft	42.72	1,860,760.00	0
Parking Lot	1,237.00	Space	11.13	494,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project Description

Construction Phase - Operations only.

Off-road Equipment - Operations only

Trips and VMT - OPerations Only

Architectural Coating -

Vehicle Trips - Passenger cars only as per the traffic study

Vechicle Emission Factors - Passenger Vehicles only

Vechicle Emission Factors - Passenger Vehicles only

Vechicle Emission Factors - Passenger Vehicles only

Road Dust - Gasoline vehicles along a arterial collector road; silt loading = 0.035 g/m2

Consumer Products -

Area Coating - See separate architectural coating worksheet for building square footage

Energy Use - Project electrical report - RPM Engineers, Inc. See accompanying electrical consumption worksheet.

Water And Wastewater - Water Report from Jurupa Valley Water District Water Supply Study - 10/2013 scaled to the project land use building square footage

Solid Waste - CalRecycle Waste Characterization - Industrial Sector: Estimated Solid Waste Generation Rates. Website: http://www.calrecycle.ca.gov/WasteChar/WasteGenRates/Industrial.htm

Land Use Change -

Area Mitigation - MItigation Measure MM AQ-3

Energy Mitigation - Solar commitment by the project: 23% of electrical requirements.

Water Mitigation -

Waste Mitigation -

Operational Off-Road Equipment - Number if equipment as per SCAQMD recommendations: 3.6 trucks/million sqyare feet

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Interior	2803524	777000
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	250	100
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	250	100
tblConstructionPhase	NumDays	30.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblRoadDust	MobileAverageVehicleWeight	2.4	2.7
tblRoadDust	RoadSiltLoading	0.1	0
tblSolidWaste	SolidWasteGenerationRate	1,749.11	1,714.33
tblVehicleEF	HHD	0.03	0.00
tblVehicleEF	HHD	0.03	0.00
tblVehicleEF	HHD	0.03	0.00
tblVehicleEF	LDA	0.51	0.56
tblVehicleEF	LDA	0.51	0.56
tblVehicleEF	LDA	0.51	0.56
tblVehicleEF	LDT1	0.06	0.08

tblVehicleEF	LDT1	0.06	0.08
tblVehicleEF	LDT1	0.06	0.08
tblVehicleEF	LDT2	0.18	0.25
tblVehicleEF	LDT2	0.18	0.25
tblVehicleEF	LDT2	0.18	0.25
tblVehicleEF	LHD1	0.04	0.00
tblVehicleEF	LHD1	0.04	0.00
tblVehicleEF	LHD1	0.04	0.00
tblVehicleEF	LHD2	6.6300e-003	0.00
tblVehicleEF	LHD2	6.6300e-003	0.00
tblVehicleEF	LHD2	6.6300e-003	0.00
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MCY	4.3480e-003	0.00
tblVehicleEF	MDV	0.14	0.12
tblVehicleEF	MDV	0.14	0.12
tblVehicleEF	MDV	0.14	0.12
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MH	2.1040e-003	0.00
tblVehicleEF	MHD	0.02	0.00
tblVehicleEF	MHD	0.02	0.00
tblVehicleEF	MHD	0.02	0.00
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	OBUS	1.9410e-003	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	SBUS	5.9400e-004	0.00
tblVehicleEF	UBUS	2.5060e-003	0.00

tblVehicleEF	UBUS	2.5060e-003	0.00
tblVehicleEF	UBUS	2.5060e-003	0.00
tblVehicleTrips	ST_TR	2.59	1.04
tblVehicleTrips	SU_TR	2.59	1.04
tblVehicleTrips	WD_TR	2.59	1.04
tblWater	IndoorWaterUseRate	430,300,750.00	11,140,000.00
tblWater	OutdoorWaterUseRate	0.00	8,810,000.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	52.1046	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Energy	0.1177	1.0696	0.8984	6.4200e-003		0.0813	0.0813		0.0813	0.0813		1,283.4896	1,283.4896	0.0246	0.0235	1,291.3007
Mobile	5.9602	7.7723	77.8200	0.2154	2.2501	0.1217	2.3718	0.8925	0.1122	1.0047		17,580.8672	17,580.8672	0.8460		17,598.6329
Total	**58.1824**	**8.8449**	**79.0407**	**0.2218**	**2.2501**	**0.2041**	**2.4542**	**0.8925**	**0.1946**	**1.0871**		**18,865.0347**	**18,865.0347**	**0.8725**	**0.0235**	**18,890.6512**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Area	48.8446	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Energy	0.1177	1.0696	0.8984	6.4200e-003		0.0813	0.0813		0.0813	0.0813		1,283.4896	1,283.4896	0.0246	0.0235	1,291.3007
Mobile	5.9602	7.7723	77.8200	0.2154	2.2501	0.1217	2.3718	0.8925	0.1122	1.0047		17,580.8672	17,580.8672	0.8460		17,598.6329
Total	**54.9224**	**8.8449**	**79.0407**	**0.2218**	**2.2501**	**0.2041**	**2.4542**	**0.8925**	**0.1946**	**1.0871**		**18,865.0347**	**18,865.0347**	**0.8725**	**0.0235**	**18,890.6512**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**5.60**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Unmitigated	5.9602	7.7723	77.8200	0.2154	2.2501	0.1217	2.3718	0.8925	0.1122	1.0047		17,580.8672	17,580.8672	0.8460		17,598.6329
Mitigated	5.9602	7.7723	77.8200	0.2154	2.2501	0.1217	2.3718	0.8925	0.1122	1.0047		17,580.8672	17,580.8672	0.8460		17,598.6329

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Unrefrigerated Warehouse-No Rail	1,935.19	1,935.19	1935.19	8,293,678	8,293,678
Total	1,935.19	1,935.19	1,935.19	8,293,678	8,293,678

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Unrefrigerated Warehouse-No Rail	16.60	8.40	6.90	59.00	0.00	41.00	92	5	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.558000	0.079000	0.249000	0.115000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1177	1.0696	0.8984	6.4200e-003		0.0813	0.0813		0.0813	0.0813		1,283.4896	1,283.4896	0.0246	0.0235	1,291.3007
NaturalGas Unmitigated	0.1177	1.0696	0.8984	6.4200e-003		0.0813	0.0813		0.0813	0.0813		1,283.4896	1,283.4896	0.0246	0.0235	1,291.3007

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unrefrigerated Warehouse-No Rail	10909.7	0.1177	1.0696	0.8984	6.4200e-003		0.0813	0.0813		0.0813	0.0813		1,283.4896	1,283.4896	0.0246	0.0235	1,291.3007
Total		**0.1177**	**1.0696**	**0.8984**	**6.4200e-003**		**0.0813**	**0.0813**		**0.0813**	**0.0813**		**1,283.4896**	**1,283.4896**	**0.0246**	**0.0235**	**1,291.3007**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Unrefrigerated Warehouse-No Rail	10.9097	0.1177	1.0696	0.8984	6.4200e-003		0.0813	0.0813		0.0813	0.0813		1,283.4896	1,283.4896	0.0246	0.0235	1,291.3007
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.1177**	**1.0696**	**0.8984**	**6.4200e-003**		**0.0813**	**0.0813**		**0.0813**	**0.0813**		**1,283.4896**	**1,283.4896**	**0.0246**	**0.0235**	**1,291.3007**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Unmitigated	52.1046	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Mitigated	48.8446	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	5.4335					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	46.6401					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Total	**52.1046**	**3.0500e-003**	**0.3223**	**2.0000e-005**		**1.1600e-003**	**1.1600e-003**		**1.1600e-003**	**1.1600e-003**		**0.6780**	**0.6780**	**1.8900e-003**		**0.7176**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.1734					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	46.6401					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Landscaping	0.0311	3.0500e-003	0.3223	2.0000e-005		1.1600e-003	1.1600e-003		1.1600e-003	1.1600e-003		0.6780	0.6780	1.8900e-003		0.7176
Total	**48.8446**	**3.0500e-003**	**0.3223**	**2.0000e-005**		**1.1600e-003**	**1.1600e-003**		**1.1600e-003**	**1.1600e-003**		**0.6780**	**0.6780**	**1.8900e-003**		**0.7176**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Appendix B:
Localized Criteria Pollutant Assessment

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San Gorgonio Crossing Project **2017** REV3
Emission Assumptions **Max Hourly CO** Emissions

Emission Factors

1) Vehicle Emissions

a) Truck and Auto Traffic
(1) EMFAC2011
(a) Calculations for SoCAB
(b) Truck Mix
Traffic Impact Study used to derive fleet mix
EMFAC2011 to derive the % of diesel truck vehicles
(d) Vehicle Travel Speed
Onsite Travel 15 mph
Offsite Travel 35 mph
(e) Truck Idle time: 15 minutes (truck idling only applies to LHDT1, LHDT2, MHDT, and HHDT diesel vehicles)
(f) Emission factors for Max Hourly CO emissions
(g) Emissions calculated for 2017

Traffic Allocation

1) Traffic was allocated to each building as a function of building size (square footage), number of loading docks, and driveway
2) Trip generation from the traffic study - Urban Crossroads 2013
3) Onsite travel emssions generated from diesel vehicles at all buildings
4) Onsite idling emissions generated only for diesel trucks

Emission Source Configuration

1) Vehicle traffic represented by a line source
2) Onsite idling represented as a point source

Onsite Travel Links

Diesel Vehicles	**Travel Distance (m)**
Building 1 West - (Enter/Exit Street 2)	999
Building 1 West - Enter Street 2/Exit Drwy 1)	1318
Building 1 East - (Enter/Exit Street 2)	342
Building 2 North - (Enter/Exit Street 2)	770
Building 2 South - (Enter/Exit Street 2)	549

Gas Vehicles	**Travel Distance (m)**
Driveway 1 to Building 1 South	280
Street 2 to Building 1 South	260
Driveway 3 to Building 2 East	469
Street 2 to Building 2 East	867
Street 2 to Building 2 West	438

Off site Travel Links

Diesel Vehicles	**Travel Distance (m)**
Cherry Ave: I10 to Driveway 1	589
Cherry Ave: DRWY1 to Street 2	370

Gas Vehicles	**Travel Distance (m)**
Cherry Valley Blvd East of Drwy 3	961
Cherry Valley Blvd Drwy 3 to Street 2	780
Cherry Valley Blvd Street 2 to Drwy 1	323
Cherry Valley Blvd West of Drwy 1	614

Other Input Parameters

Facility Operations for Warehouses (hr): 1

San Gorgonio Crossing Project
Emissions Summary for **Max Hourly CO**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	3.17E-03
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	1.39E-03
Building 1 - East (Enter/Exit Street 2) - DB1E22	1.45E-03
Building 2 - North (Enter/Exit Street 2) -DB2N22	4.39E-03
Building 2 - South (Enter/Exit Street 2) - DB2S22	3.13E-03
Total	**1.35E-02**

Onsite GAS Running Emissions

Location / AERMOD Source ID	GAS Emissions (g/sec)
Building 1 - South Parking (Enter/Exit Drwy 1) - GB1SD1	4.36E-04
Building 1- South Parking (Enter/Exit Street 2) - GB1SS2	6.82E-03
Building 2 - East Parking (Enter/Exit Drwy 3) - GB2ED3	1.46E-03
Building 2 - East Parking (Enter/Exit Street 2) - GB2ES2	1.23E-02
Building 2 - West Parking (Enter/Exit Street 2) - GB2WS2	7.60E-03

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	1.28E-02	2.57E-03
Building 1 - East (DB1E 1 to 5)	5	1.28E-02	2.57E-03
Building 2 - North (DB1N 1 to 5)	5	1.73E-02	3.46E-03
Building 2 - South (DB1S 1 to 5)	5	1.73E-02	3.46E-03
TOTAL		**6.03E-02**	

Offsite DSL Emissions / AERMOD Source ID		Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd	(DOFFD1)	6.30E-03
I10 to Street 2 along Cherry Valley Blvd	(DOFFST2)	3.46E-03

Offsite GAS Emissions / AERMOD Source ID		Gas Emissions (g/sec)
Cherry Valley Blvd East of Drwy 3	(GDW3)	7.65E-03
Cherry Valley Blvd Drwy 3 to Street 2	(GDR3ST2)	4.66E-03
Cherry Valley Blvd Street 2 to Drwy 1	(GST2DR1)	9.65E-03
Cherry Valley Blvd West of Drwy 1	(GDW1I10)	1.96E-02

San Gorgonio Crossing Project **2017**

Vehicle Trip Allocation to Buildings

Building	Building Size Warehouse (sq-ft)
Building 1	811000
Building 2	1012760
Total	1823760

Trip Generation

Trip Generation Rate 0.12 trips/TSF as per Traffic Study

Building	trips/Pk Hr (Non-PCE)
Building 1	97
Building 2	122
Total	219

PM Peak Rate is used since the number of peak PM trips > number of peak hour AM trips

Diesel Vehicle Allocation for Warehouse Buildings

	Urban Crossroads Vehicle Distribution	EMFAC2011 Vehicle Default	Adjusted Fleet	EMFAC2011 % Diesel	Number of Pk Hr Diesel Trips	Number of Pk Hr GAS Trips	Total Number of Diesel+GAS Trips		
LDA (Passenger Car)	66.70%	51.6%	37.21%	0.2%	0	81	81	145.9738	
LDT1		7.3%	5.26%	2.7%	0	11	12		
LDT2		23.0%	16.58%	0.0%	0	36	36		
MDT		10.6%	7.64%	0.0%	0	17	17		
LHDT1 (2 axle truck)	7.33%	1.6%	5.58%	18.8%	2	10	12		
LHDT2		0.5%	1.75%	40.0%	2	2	4		
MHDT (3 axle truck)	5.89%	0.9%	5.89%	77.8%	10	3	13		
HHDT (4+ axle truck)	20.08%	0.5%	20.08%	100.0%	44	0	44	73	
	100.00%	96.0%	100.00%		58	161	219		0.333

Vehicle Distribution taken from Urban Crossroads 2014, Traffic Impact Study
Vehicle Default taken from EMFAC2011 for the SCAQMD in 2017
% Diesel taken from EMFAC2011 for the SoCAB in 2017

San Gorgonio Crossing Project
Traffic Allocation Max Hourly CO

Location	Vehicle type	Number of Diesel Trips	% of Fleet
San Gorgonio Crossing Project	LDA	0	0.3%
	LDT1	0	0.5%
	LDT2	0	0.0%
	MDT	0	0.0%
	LHDT1	2	3.9%
	LHDT2	2	2.6%
	MHDT	10	17.2%
	HHDT	44	75.4%
Total		**58**	

NOTE: % Fleet and % diesel vehicles derived from the project traffic impact study and EMFAC2011 for the SCAQMD in 2017
Vehicle trips derived from the project traffic study

Vehicle Trip Allocation - Diesel Vehicles

Vehicle trips are allocated to building by square footage, number of loading docks, and by driveway

Loading Dock Allocations:

Building 1	70	docks on west side	64	docks on east side	134 Total Docks
Building 2	85	docks on north side	85	docks on south side	170 Total Docks

Total Trips to Building 1	26
Total Trips to Building 2	32
Total Trips to Building 1 East docks Enter and Exit Street 2	12
Total Trips to Building 1 West docks Enter Street 2 Exit Driveway 1	3
Total Trips to Building 1 West docks Enter Street 2 and Exit Street 2	9
Total Trips to Building 2 North Docks Enter Street 2 Exit Street 2	16
Total Trips to Building 2 South docks Enter Street 2 Exist Street 2	16

Onsite Truck Travel Segments	Total Diesel Vehicle Trips	Number of Diesel Vehicle Trips Transiting to Each Building							
		LDA	LDT1	LDT2	MDT	LHDT1	LHDT2	MHDT	HHDT
Building 1 - West (Enter Street 2/Exit Street 2)	9	0	0	0	0	0	0	2	7
Building 1 - West (Enter Street 2/Exit Driveway 1)	3	0	0	0	0	0	0	1	2
Building 1 - East (Enter/Exit Street 2)	12	0	0	0	0	0	0	2	9
Building 2 - North (Enter/Exit Street 2)	16	0	0	0	0	1	0	3	12
Building 2 - South (Enter/Exit Street 2)	16	0	0	0	0	1	0	3	12
Total Number of Diesel Vehicle Trips	56	0	0	0	0	2	1	10	43

Allocation to Driveways

Assume # incoming trucks = # outgoing trucks

All incoming trucks must use Street 2	28	trucks/day
75% outgoing trucks use Street 2	21	trucks/day
25% outgoing trucks use Driveway 1	7	trucks/day
Total Street 2	49	87.5%
Total Driveway 1	7	12.5%
Total	56	100.0%

Total Vehicles - All Vehicles Trips

Location	Diesel
Building 1	24
Building 2	32
Total	56

San Gorgonio Crossing Project
Diesel Vehicle Emissions **Max Hourly CO**

Processes Modeled
Diesel truck exhaust
Diesel truck idling

Facility Operations:
I10 Gateway (warehouse) 1 **hrs/day, 52weeks/year**

Onsite Roadway Links **Max Hourly CO Emissions**

Link	Truck Type	Average Speed (mph)	Emission Factor (g/mi)	Trips per PK Hr (in and out)	Link Length (m)	Link Length (mi)	Emissions Over Link (g/hr)	Daily Emissions (lbs/hr)	Average Emissions (g/sec)	
Travel to Building 1 - West Docks	**LDA**	15	0.367	0	999	0.62	5.729E-03	1.26E-05	1.59E-06	
(Enter/Exit Street 2)	**LDT1**	15	0.640	0	999	0.62	1.908E-02	4.20E-05	5.30E-06	
	LDT2	15	0.435	0	999	0.62	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.359	0	999	0.62	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	1.892	0	999	0.62	4.167E-01	9.18E-04	1.16E-04	
	LHDT2	15	1.833	0	999	0.62	2.684E-01	5.91E-04	7.46E-05	
	MHDT	15	1.086	2	999	0.62	1.044E+00	2.30E-03	2.90E-04	
	HHDT	15	2.294	7	999	0.62	9.662E+00	2.13E-02	2.68E-03	3.17E-03
Travel to Bulding 1 - West Docks	**LDA**	15	0.367	0	1318	0.82	2.519E-03	5.55E-06	7.00E-07	
(Enter Street 2 / Exit Driveway 1)	**LDT1**	15	0.640	0	1318	0.82	8.391E-03	1.85E-05	2.33E-06	
	LDT2	15	0.435	0	1318	0.82	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.359	0	1318	0.82	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	1.892	0	1318	0.82	1.832E-01	4.04E-04	5.09E-05	
	LHDT2	15	1.833	0	1318	0.82	1.180E-01	2.60E-04	3.28E-05	
	MHDT	15	1.086	1	1318	0.82	4.591E-01	1.01E-03	1.28E-04	
	HHDT	15	2.294	2	1318	0.82	4.249E+00	9.36E-03	1.18E-03	1.39E-03
Travel to Building 1 - East Docks	**LDA**	15	0.367	0	342	0.21	2.615E-03	5.76E-06	7.26E-07	
(Enter/Exit Street 2)	**LDT1**	15	0.640	0	342	0.21	8.709E-03	1.92E-05	2.42E-06	
	LDT2	15	0.435	0	342	0.21	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.359	0	342	0.21	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	1.892	0	342	0.21	1.902E-01	4.19E-04	5.28E-05	
	LHDT2	15	1.833	0	342	0.21	1.225E-01	2.70E-04	3.40E-05	
	MHDT	15	1.086	2	342	0.21	4.765E-01	1.05E-03	1.32E-04	
	HHDT	15	2.294	9	342	0.21	4.410E+00	9.71E-03	1.23E-03	1.45E-03
Travel to Building 2 - North Docks	**LDA**	15	0.367	0	770	0.48	7.938E-03	1.75E-05	2.21E-06	
(Enter/Exit Street 2)	**LDT1**	15	0.640	0	770	0.48	2.644E-02	5.82E-05	7.34E-06	
	LDT2	15	0.435	0	770	0.48	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.359	0	770	0.48	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	1.892	1	770	0.48	5.774E-01	1.27E-03	1.60E-04	
	LHDT2	15	1.833	0	770	0.48	3.719E-01	8.19E-04	1.03E-04	
	MHDT	15	1.086	3	770	0.48	1.446E+00	3.19E-03	4.02E-04	
	HHDT	15	2.294	12	770	0.48	1.339E+01	2.95E-02	3.72E-03	4.39E-03
Travel to Building 2 - South Docks	**LDA**	15	0.367	0	549	0.34	5.660E-03	1.25E-05	1.57E-06	
(Enter/Exit Street 2)	**LDT1**	15	0.640	0	549	0.34	1.885E-02	4.15E-05	5.24E-06	
	LDT2	15	0.435	0	549	0.34	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.359	0	549	0.34	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	1.892	1	549	0.34	4.117E-01	9.07E-04	1.14E-04	
	LHDT2	15	1.833	0	549	0.34	2.652E-01	5.84E-04	7.37E-05	
	MHDT	15	1.086	3	549	0.34	1.031E+00	2.27E-03	2.86E-04	
	HHDT	15	2.294	12	549	0.34	9.546E+00	2.10E-02	2.65E-03	3.13E-03
TOTAL	**LDA**			0			2.446E-02	5.388E-05	6.795E-06	
	LDT1			0			8.147E-02	1.794E-04	2.263E-05	
	LDT2			0			0.000E+00	0.000E+00	0.000E+00	
	MDT			0			0.000E+00	0.000E+00	0.000E+00	
	LHDT1			2			1.779E+00	3.919E-03	4.942E-04	
	LHDT2			1			1.146E+00	2.524E-03	3.184E-04	
	MHDT			10			4.457E+00	9.818E-03	1.238E-03	
	HHDT			43			4.126E+01	9.087E-02	1.146E-02	
	Total			56			**4.87E+01**	**1.07E-01**	**1.35E-02**	**1.35E-02**

Diesel truck Idling Emissions **Max Hourly CO Emissions** Idle Time (minutes) 15

Building/Location	Truck Type	Emission Factor (g/idle-hour)	Idling Time (min)	# Vehicles	Emissions (g/hr)	Daily Emissions (lbs/hr)	Average Emissions (g/sec)	
Idle at Building 1 - West	**LHDT1**	15.255	15	0	9.02E-01	1.99E-03	2.51E-04	
	LHDT2	14.935	15	0	5.87E-01	1.29E-03	1.63E-04	
	MHDT	21.880	15	1	5.65E+00	1.24E-02	1.57E-03	
	HHDT	34.580	15	5	3.91E+01	8.62E-02	1.09E-02	1.28E-02
Idle at Building 1 - East	**LHDT1**	15.255	15	0	9.02E-01	1.99E-03	2.51E-04	
	LHDT2	14.935	15	0	5.87E-01	1.29E-03	1.63E-04	
	MHDT	21.880	15	1	5.65E+00	1.24E-02	1.57E-03	
	HHDT	34.580	15	5	3.91E+01	8.62E-02	1.09E-02	1.28E-02
Idle at Building 2 - North	**LHDT1**	15.255	15	0	1.22E+00	2.68E-03	3.38E-04	
	LHDT2	14.935	15	0	7.92E-01	1.74E-03	2.20E-04	
	MHDT	21.880	15	1	7.62E+00	1.68E-02	2.12E-03	
	HHDT	34.580	15	6	5.27E+01	1.16E-01	1.47E-02	1.73E-02
Idle at Building 2 - South	**LHDT1**	15.255	15	0	1.22E+00	2.68E-03	3.38E-04	
	LHDT2	14.935	15	0	7.92E-01	1.74E-03	2.20E-04	
	MHDT	21.880	15	1	7.62E+00	1.68E-02	2.12E-03	
	HHDT	34.580	15	6	5.27E+01	1.16E-01	1.47E-02	1.73E-02
TOTAL Vehicles	**LHDT1**			1	4.24E+00	9.33E-03	1.18E-03	
	LHDT2			1	2.76E+00	6.08E-03	7.66E-04	
	MHDT			5	2.65E+01	5.84E-02	7.37E-03	
	HHDT			21	1.84E+02	4.05E-01	5.10E-02	
	Total			28	**2.17E+02**	**4.79E-01**	**6.03E-02**	**6.03E-02**

NOTES:
Onsite diesel truck travel emissions as per CARB EMFAC2011 for SoCAB, 15 mph
Onsite diesel truck Idle emissions as per CARB EMFAC2011 for SoCAB

Offsite DSL Vehicle Travel Emissions **Max Hourly CO** **2017**

Total Number of Daily DSL Vehicle Trips

Vehicle Class	Ph Hour DSL Trips	Pk Hr DSL Trips (I10 to/from DRWY1	Pk Hr DSL Trips (DRWY1 to Str2)
LDA-DSL	0	0	0
LDT1-DSL	0	0	0
LDT2-DSL	0	0	0
MDT-DSL	0	0	0
LHDT1-DSL	2	2	2
LHDT2-DSL	2	2	1
MHDT-DSL	10	10	9
HHDT-DSL	44	44	38
Total	58	58	51

Travel Link DSL Vehicle Trips

Travel Link	Link Length (m)	LDA-DSL (trips/PK Hr)	LDT1-DSL (trips/PK Hr)	LDT2-DSL (trips/PK Hr)	MDT-DSL (trips/PK Hr)	LHDT1-DSL (trips/PK Hr)	LHDT2-DSL (trips/PK Hr)	MHDT-DSL (trips/PK Hr)	HHDT-DSL (trips/PK Hr)	Total trips/PK Hr)
Cherry Ave: I10 to Driveway 1	589	0	0	0	0	2	2	10	44	58
Cherry Ave: DRWY1 to Street 2	370	0	0	0	0	2	1	9	38	51

Emission Factors

Vehicle Class	Emission Factor @ 25 mph (g/mi)	Emission Factor @ 35 mph (g/mi)
LDA-DSL	0.224	0.160
LDT1-DSL	0.373	0.253
LDT2-DSL	0.261	0.182
MDT-DSL	0.222	0.159
LHDT1-DSL	1.066	0.712
LHDT2-DSL	1.035	0.693
MHDT-DSL	0.572	0.494
HHDT-DSL	1.185	1.086

Travel Link DSL Emissions

Operations 1 hours/day

Travel Link	LDA-DSL (g/sec)	LDT1-DSL (g/sec)	LDT2-DSL (g/sec)	MDT-DSL (g/sec)	LHDT1-DSL (g/sec)	LHDT2-DSL (g/sec)	MHDT-DSL (g/sec)	HHDT-DSL (g/sec)	Total (g/sec)
Cherry Ave: I10 to Driveway 1	2.65E-06	8.01E-06	0.00E+00	0.00E+00	2.49E-04	1.61E-04	5.83E-04	5.29E-03	6.30E-03
Cherry Ave: DRWY1 to Street 2	1.46E-06	4.40E-06	0.00E+00	0.00E+00	1.37E-04	8.83E-05	3.20E-04	2.91E-03	3.46E-03

San Gorgonio Crossing Project
Onsite GASTraffic Allocation Max Hourly CO

Location	Vehicle type	Number of GAS Trips	% Trips
San Gorgonio Crossing Project	LDA	81	50.6%
	LDT1	11	7.0%
	LDT2	36	22.6%
	MDT	17	10.4%
	LHDT1	10	6.2%
	LHDT2	2	1.4%
	MHDT	3	1.8%
	HHDT	0	0.0%
Total		**161**	**1**

Vehicle trips derived from the project traffic study

Vehicle Entry Allocation - GAS Vehicles

	Pk Hour Trips (all Veicles)
Building 1	71
Building 2	89

Roadway Segment	Total GAS Vehicle Trips	Number of GAS Vehicle Trips Transiting to Each Roadway Segment							
		LDA	LDT1	LDT2	MDT	LHDT1	LHDT2	MHDT	HHDT
Driveway 1 to Building 1 South Parking	4	2	0	1	0	0	0	0	0
Street 2 to Building 1 South Parking	67	34	5	15	7	4	1	1	0
Driveway 3 to Building 2 East Parking	8	4	1	2	1	0	0	0	0
Street 2 to Building 2 East Parking	37	19	3	8	4	2	1	1	0
Street 2 to Building 2 West Parking	45	23	3	10	5	3	1	1	0
	161	81	11	36	17	10	2	3	0

San Gorgonio Crossing Project
GAS Vehicle Emissions **Max Hourly CO**

Processes Modeled
Gas Vehicle exhaust

Facility Operations:
I10 Gateway (warehouse) 1 **hrs/day, 52weeks/year**

Roadway Links Modeled **Max Hourly CO Emissions**

Link	Vehicle Type	Average Speed (mph)	Emission Factor (g/mi)	Trips per Pk Hr (in and out)	Link Length (m)	Link Length (mi)	Emissions Over Link (g/hr)	Daily Emissions (lbs/hr)	Average Emissions (g/sec)	
Driveway 1 to/from Building 1	**LDA**	15	1.465	2	280	0.17	5.159E-01	1.14E-03	1.43E-04	
South Parking Area	**LDT1**	15	4.136	0	280	0.17	2.009E-01	4.42E-04	5.58E-05	
	LDT2	15	2.104	1	280	0.17	3.309E-01	7.29E-04	9.19E-05	
	MDT	15	3.317	0	280	0.17	2.404E-01	5.30E-04	6.68E-05	
	LHDT1	15	3.744	0	280	0.17	1.610E-01	3.55E-04	4.47E-05	
	LHDT2	15	2.763	0	280	0.17	2.744E-02	6.04E-05	7.62E-06	
	MHDT	15	7.496	0	280	0.17	9.294E-02	2.05E-04	2.58E-05	
	HHDT	15	66.096	0	280	0.17	0.000E+00	0.00E+00	0.00E+00	4.36E-04
Street 2 to Building 1	**LDA**	15	1.465	34	260	0.16	8.072E+00	1.78E-02	2.24E-03	
South Parking Area	**LDT1**	15	4.136	5	260	0.16	3.143E+00	6.92E-03	8.73E-04	
	LDT2	15	2.104	15	260	0.16	5.178E+00	1.14E-02	1.44E-03	
	MDT	15	3.317	7	260	0.16	3.762E+00	8.29E-03	1.04E-03	
	LHDT1	15	3.744	4	260	0.16	2.519E+00	5.55E-03	7.00E-04	
	LHDT2	15	2.763	1	260	0.16	4.293E-01	9.46E-04	1.19E-04	
	MHDT	15	7.496	1	260	0.16	1.454E+00	3.20E-03	4.04E-04	
	HHDT	15	66.096	0	260	0.16	0.000E+00	0.00E+00	0.00E+00	6.82E-03
Driveway 3 to Building 2	**LDA**	15	1.465	4	469	0.29	1.728E+00	3.81E-03	4.80E-04	
East Parking Area	**LDT1**	15	4.136	1	469	0.29	6.729E-01	1.48E-03	1.87E-04	
	LDT2	15	2.104	2	469	0.29	1.108E+00	2.44E-03	3.08E-04	
	MDT	15	3.317	1	469	0.29	8.054E-01	1.77E-03	2.24E-04	
	LHDT1	15	3.744	0	469	0.29	5.393E-01	1.19E-03	1.50E-04	
	LHDT2	15	2.763	0	469	0.29	9.191E-02	2.02E-04	2.55E-05	
	MHDT	15	7.496	0	469	0.29	3.114E-01	6.86E-04	8.65E-05	
	HHDT	15	66.096	0	469	0.29	0.000E+00	0.00E+00	0.00E+00	1.46E-03
Street 2 to Building 2	**LDA**	15	1.465	19	867	0.54	1.461E+01	3.22E-02	4.06E-03	
East Parking Area	**LDT1**	15	4.136	3	867	0.54	5.689E+00	1.25E-02	1.58E-03	
	LDT2	15	2.104	8	867	0.54	9.371E+00	2.06E-02	2.60E-03	
	MDT	15	3.317	4	867	0.54	6.809E+00	1.50E-02	1.89E-03	
	LHDT1	15	3.744	2	867	0.54	4.560E+00	1.00E-02	1.27E-03	
	LHDT2	15	2.763	1	867	0.54	7.770E-01	1.71E-03	2.16E-04	
	MHDT	15	7.496	1	867	0.54	2.632E+00	5.80E-03	7.31E-04	
	HHDT	15	66.096	0	867	0.54	0.000E+00	0.00E+00	0.00E+00	1.23E-02
Street 2 to Building 2	**LDA**	15	1.465	23	438	0.27	8.994E+00	1.98E-02	2.50E-03	
West Parking Area	**LDT1**	15	4.136	3	438	0.27	3.502E+00	7.71E-03	9.73E-04	
	LDT2	15	2.104	10	438	0.27	5.769E+00	1.27E-02	1.60E-03	
	MDT	15	3.317	5	438	0.27	4.192E+00	9.23E-03	1.16E-03	
	LHDT1	15	3.744	3	438	0.27	2.807E+00	6.18E-03	7.80E-04	
	LHDT2	15	2.763	1	438	0.27	4.784E-01	1.05E-03	1.33E-04	
	MHDT	15	7.496	1	438	0.27	1.621E+00	3.57E-03	4.50E-04	
	HHDT	15	66.096	0	438	0.27	0.000E+00	0.00E+00	0.00E+00	7.60E-03
TOTAL	**LDA**			81			3.39E+01	2.272E-02	2.866E-03	
	LDT1			11			1.32E+01	8.848E-03	1.116E-03	
	LDT2			36			2.18E+01	1.458E-02	1.838E-03	
	MDT			17			1.58E+01	1.059E-02	1.335E-03	
	LHDT1			10			1.06E+01	7.092E-03	8.943E-04	
	LHDT2			2			1.80E+00	1.208E-03	1.524E-04	
	MHDT			3			6.11E+00	4.094E-03	5.163E-04	
	HHDT			0			0.00E+00	0.000E+00	0.000E+00	
	Total			161			**1.03E+02**	**6.91E-02**	**8.72E-03**	**1.03E+02**

Offsite GAS Vehicle Travel Emissions **Max Hourly CO** **2017**

Total Number of Daily GAS Vehicle Trips

Vehicle Class	Pk Hour Gas Trips	Pk Hour Trips East of Drwy 3 (20% of Total)	Pk Hour Trips Drwy 3 to Street 2 (15% of Total)	Pk Hour Trips Street 2 to DRWY 1 (75% of total)	Pk Hour Trips Drwy 1 to I10 (80% of Total)
LDA-GAS	81	16	12	61	65
LDT1-GAS	11	2	2	8	9
LDT2-GAS	36	7	5	27	29
MDT-GAS	17	3	3	13	13
LHDT1-GAS	10	2	1	7	8
LHDT2-GAS	2	0	0	2	2
MHDT-GAS	3	1	0	2	2
HHDT-GAS	0	0	0	0	0
Total	161	32	24	120	128

Travel Link GAS Vehicle Trips

Travel Link	Length (m)	LDA-GAS (trips/Pk Hr)	LDT1-GAS (trips/Pk Hr)	LDT2-GAS (trips/Pk Hr)	MDT-GAS (trips/Pk Hr)	LHDT1-GAS (trips/Pk Hr)	LHDT2-GAS (trips/Pk Hr)	MHDT-GAS (trips/Pk Hr)	HHDT-GAS (trips/Pk Hr)	Total (trips/Pk Hr)
Cherry Valley Blvd East of Drwy 3	961	16	2	7	3	2	0	1	0	32
Cherry Valley Blvd Drwy 3 to Street 2	780	12	2	5	3	1	0	0	0	24
Cherry Valley Blvd Street 2 to Drwy 1	323	61	8	27	13	7	2	2	0	120
Cherry Valley Blvd West of Drwy 1	614	65	9	29	13	8	2	2	0	128

Emission Factors

Vehicle Class	Emission Factor @ 25 mph (g/mi)	Emission Factor @ 35 mph (g/mi)
LDA-GAS	1.180	0.985
LDT1-GAS	3.189	2.544
LDT2-GAS	1.695	1.397
MDT-GAS	2.642	2.167
LHDT1-GAS	2.020	1.326
LHDT2-GAS	1.498	0.987
MHDT-GAS	4.117	2.793
HHDT-GAS	36.364	24.800

Travel Link GAS Emissions

Operations 1 hours/day

Travel Link	LDA-GAS (g/sec)	LDT1-GAS (g/sec)	LDT2-GAS (g/sec)	MDT-GAS (g/sec)	LHDT1-GAS (g/sec)	LHDT2-GAS (g/sec)	MHDT-GAS (g/sec)	HHDT-GAS (g/sec)	Total (g/sec)
Cherry Valley Blvd East of Drwy 3	2.65E-03	9.46E-04	1.68E-03	1.20E-03	6.65E-04	1.14E-04	3.91E-04	0.00E+00	7.65E-03
Cherry Valley Blvd Drwy 3 to Street 2	1.62E-03	5.76E-04	1.02E-03	7.32E-04	4.05E-04	6.93E-05	2.38E-04	0.00E+00	4.66E-03
Cherry Valley Blvd Street 2 to Drwy 1	3.35E-03	1.19E-03	2.12E-03	1.52E-03	8.38E-04	1.44E-04	4.92E-04	0.00E+00	9.65E-03
Cherry Valley Blvd West of Drwy 1	6.78E-03	2.42E-03	4.30E-03	3.07E-03	1.70E-03	2.91E-04	9.99E-04	0.00E+00	1.96E-02

EMFAC2011 Running Exhaust and Idling Emission Factors Max Hourly CO 2017

Emission Factors @ 15 mph

Vehicle Class	Running Exhaust Emission Factor (g/mi)
LDA-DSL	0.367
LDT1-DSL	0.640
LDT2-DSL	0.435
MDV-DSL	0.359
LHDT1-DSL	1.892
LHDT2-DSL	1.833
MHDT-DSL	1.086
HHDT-DSL	2.294
LDA-GAS	1.465
LDT1-GAS	4.136
LDT2-GAS	2.104
MDV-GAS	3.317
LHDT1-GAS	3.744
LHDT2-GAS	2.763
MHDT-GAS	7.496
HHDT-GAS	66.096

Emission Factors @ 25 mph

Vehicle Class	Running Exhaust Emission Factor (g/mi)
LDA-DSL	0.224
LDT1-DSL	0.373
LDT2-DSL	0.261
MDV-DSL	0.222
LHDT1-DSL	1.066
LHDT2-DSL	1.035
MHDT-DSL	0.572
HHDT-DSL	1.185
LDA-GAS	1.180
LDT1-GAS	3.189
LDT2-GAS	1.695
MDV-GAS	2.642
LHDT1-GAS	2.020
LHDT2-GAS	1.498
MHDT-GAS	4.117
HHDT-GAS	36.364

Emission Factors @ 35 mph

Vehicle Class	Running Exhaust Emission Factor (g/mi)
LDA-DSL	0.1600
LDT1-DSL	0.2534
LDT2-DSL	0.1818
MDV-DSL	0.1591
LHDT1-DSL	0.7118
LHDT2-DSL	0.6934
MHDT-DSL	0.4943
HHDT-DSL	1.0861
LDA-GAS	0.9850
LDT1-GAS	2.5440
LDT2-GAS	1.3966
MDV-GAS	2.1667
LHDT1-GAS	1.3259
LHDT2-GAS	0.9871
MHDT-GAS	2.7932
HHDT-GAS	24.7998

Idling Emissions

Vehicle Class	Emission Factor (g/hr)
LHDT1-DSL	15.255
LHDT2-DSL	14.935
MHDT-DSL	21.880
HHDT-DSL	34.580

LHDT1 and LHDT2 idling emissions calculated by muiltiplying the running exhast emission factor at 5 mph by 5 mph

San Gordonio Crossing Project **2017** REV3
Emission Assumptions **Max Hourly Nox** Emissions

Emission Factors

1) Vehicle Emissions

a) Truck and Auto Traffic
(1) EMFAC2011
(a) Calculations for SoCAB
(b) Truck Mix
Traffic Impact Study used to derive fleet mix
EMFAC2011 to derive the % of diesel truck vehicles
(d) Vehicle Travel Speed
Onsite Travel 15 mph
Offsite Travel 35 mph
(e) Truck Idle time: 15 minutes (truck idling only applies to LHDT1, LHDT2, MHDT, and HHDT diesel vehicles)
(f) Emission factors for Max Hourly Nox emissions
(g) Emissions calculated for 2017

Traffic Allocation

1) Traffic was allocated to each building as a function of building size (square footage), number of loading docks, and driveway
2) Trip generation from the traffic study - Urban Crossroads 2013
3) Onsite travel emssions generated from diesel vehicles at all buildings
4) Onsite idling emissions generated only for diesel trucks

Emission Source Configuration

1) Vehicle traffic represented by a line source
2) Onsite idling represented as a point source

Onsite Travel Links

Diesel Vehicles	**Travel Distance (m)**
Building 1 West - (Enter/Exit Street 2)	999
Building 1 West - Enter Street 2/Exit Drwy 1)	1318
Building 1 East - (Enter/Exit Street 2)	342
Building 2 North - (Enter/Exit Street 2)	770
Building 2 South - (Enter/Exit Street 2)	549

Gas Vehicles	**Travel Distance (m)**
Driveway 1 to Building 1 South	280
Street 2 to Building 1 South	260
Driveway 3 to Building 2 East	469
Street 2 to Building 2 East	867
Street 2 to Building 2 West	438

Off site Travel Links

Diesel Vehicles	**Travel Distance (m)**
Cherry Ave: I10 to Driveway 1	589
Cherry Ave: DRWY1 to Street 2	370

Gas Vehicles	**Travel Distance (m)**
Cherry Valley Blvd East of Drwy 3	961
Cherry Valley Blvd Drwy 3 to Street 2	780
Cherry Valley Blvd Street 2 to Drwy 1	323
Cherry Valley Blvd West of Drwy 1	614

Other Input Parameters

Facility Operations for Warehouses (hr): 1

San Gordonio Crossing Project
Emissions Summary for Travel and Idling **Max Hourly Nox**

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	1.32E-02
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	5.82E-03
Building 1 - East (Enter/Exit Street 2) - DB1E22	6.04E-03
Building 2 - North (Enter/Exit Street 2) -DB2N22	1.83E-02
Building 2 - South (Enter/Exit Street 2) - DB2S22	1.31E-02
Total	**5.65E-02**

Onsite GAS Running Emissions

Location / AERMOD Source ID	GAS Emissions (g/sec)
Building 1 - South Parking (Enter/Exit Drwy 1) - GB1SD1	4.18E-05
Building 1- South Parking (Enter/Exit Street 2) - GB1SS2	6.54E-04
Building 2 - East Parking (Enter/Exit Drwy 3) - GB2ED3	1.40E-04
Building 2 - East Parking (Enter/Exit Street 2) - GB2ES2	1.18E-03
Building 2 - West Parking (Enter/Exit Street 2) - GB2WS2	7.28E-04

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	2.30E-02	4.60E-03
Building 1 - East (DB1E 1 to 5)	5	2.30E-02	4.60E-03
Building 2 - North (DB1N 1 to 5)	5	3.10E-02	6.20E-03
Building 2 - South (DB1S 1 to 5)	5	3.10E-02	6.20E-03
TOTAL		**1.08E-01**	

Offsite DSL Emissions / AERMOD Source ID		Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd	(DOFFD1)	3.50E-02
I10 to Street 2 along Cherry Valley Blvd	(DOFFST2)	1.92E-02

Offsite GAS Emissions / AERMOD Source ID		Gas Emissions (g/sec)
Cherry Valley Blvd East of Drwy 3	(GDW3)	8.90E-04
Cherry Valley Blvd Drwy 3 to Street 2	(GDR3ST2)	5.42E-04
Cherry Valley Blvd Street 2 to Drwy 1	(GST2DR1)	1.12E-03
Cherry Valley Blvd West of Drwy 1	(GDW1I10)	2.28E-03

San Gordonio Crossing Project **2017**

Vehicle Trip Allocation to Buildings

Building	Building Size Warehouse (sq-ft)
Building 1	811000
Building 2	1012760
Total	1823760

Trip Generation

Trip Generation Rate 0.12 trips/TSF as per Traffic Study

Building	trips/Pk Hr (Non-PCE)
Building 1	97
Building 2	122
Total	219

PM Peak Rate is used since the number of peak PM trips > number of peak hour AM trips

Diesel Vehicle Allocation for Warehouse Buildings

	Urban Crossroads Vehicle Distribution	EMFAC2011 Vehicle Default	Adjusted Fleet	EMFAC2011 % Diesel	Number of Pk Hr Diesel Trips	Number of Pk Hr GAS Trips	Total Number of Diesel+GAS Trips
LDA (Passenger Car)	66.70%	51.6%	37.21%	0.2%	0	81	81
LDT1		7.3%	5.26%	2.7%	0	11	12
LDT2		23.0%	16.58%	0.0%	0	36	36
MDT		10.6%	7.64%	0.0%	0	17	17
LHDT1 (2 axle truck)	7.33%	1.6%	5.58%	18.8%	2	10	12
LHDT2		0.5%	1.75%	40.0%	2	2	4
MHDT (3 axle truck)	5.89%	0.9%	5.89%	77.8%	10	3	13
HHDT (4+ axle truck)	20.08%	0.5%	20.08%	100.0%	44	0	44
	100.00%	96.0%	100.00%		58	161	219

Vehicle Distribution taken from Urban Crossroads 2014, Traffic Impact Study
Vehicle Default taken from EMFAC2011 for the SCAQMD in 2017
% Diesel taken from EMFAC2011 for the SoCAB in 2017

San Gordonio Crossing Project
Traffic Allocation Max Hourly Nox

Location	Vehicle type	Number of Diesel Trips	% of Fleet
San Gordonio Crossing Project	LDA	0	0.3%
	LDT1	0	0.5%
	LDT2	0	0.0%
	MDT	0	0.0%
	LHDT1	2	3.9%
	LHDT2	2	2.6%
	MHDT	10	17.2%
	HHDT	44	75.4%
Total		**58**	

NOTE: % Fleet and % diesel vehicles derived from the project traffic impact study and EMFAC2011 for the SCAQMD in 2017
Vehicle trips derived from the project traffic study

Vehicle Trip Allocation - Diesel Vehicles

Vehicle trips are allocated to building by square footage, number of loading docks, and by driveway

Loading Dock Allocations:

Building 1	70 docks on west side	64 docks on east side	134 Total Docks
Building 2	85 docks on north side	85 docks on south side	170 Total Docks

Total Trips to Building 1	26
Total Trips to Building 2	32
Total Trips to Building 1 East docks Enter and Exit Street 2	12
Total Trips to Building 1 West docks Enter Street 2 Exit Driveway 1	3
Total Trips to Building 1 West docks Enter Street 2 and Exit Street 2	9
Total Trips to Building 2 North Docks Enter Street 2 Exit Street 2	16
Total Trips to Building 2 South docks Enter Street 2 Exist Street 2	16

Onsite Truck Travel Segments	Total Diesel Vehicle Trips	Number of Diesel Vehicle Trips Transiting to Each Building							
		LDA	LDT1	LDT2	MDT	LHDT1	LHDT2	MHDT	HHDT
Building 1 - West (Enter Street 2/Exit Street 2)	9	0	0	0	0	0	0	2	7
Building 1 - West (Enter Street 2/Exit Driveway 1)	3	0	0	0	0	0	0	1	2
Building 1 - East (Enter/Exit Street 2)	12	0	0	0	0	0	0	2	9
Building 2 - North (Enter/Exit Street 2)	16	0	0	0	0	1	0	3	12
Building 2 - South (Enter/Exit Street 2)	16	0	0	0	0	1	0	3	12
Total Number of Diesel Vehicle Trips	56	0	0	0	0	2	1	10	43

Allocation to Driveways

Assume # incoming trucks = # outgoing trucks

All incoming trucks must use Street 2	28	trucks/day
75% outgoing trucks use Street 2	21	trucks/day
25% outgoing trucks use Driveway 1	7	trucks/day
Total Street 2	49	87.5%
Total Driveway 1	7	12.5%
Total	56	100.0%

Total Vehicles - All Vehicles Trips

Location	Diesel
Building 1	24
Building 2	32
Total	56

San Gordonio Crossing Project
Diesel Vehicle Emissions **Max Hourly Nox**

Processes Modeled
Diesel truck exhaust
Diesel truck idling

Facility Operations:
I10 Gateway (warehouse) 1 **hrs/day, 52weeks/year**

Onsite Roadway Links **Max Hourly Nox Emissions**

Link	Truck Type	Average Speed (mph)	Emission Factor (g/mi)	Trips per PK Hr (in and out)	Link Length (m)	Link Length (mi)	Emissions Over Link (g/hr)	Daily Emissions (lbs/hr)	Average Emissions (g/sec)	
Travel to Building 1 - West Docks	**LDA**	15	0.467	0	999	0.62	7.290E-03	1.61E-05	2.02E-06	
(Enter/Exit Street 2)	**LDT1**	15	0.652	0	999	0.62	1.944E-02	4.28E-05	5.40E-06	
	LDT2	15	0.581	0	999	0.62	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.431	0	999	0.62	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	3.810	0	999	0.62	8.391E-01	1.85E-03	2.33E-04	
	LHDT2	15	3.665	0	999	0.62	5.367E-01	1.18E-03	1.49E-04	
	MHDT	15	5.289	2	999	0.62	5.084E+00	1.12E-02	1.41E-03	
	HHDT	15	9.767	7	999	0.62	4.114E+01	9.06E-02	1.14E-02	1.32E-02
Travel to Bulding 1 - West Docks	**LDA**	15	0.467	0	1318	0.82	3.206E-03	7.06E-06	8.90E-07	
(Enter Street 2 / Exit Driveway 1)	**LDT1**	15	0.652	0	1318	0.82	8.548E-03	1.88E-05	2.37E-06	
	LDT2	15	0.581	0	1318	0.82	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.431	0	1318	0.82	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	3.810	0	1318	0.82	3.690E-01	8.13E-04	1.03E-04	
	LHDT2	15	3.665	0	1318	0.82	2.360E-01	5.20E-04	6.56E-05	
	MHDT	15	5.289	1	1318	0.82	2.236E+00	4.92E-03	6.21E-04	
	HHDT	15	9.767	2	1318	0.82	1.809E+01	3.98E-02	5.03E-03	5.82E-03
Travel to Building 1 - East Docks	**LDA**	15	0.467	0	342	0.21	3.327E-03	7.33E-06	9.24E-07	
(Enter/Exit Street 2)	**LDT1**	15	0.652	0	342	0.21	8.872E-03	1.95E-05	2.46E-06	
	LDT2	15	0.581	0	342	0.21	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.431	0	342	0.21	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	3.810	0	342	0.21	3.830E-01	8.44E-04	1.06E-04	
	LHDT2	15	3.665	0	342	0.21	2.450E-01	5.40E-04	6.80E-05	
	MHDT	15	5.289	2	342	0.21	2.321E+00	5.11E-03	6.45E-04	
	HHDT	15	9.767	9	342	0.21	1.878E+01	4.14E-02	5.22E-03	6.04E-03
Travel to Building 2 - North Docks	**LDA**	15	0.467	0	770	0.48	1.010E-02	2.22E-05	2.81E-06	
(Enter/Exit Street 2)	**LDT1**	15	0.652	0	770	0.48	2.693E-02	5.93E-05	7.48E-06	
	LDT2	15	0.581	0	770	0.48	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.431	0	770	0.48	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	3.810	1	770	0.48	1.163E+00	2.56E-03	3.23E-04	
	LHDT2	15	3.665	0	770	0.48	7.437E-01	1.64E-03	2.07E-04	
	MHDT	15	5.289	3	770	0.48	7.045E+00	1.55E-02	1.96E-03	
	HHDT	15	9.767	12	770	0.48	5.701E+01	1.26E-01	1.58E-02	1.83E-02
Travel to Building 2 - South Docks	**LDA**	15	0.467	0	549	0.34	7.202E-03	1.59E-05	2.00E-06	
(Enter/Exit Street 2)	**LDT1**	15	0.652	0	549	0.34	1.920E-02	4.23E-05	5.33E-06	
	LDT2	15	0.581	0	549	0.34	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.431	0	549	0.34	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	3.810	1	549	0.34	8.290E-01	1.83E-03	2.30E-04	
	LHDT2	15	3.665	0	549	0.34	5.302E-01	1.17E-03	1.47E-04	
	MHDT	15	5.289	3	549	0.34	5.023E+00	1.11E-02	1.40E-03	
	HHDT	15	9.767	12	549	0.34	4.064E+01	8.95E-02	1.13E-02	1.31E-02
TOTAL	**LDA**			0			3.113E-02	6.856E-05	8.646E-06	
	LDT1			0			8.300E-02	1.828E-04	2.305E-05	
	LDT2			0			0.000E+00	0.000E+00	0.000E+00	
	MDT			0			0.000E+00	0.000E+00	0.000E+00	
	LHDT1			2			3.583E+00	7.892E-03	9.952E-04	
	LHDT2			1			2.292E+00	5.047E-03	6.365E-04	
	MHDT			10			2.171E+01	4.781E-02	6.030E-03	
	HHDT			43			1.757E+02	3.869E-01	4.879E-02	
	Total			56			**2.03E+02**	**4.48E-01**	**5.65E-02**	**5.65E-02**

Diesel truck Idling Emissions **Max Hourly Nox Emissions** Idle Time (minutes) 15

Building/Location	Truck Type	Emission Factor (g/idle-hour)	Idling Time (min)	# Vehicles	Emissions (g/hr)	Daily Emissions (lbs/hr)	Average Emissions (g/sec)	
Idle at Building 1 - West	**LHDT1**	24.600	15	0	1.46E+00	3.20E-03	4.04E-04	
	LHDT2	23.820	15	0	9.37E-01	2.06E-03	2.60E-04	
	MHDT	71.012	15	1	1.83E+01	4.04E-02	5.09E-03	
	HHDT	54.808	15	5	6.20E+01	1.37E-01	1.72E-02	2.30E-02
Idle at Building 1 - East	**LHDT1**	24.600	15	0	1.46E+00	3.20E-03	4.04E-04	
	LHDT2	23.820	15	0	9.37E-01	2.06E-03	2.60E-04	
	MHDT	71.012	15	1	1.83E+01	4.04E-02	5.09E-03	
	HHDT	54.808	15	5	6.20E+01	1.37E-01	1.72E-02	2.30E-02
Idle at Building 2 - North	**LHDT1**	24.600	15	0	1.96E+00	4.32E-03	5.45E-04	
	LHDT2	23.820	15	0	1.26E+00	2.78E-03	3.51E-04	
	MHDT	71.012	15	1	2.47E+01	5.44E-02	6.87E-03	
	HHDT	54.808	15	6	8.36E+01	1.84E-01	2.32E-02	3.10E-02
Idle at Building 2 - South	**LHDT1**	24.600	15	0	1.96E+00	4.32E-03	5.45E-04	
	LHDT2	23.820	15	0	1.26E+00	2.78E-03	3.51E-04	
	MHDT	71.012	15	1	2.47E+01	5.44E-02	6.87E-03	
	HHDT	54.808	15	6	8.36E+01	1.84E-01	2.32E-02	3.10E-02
TOTAL Vehicles	**LHDT1**			1	6.83E+00	1.51E-02	1.90E-03	
	LHDT2			1	4.40E+00	9.69E-03	1.22E-03	
	MHDT			5	8.61E+01	1.90E-01	2.39E-02	
	HHDT			21	2.91E+02	6.41E-01	8.09E-02	
	Total			28	**3.89E+02**	**8.56E-01**	**1.08E-01**	**1.08E-01**

NOTES:
Onsite diesel truck travel emissions as per CARB EMFAC2011 for SoCAB, 15 mph
Onsite diesel truck Idle emissions as per CARB EMFAC2011 for SoCAB

Offsite DSL Vehicle Travel Emissions **Max Hourly Nox** **2017**

Total Number of Daily DSL Vehicle Trips

Vehicle Class	Ph Hour DSL Trips	Pk Hr DSL Trips (I10 to/from DRWY1	Pk Hr DSL Trips (DRWY1 to Str2)
LDA-DSL	0	0	0
LDT1-DSL	0	0	0
LDT2-DSL	0	0	0
MDT-DSL	0	0	0
LHDT1-DSL	2	2	2
LHDT2-DSL	2	2	1
MHDT-DSL	10	10	9
HHDT-DSL	44	44	38
Total	58	58	51

Travel Link DSL Vehicle Trips

Travel Link	Link Length (m)	LDA-DSL (trips/PK Hr)	LDT1-DSL (trips/PK Hr)	LDT2-DSL (trips/PK Hr)	MDT-DSL (trips/PK Hr)	LHDT1-DSL (trips/PK Hr)	LHDT2-DSL (trips/PK Hr)	MHDT-DSL (trips/PK Hr)	HHDT-DSL (trips/PK Hr)	Total (trips/PK Hr)
Cherry Ave: I10 to Driveway 1	589	0	0	0	0	2	2	10	44	58
Cherry Ave: DRWY1 to Street 2	370	0	0	0	0	2	1	9	38	51

Emission Factors

Vehicle Class	Emission Factor @ 25 mph (g/mi)	Emission Factor @ 35 mph (g/mi)
LDA-DSL	0.384	0.355
LDT1-DSL	0.524	0.469
LDT2-DSL	0.472	0.425
MDT-DSL	0.357	0.326
LHDT1-DSL	3.014	2.734
LHDT2-DSL	2.904	2.643
MHDT-DSL	3.674	3.207
HHDT-DSL	6.739	5.773

Travel Link DSL Emissions

Operations 1 hours/day

Travel Link	LDA-DSL (g/sec)	LDT1-DSL (g/sec)	LDT2-DSL (g/sec)	MDT-DSL (g/sec)	LHDT1-DSL (g/sec)	LHDT2-DSL (g/sec)	MHDT-DSL (g/sec)	HHDT-DSL (g/sec)	Total (g/sec)
Cherry Ave: I10 to Driveway 1	5.87E-06	1.48E-05	0.00E+00	0.00E+00	7.04E-04	4.51E-04	3.74E-03	3.01E-02	3.50E-02
Cherry Ave: DRWY1 to Street 2	3.23E-06	8.15E-06	0.00E+00	0.00E+00	3.87E-04	2.48E-04	2.06E-03	1.65E-02	1.92E-02

San Gordonio Crossing Project
Onsite GASTraffic Allocation Max Hourly Nox

Location	Vehicle type	Number of GAS Trips	% Trips
San Gordonio Crossing Project	LDA	81	50.6%
	LDT1	11	7.0%
	LDT2	36	22.6%
	MDT	17	10.4%
	LHDT1	10	6.2%
	LHDT2	2	1.4%
	MHDT	3	1.8%
	HHDT	0	0.0%
Total		**161**	**1**

Vehicle trips derived from the project traffic study

Vehicle Entry Allocation - GAS Vehicles

	Pk Hour Trips (all Veicles)
Building 1	71
Building 2	89

Roadway Segment	Total GAS Vehicle Trips	Number of GAS Vehicle Trips Transiting to Each Roadway Segment							
		LDA	LDT1	LDT2	MDT	LHDT1	LHDT2	MHDT	HHDT
Driveway 1 to Building 1 South Parking	4	2	0	1	0	0	0	0	0
Street 2 to Building 1 South Parking	67	34	5	15	7	4	1	1	0
Driveway 3 to Building 2 East Parking	8	4	1	2	1	0	0	0	0
Street 2 to Building 2 East Parking	37	19	3	8	4	2	1	1	0
Street 2 to Building 2 West Parking	45	23	3	10	5	3	1	1	0
	161	81	11	36	17	10	2	3	0

San Gordonio Crossing Project
GAS Vehicle Emissions **Max Hourly Nox**

Processes Modeled
Gas Vehicle exhaust

Facility Operations:
I10 Gateway (warehouse) 1 **hrs/day, 52weeks/year**

Roadway Links Modeled **Max Hourly Nox Emissions**

Link	Vehicle Type	Average Speed (mph)	Emission Factor (g/mi)	Trips per Pk Hr (in and out)	Link Length (m)	Link Length (mi)	Emissions Over Link (g/hr)	Daily Emissions (lbs/hr)	Average Emissions (g/sec)	
Driveway 1 to/from Building 1	**LDA**	15	0.116	2	280	0.17	4.085E-02	9.00E-05	1.13E-05	
South Parking Area	**LDT1**	15	0.366	0	280	0.17	1.778E-02	3.92E-05	4.94E-06	
	LDT2	15	0.220	1	280	0.17	3.460E-02	7.62E-05	9.61E-06	
	MDT	15	0.377	0	280	0.17	2.732E-02	6.02E-05	7.59E-06	
	LHDT1	15	0.378	0	280	0.17	1.625E-02	3.58E-05	4.52E-06	
	LHDT2	15	0.334	0	280	0.17	3.316E-03	7.30E-06	9.21E-07	
	MHDT	15	0.830	0	280	0.17	1.029E-02	2.27E-05	2.86E-06	
	HHDT	15	3.577	0	280	0.17	0.000E+00	0.00E+00	0.00E+00	4.18E-05
Street 2 to Building 1	**LDA**	15	0.116	34	260	0.16	6.391E-01	1.41E-03	1.78E-04	
South Parking Area	**LDT1**	15	0.366	5	260	0.16	2.782E-01	6.13E-04	7.73E-05	
	LDT2	15	0.220	15	260	0.16	5.414E-01	1.19E-03	1.50E-04	
	MDT	15	0.377	7	260	0.16	4.276E-01	9.42E-04	1.19E-04	
	LHDT1	15	0.378	4	260	0.16	2.544E-01	5.60E-04	7.07E-05	
	LHDT2	15	0.334	1	260	0.16	5.190E-02	1.14E-04	1.44E-05	
	MHDT	15	0.830	1	260	0.16	1.610E-01	3.55E-04	4.47E-05	
	HHDT	15	3.577	0	260	0.16	0.000E+00	0.00E+00	0.00E+00	6.54E-04
Driveway 3 to Building 2	**LDA**	15	0.116	4	469	0.29	1.368E-01	3.01E-04	3.80E-05	
East Parking Area	**LDT1**	15	0.366	1	469	0.29	5.955E-02	1.31E-04	1.65E-05	
	LDT2	15	0.220	2	469	0.29	1.159E-01	2.55E-04	3.22E-05	
	MDT	15	0.377	1	469	0.29	9.154E-02	2.02E-04	2.54E-05	
	LHDT1	15	0.378	0	469	0.29	5.445E-02	1.20E-04	1.51E-05	
	LHDT2	15	0.334	0	469	0.29	1.111E-02	2.45E-05	3.09E-06	
	MHDT	15	0.830	0	469	0.29	3.448E-02	7.59E-05	9.58E-06	
	HHDT	15	3.577	0	469	0.29	0.000E+00	0.00E+00	0.00E+00	1.40E-04
Street 2 to Building 2	**LDA**	15	0.116	19	867	0.54	1.157E+00	2.55E-03	3.21E-04	
East Parking Area	**LDT1**	15	0.366	3	867	0.54	5.034E-01	1.11E-03	1.40E-04	
	LDT2	15	0.220	8	867	0.54	9.799E-01	2.16E-03	2.72E-04	
	MDT	15	0.377	4	867	0.54	7.739E-01	1.70E-03	2.15E-04	
	LHDT1	15	0.378	2	867	0.54	4.603E-01	1.01E-03	1.28E-04	
	LHDT2	15	0.334	1	867	0.54	9.393E-02	2.07E-04	2.61E-05	
	MHDT	15	0.830	1	867	0.54	2.915E-01	6.42E-04	8.10E-05	
	HHDT	15	3.577	0	867	0.54	0.000E+00	0.00E+00	0.00E+00	1.18E-03
Street 2 to Building 2	**LDA**	15	0.116	23	438	0.27	7.122E-01	1.57E-03	1.98E-04	
West Parking Area	**LDT1**	15	0.366	3	438	0.27	3.099E-01	6.83E-04	8.61E-05	
	LDT2	15	0.220	10	438	0.27	6.033E-01	1.33E-03	1.68E-04	
	MDT	15	0.377	5	438	0.27	4.764E-01	1.05E-03	1.32E-04	
	LHDT1	15	0.378	3	438	0.27	2.834E-01	6.24E-04	7.87E-05	
	LHDT2	15	0.334	1	438	0.27	5.783E-02	1.27E-04	1.61E-05	
	MHDT	15	0.830	1	438	0.27	1.794E-01	3.95E-04	4.98E-05	
	HHDT	15	3.577	0	438	0.27	0.000E+00	0.00E+00	0.00E+00	7.28E-04
TOTAL	**LDA**			81			2.69E+00	1.799E-03	2.269E-04	
	LDT1			11			1.17E+00	7.830E-04	9.874E-05	
	LDT2			36			2.28E+00	1.524E-03	1.922E-04	
	MDT			17			1.80E+00	1.204E-03	1.518E-04	
	LHDT1			10			1.07E+00	7.160E-04	9.029E-05	
	LHDT2			2			2.18E-01	1.461E-04	1.842E-05	
	MHDT			3			6.77E-01	4.533E-04	5.717E-05	
	HHDT			0			0.00E+00	0.000E+00	0.000E+00	
	Total			161			**9.89E+00**	**6.63E-03**	**8.36E-04**	**9.90E+00**

Offsite GAS Vehicle Travel Emissions **Max Hourly Nox** **2017**

Total Number of Daily GAS Vehicle Trips

Vehicle Class	Pk Hour Gas Trips	Pk Hour Trips East of Drwy 3 (20% of Total)	Pk Hour Trips Drwy 3 to Street 2 (15% of Total)	Pk Hour Trips Street 2 to DRWY 1 (75% of total)	Pk Hour Trips Drwy 1 to I10 (80% of Total)
LDA-GAS	81	16	12	61	65
LDT1-GAS	11	2	2	8	9
LDT2-GAS	36	7	5	27	29
MDT-GAS	17	3	3	13	13
LHDT1-GAS	10	2	1	7	8
LHDT2-GAS	2	0	0	2	2
MHDT-GAS	3	1	0	2	2
HHDT-GAS	0	0	0	0	0
Total	161	32	24	120	128

Travel Link GAS Vehicle Trips

Travel Link	Length (m)	LDA-GAS (trips/Pk Hr)	LDT1-GAS (trips/Pk Hr)	LDT2-GAS (trips/Pk Hr)	MDT-GAS (trips/Pk Hr)	LHDT1-GAS (trips/Pk Hr)	LHDT2-GAS (trips/Pk Hr)	MHDT-GAS (trips/Pk Hr)	HHDT-GAS (trips/Pk Hr)	Total (trips/Pk Hr)
Cherry Valley Blvd East of Drwy 3	961	16	2	7	3	2	0	1	0	32
Cherry Valley Blvd Drwy 3 to Street 2	780	12	2	5	3	1	0	0	0	24
Cherry Valley Blvd Street 2 to Drwy 1	323	61	8	27	13	7	2	2	0	120
Cherry Valley Blvd West of Drwy 1	614	65	9	29	13	8	2	2	0	128

Emission Factors

Vehicle Class	Emission Factor @ 25 mph (g/mi)	Emission Factor @ 35 mph (g/mi)
LDA-GAS	0.096	0.085
LDT1-GAS	0.286	0.240
LDT2-GAS	0.176	0.151
MDT-GAS	0.302	0.259
LHDT1-GAS	0.408	0.432
LHDT2-GAS	0.362	0.385
MHDT-GAS	0.904	0.970
HHDT-GAS	3.908	4.247

Travel Link GAS Emissions

Operations 1 hours/day

Travel Link	LDA-GAS (g/sec)	LDT1-GAS (g/sec)	LDT2-GAS (g/sec)	MDT-GAS (g/sec)	LHDT1-GAS (g/sec)	LHDT2-GAS (g/sec)	MHDT-GAS (g/sec)	HHDT-GAS (g/sec)	Total (g/sec)
Cherry Valley Blvd East of Drwy 3	2.28E-04	8.94E-05	1.82E-04	1.44E-04	1.34E-04	2.75E-05	8.58E-05	0.00E+00	8.90E-04
Cherry Valley Blvd Drwy 3 to Street 2	1.39E-04	5.44E-05	1.11E-04	8.74E-05	8.18E-05	1.67E-05	5.22E-05	0.00E+00	5.42E-04
Cherry Valley Blvd Street 2 to Drwy 1	2.87E-04	1.13E-04	2.29E-04	1.81E-04	1.69E-04	3.47E-05	1.08E-04	0.00E+00	1.12E-03
Cherry Valley Blvd West of Drwy 1	5.83E-04	2.28E-04	4.64E-04	3.67E-04	3.43E-04	7.03E-05	2.19E-04	0.00E+00	2.28E-03

EMFAC2011 Running Exhaust and Idling Emission Factors Max Hourly Nox 2017

Emission Factors @ 15 mph

Vehicle Class	Running Exhaust Emission Factor (g/mi)
LDA-DSL	0.467
LDT1-DSL	0.652
LDT2-DSL	0.581
MDV-DSL	0.431
LHDT1-DSL	3.810
LHDT2-DSL	3.665
MHDT-DSL	5.289
HHDT-DSL	9.767
LDA-GAS	0.116
LDT1-GAS	0.366
LDT2-GAS	0.220
MDV-GAS	0.377
LHDT1-GAS	0.378
LHDT2-GAS	0.334
MHDT-GAS	0.830
HHDT-GAS	3.577

Emission Factors @ 25 mph

Vehicle Class	Running Exhaust Emission Factor (g/mi)
LDA-DSL	0.384
LDT1-DSL	0.524
LDT2-DSL	0.472
MDV-DSL	0.357
LHDT1-DSL	3.014
LHDT2-DSL	2.904
MHDT-DSL	3.674
HHDT-DSL	6.739
LDA-GAS	0.096
LDT1-GAS	0.286
LDT2-GAS	0.176
MDV-GAS	0.302
LHDT1-GAS	0.408
LHDT2-GAS	0.362
MHDT-GAS	0.904
HHDT-GAS	3.908

Emission Factors @ 35 mph

Vehicle Class	Running Exhaust Emission Factor (g/mi)
LDA-DSL	0.3549
LDT1-DSL	0.4688
LDT2-DSL	0.4254
MDV-DSL	0.3264
LHDT1-DSL	2.7341
LHDT2-DSL	2.6428
MHDT-DSL	3.2073
HHDT-DSL	5.7726
LDA-GAS	0.0846
LDT1-GAS	0.2404
LDT2-GAS	0.1509
MDV-GAS	0.2589
LHDT1-GAS	0.4319
LHDT2-GAS	0.3846
MHDT-GAS	0.9704
HHDT-GAS	4.2468

Idling Emissions

Vehicle Class	Emission Factor (g/hr)
LHDT1-DSL	24.600
LHDT2-DSL	23.820
MHDT-DSL	71.012
HHDT-DSL	54.808

LHDT1 and LHDT2 idling emissions calculated by muiltiplying the running exhast emission factor at 5 mph by 5 mph

San Gorgonio Crossing Project **2017** REV3
Emission Assumptions **Annual Nox** Emissions

Emission Factors

1) Vehicle Emissions

a) Truck and Auto Traffic
(1) EMFAC2011
(a) Calculations for SoCAB
(b) Truck Mix
Traffic Impact Study used to derive fleet mix
EMFAC2011 to derive the % of diesel truck vehicles
(d) Vehicle Travel Speed
Onsite Travel 15 mph
Offsite Travel 35 mph
(e) Truck Idle time: 15 minutes (truck idling only applies to LHDT1, LHDT2, MHDT, and HHDT diesel vehicles)
(f) Emission factors for Annual Nox emissions
(g) Emissions calculated for 2017

Traffic Allocation

1) Traffic was allocated to each building as a function of building size (square footage), number of loading docks, and driveway
2) Trip generation from the traffic study - Urban Crossroads 2013
3) Onsite travel emssions generated from diesel vehicles at all buildings
4) Onsite idling emissions generated only for diesel trucks

Emission Source Configuration

1) Vehicle traffic represented by a line source
2) Onsite idling represented as a point source

Onsite Travel Links

Diesel Vehicles	**Travel Distance (m)**
Building 1 West - (Enter/Exit Street 2)	999
Building 1 West - Enter Street 2/Exit Drwy 1)	1318
Building 1 East - (Enter/Exit Street 2)	342
Building 2 North - (Enter/Exit Street 2)	770
Building 2 South - (Enter/Exit Street 2)	549

Gas Vehicles	**Travel Distance (m)**
Driveway 1 to Building 1 South	280
Street 2 to Building 1 South	260
Driveway 3 to Building 2 East	469
Street 2 to Building 2 East	867
Street 2 to Building 2 West	438

Off site Travel Links

Diesel Vehicles	**Travel Distance (m)**
Cherry Ave: I10 to Driveway 1	589
Cherry Ave: DRWY1 to Street 2	370

Gas Vehicles	**Travel Distance (m)**
Cherry Valley Blvd East of Drwy 3	961
Cherry Valley Blvd Drwy 3 to Street 2	780
Cherry Valley Blvd Street 2 to Drwy 1	323
Cherry Valley Blvd West of Drwy 1	614

Other Input Parameters

Facility Operations for Warehouses (hr): 24

San Gorgonio Crossing Project
Emissions Summary for **Annual Nox**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	5.98E-03
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	9.63E-03
Building 1 - East (Enter/Exit Street 2) - DB1E22	4.16E-03
Building 2 - North (Enter/Exit Street 2) -DB2N22	1.22E-02
Building 2 - South (Enter/Exit Street 2) - DB2S22	8.72E-03
Total	**4.07E-02**

Onsite GAS Running Emissions

Location / AERMOD Source ID	GAS Emissions (g/sec)
Building 1 - South Parking (Enter/Exit Drwy 1) - GB1SD1	7.22E-05
Building 1- South Parking (Enter/Exit Street 2) - GB1SS2	3.25E-04
Building 2 - East Parking (Enter/Exit Drwy 3) - GB2ED3	1.61E-04
Building 2 - East Parking (Enter/Exit Street 2) - GB2ES2	5.19E-04
Building 2 - West Parking (Enter/Exit Street 2) - GB2WS2	4.13E-04

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	1.73E-02	3.46E-03
Building 1 - East (DB1E 1 to 5)	5	1.58E-02	3.16E-03
Building 2 - North (DB1N 1 to 5)	5	2.07E-02	4.14E-03
Building 2 - South (DB1S 1 to 5)	5	2.07E-02	4.14E-03
TOTAL		**7.45E-02**	

Offsite DSL Emissions / AERMOD Source ID		Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd	(DOFFD1)	2.34E-02
I10 to Street 2 along Cherry Valley Blvd	(DOFFST2)	1.28E-02

Offsite GAS Emissions / AERMOD Source ID		Gas Emissions (g/sec)
Cherry Valley Blvd East of Drwy 3	(GDW3)	5.13E-04
Cherry Valley Blvd Drwy 3 to Street 2	(GDR3ST2)	3.12E-04
Cherry Valley Blvd Street 2 to Drwy 1	(GST2DR1)	6.47E-04
Cherry Valley Blvd West of Drwy 1	(GDW1I10)	1.31E-03

San Gorgonio Crossing Project **2017**

Vehicle Trip Allocation to Buildings

Building	Building Size Warehouse (sq-ft)
Building 1	811000
Building 2	1012760
Total	1823760

Trip Generation

Trip Generation Rate 1.68 trips/TSF as per Traffic Study

Building	trips/day (Non-PCE)
Building 1	1362
Building 2	1701
Total	3064

Diesel Vehicle Allocation for Warehouse Buildings

	Urban Crossroads Vehicle Distribution	EMFAC2011 Vehicle Default	Adjusted Fleet	EMFAC2011 % Diesel	Number of Daily Diesel Trips	Number of Daily GAS Trips	Total Number of Diesel+GAS Trips
LDA (Passenger Car)	61.90%	51.6%	34.53%	0.2%	2	1056	1058
LDT1		7.3%	4.89%	2.7%	4	146	150
LDT2		23.0%	15.39%	0.0%	0	472	472
MDT		10.6%	7.09%	0.0%	0	217	217
LHDT1 (2 axle truck)	8.38%	1.6%	6.38%	18.8%	37	159	196
LHDT2		0.5%	2.00%	40.0%	24	37	61
MHDT (3 axle truck)	6.74%	0.9%	6.74%	77.8%	161	46	207
HHDT (4+ axle truck)	22.98%	0.5%	22.98%	100.0%	704	0	704
	100.00%	96.0%	100.00%		932	2132	3064

Vehicle Distribution taken from Urban Crossroads 2014, Traffic Impact Study
Vehicle Default taken from EMFAC2011 for the SCAQMD in 2017
% Diesel taken from EMFAC2011 for the SoCAB in 2017

San Gorgonio Crossing Project
Traffic Allocation Annual Nox

Location	Vehicle type	Number of Diesel Trips	% of Fleet
San Gorgonio Crossing Project	LDA	2	0.2%
	LDT1	4	0.4%
	LDT2	0	0.0%
	MDT	0	0.0%
	LHDT1	37	3.9%
	LHDT2	24	2.6%
	MHDT	161	17.2%
	HHDT	704	75.5%
Total		**932**	

NOTE: % Fleet and % diesel vehicles derived from the project traffic impact study and EMFAC2011 for the SCAQMD in 2017
Vehicle trips derived from the project traffic study

Vehicle Trip Allocation - Diesel Vehicles

Vehicle trips are allocated to building by square footage, number of loading docks, and by driveway

Loading Dock Allocations:

Building 1	70	docks on west side	64	docks on east side	134 Total Docks
Building 2	85	docks on north side	85	docks on south side	170 Total Docks

Total Trips to Building 1	415
Total Trips to Building 2	518
Total Trips to Building 1 East docks Enter and Exit Street 2	198
Total Trips to Building 1 West docks Enter Street 2 Exit Driveway 1	119
Total Trips to Building 1 West docks Enter Street 2 and Exit Street 2	98
Total Trips to Building 2 North Docks Enter Street 2 Exit Street 2	259
Total Trips to Building 2 South docks Enter Street 2 Exist Street 2	259

Onsite Truck Travel Segments	Total Diesel Vehicle Trips	Number of Diesel Vehicle Trips Transiting to Each Building							
		LDA	LDT1	LDT2	MDT	LHDT1	LHDT2	MHDT	HHDT
Building 1 - West (Enter Street 2/Exit Street 2)	98	0	0	0	0	4	3	17	74
Building 1 - West (Enter Street 2/Exit Driveway 1)	119	0	1	0	0	5	3	21	90
Building 1 - East (Enter/Exit Street 2)	198	0	1	0	0	8	5	34	150
Building 2 - North (Enter/Exit Street 2)	259	1	1	0	0	10	7	45	195
Building 2 - South (Enter/Exit Street 2)	259	1	1	0	0	10	7	45	195
Total Number of Diesel Vehicle Trips	932	2	4	0	0	37	24	161	704

Allocation to Driveways

Assume # incoming trucks = # outgoing trucks

All incoming trucks must use Street 2	466	trucks/day
75% outgoing trucks use Street 2	350	trucks/day
25% outgoing trucks use Driveway 1	117	trucks/day
Total Street 2	816	87.5%
Total Driveway 1	117	12.5%
Total	932	100.0%

Total Vehicles - All Vehicles Trips

Location	Diesel
Building 1	415
Building 2	518
Total	932

San Gorgonio Crossing Project
Diesel Vehicle Emissions **Annual Nox**

Processes Modeled
Diesel truck exhaust
Diesel truck idling

Facility Operations:
I10 Gateway (warehouse) 24 **hrs/day, 52weeks/year**

Onsite Roadway Links **Annual Nox Emissions**

Link	Truck Type	Average Speed (mph)	Emission Factor (g/mi)	Trips per day (in and out)	Link Length (m)	Link Length (mi)	Emissions Over Link (g/day)	Daily Emissions (lbs/day)	Average Emissions (g/sec)	
Travel to Building 1 - West Docks	**LDA**	15	0.467	0	999	0.62	6.417E-02	1.41E-04	7.43E-07	
(Enter/Exit Street 2)	**LDT1**	15	0.652	0	999	0.62	1.711E-01	3.77E-04	1.98E-06	
	LDT2	15	0.581	0	999	0.62	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.431	0	999	0.62	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	3.810	4	999	0.62	9.099E+00	2.00E-02	1.05E-04	
	LHDT2	15	3.665	3	999	0.62	5.820E+00	1.28E-02	6.74E-05	
	MHDT	15	5.289	17	999	0.62	5.518E+01	1.22E-01	6.39E-04	
	HHDT	15	9.767	74	999	0.62	4.466E+02	9.84E-01	5.17E-03	5.98E-03
Travel to Bulding 1 - West Docks	**LDA**	15	0.467	0	1318	0.82	1.033E-01	2.28E-04	1.20E-06	
(Enter Street 2 / Exit Driveway 1)	**LDT1**	15	0.652	1	1318	0.82	2.754E-01	6.07E-04	3.19E-06	
	LDT2	15	0.581	0	1318	0.82	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.431	0	1318	0.82	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	3.810	5	1318	0.82	1.465E+01	3.23E-02	1.70E-04	
	LHDT2	15	3.665	3	1318	0.82	9.368E+00	2.06E-02	1.08E-04	
	MHDT	15	5.289	21	1318	0.82	8.882E+01	1.96E-01	1.03E-03	
	HHDT	15	9.767	90	1318	0.82	7.188E+02	1.58E+00	8.32E-03	9.63E-03
Travel to Building 1 - East Docks	**LDA**	15	0.467	0	342	0.21	4.459E-02	9.82E-05	5.16E-07	
(Enter/Exit Street 2)	**LDT1**	15	0.652	1	342	0.21	1.189E-01	2.62E-04	1.38E-06	
	LDT2	15	0.581	0	342	0.21	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.431	0	342	0.21	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	3.810	8	342	0.21	6.323E+00	1.39E-02	7.32E-05	
	LHDT2	15	3.665	5	342	0.21	4.044E+00	8.91E-03	4.68E-05	
	MHDT	15	5.289	34	342	0.21	3.834E+01	8.45E-02	4.44E-04	
	HHDT	15	9.767	150	342	0.21	3.103E+02	6.83E-01	3.59E-03	4.16E-03
Travel to Building 2 - North Docks	**LDA**	15	0.467	1	770	0.48	1.312E-01	2.89E-04	1.52E-06	
(Enter/Exit Street 2)	**LDT1**	15	0.652	1	770	0.48	3.499E-01	7.71E-04	4.05E-06	
	LDT2	15	0.581	0	770	0.48	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.431	0	770	0.48	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	3.810	10	770	0.48	1.861E+01	4.10E-02	2.15E-04	
	LHDT2	15	3.665	7	770	0.48	1.190E+01	2.62E-02	1.38E-04	
	MHDT	15	5.289	45	770	0.48	1.129E+02	2.49E-01	1.31E-03	
	HHDT	15	9.767	195	770	0.48	9.133E+02	2.01E+00	1.06E-02	1.22E-02
Travel to Building 2 - South Docks	**LDA**	15	0.467	1	549	0.34	9.357E-02	2.06E-04	1.08E-06	
(Enter/Exit Street 2)	**LDT1**	15	0.652	1	549	0.34	2.495E-01	5.50E-04	2.89E-06	
	LDT2	15	0.581	0	549	0.34	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.431	0	549	0.34	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	3.810	10	549	0.34	1.327E+01	2.92E-02	1.54E-04	
	LHDT2	15	3.665	7	549	0.34	8.486E+00	1.87E-02	9.82E-05	
	MHDT	15	5.289	45	549	0.34	8.047E+01	1.77E-01	9.31E-04	
	HHDT	15	9.767	195	549	0.34	6.512E+02	1.43E+00	7.54E-03	8.72E-03
TOTAL	**LDA**			2			4.369E-01	9.622E-04	5.056E-06	
	LDT1			4			1.165E+00	2.566E-03	1.348E-05	
	LDT2			0			0.000E+00	0.000E+00	0.000E+00	
	MDT			0			0.000E+00	0.000E+00	0.000E+00	
	LHDT1			37			6.195E+01	1.364E-01	7.170E-04	
	LHDT2			24			3.962E+01	8.727E-02	4.586E-04	
	MHDT			161			3.757E+02	8.275E-01	4.348E-03	
	HHDT			704			3.040E+03	6.696E+00	3.519E-02	
	Total			932			**3.52E+03**	**7.75E+00**	**4.07E-02**	**4.07E-02**

Diesel truck Idling Emissions **Annual Nox Emissions** Idle Time (minutes) 15

Building/Location	Truck Type	Emission Factor (g/idle-hour)	Idling Time (min)	# Vehicles	Emissions (g/day)	Daily Emissions (lbs/day)	Average Emissions (g/sec)	
Idle at Building 1 - West	**LHDT1**	24.600	15	4	2.63E+01	5.79E-02	3.04E-04	
	LHDT2	23.820	15	3	1.69E+01	3.73E-02	1.96E-04	
	MHDT	71.012	15	19	3.31E+02	7.30E-01	3.83E-03	
	HHDT	54.808	15	82	1.12E+03	2.47E+00	1.30E-02	1.73E-02
Idle at Building 1 - East	**LHDT1**	24.600	15	4	2.40E+01	5.29E-02	2.78E-04	
	LHDT2	23.820	15	3	1.55E+01	3.41E-02	1.79E-04	
	MHDT	71.012	15	17	3.03E+02	6.67E-01	3.51E-03	
	HHDT	54.808	15	75	1.02E+03	2.26E+00	1.19E-02	1.58E-02
Idle at Building 2 - North	**LHDT1**	24.600	15	5	3.14E+01	6.92E-02	3.63E-04	
	LHDT2	23.820	15	3	2.02E+01	4.45E-02	2.34E-04	
	MHDT	71.012	15	22	3.96E+02	8.72E-01	4.58E-03	
	HHDT	54.808	15	98	1.34E+03	2.95E+00	1.55E-02	2.07E-02
Idle at Building 2 - South	**LHDT1**	24.600	15	5	3.14E+01	6.92E-02	3.63E-04	
	LHDT2	23.820	15	3	2.02E+01	4.45E-02	2.34E-04	
	MHDT	71.012	15	22	3.96E+02	8.72E-01	4.58E-03	
	HHDT	54.808	15	98	1.34E+03	2.95E+00	1.55E-02	2.07E-02
TOTAL Vehicles	**LHDT1**			18	1.13E+02	2.49E-01	1.31E-03	
	LHDT2			12	7.28E+01	1.60E-01	8.43E-04	
	MHDT			80	1.43E+03	3.14E+00	1.65E-02	
	HHDT			352	4.82E+03	1.06E+01	5.58E-02	
	Total			463	**6.44E+03**	**1.42E+01**	**7.45E-02**	**7.45E-02**

NOTES:
Onsite diesel truck travel emissions as per CARB EMFAC2011 for SoCAB, 15 mph
Onsite diesel truck Idle emissions as per CARB EMFAC2011 for SoCAB

Offsite DSL Vehicle Travel Emissions **Annual Nox** **2017**

Total Number of Daily DSL Vehicle Trips

Vehicle Class	Daily DSL Trips	Daily DSL Trips (I10 to/from DRWY1	Daily DSL Trips (DRWY1 to Str2)
LDA-DSL	2	2	2
LDT1-DSL	4	4	4
LDT2-DSL	0	0	0
MDT-DSL	0	0	0
LHDT1-DSL	37	37	32
LHDT2-DSL	24	24	21
MHDT-DSL	161	161	141
HHDT-DSL	704	704	616
Total	932	932	816

Travel Link DSL Vehicle Trips

Travel Link	Link Length (m)	LDA-DSL (trips/day)	LDT1-DSL (trips/day)	LDT2-DSL (trips/day)	MDT-DSL (trips/day)	LHDT1-DSL (trips/day)	LHDT2-DSL (trips/day)	MHDT-DSL (trips/day)	HHDT-DSL (trips/day)	Total (trips/day)
Cherry Ave: I10 to Driveway 1	589	2	4	0	0	37	24	161	704	932
Cherry Ave: DRWY1 to Street 2	370	2	4	0	0	32	21	141	616	816

Emission Factors

Vehicle Class	Emission Factor @ 25 mph (g/mi)	Emission Factor @ 35 mph (g/mi)
LDA-DSL	0.384	0.355
LDT1-DSL	0.524	0.469
LDT2-DSL	0.472	0.425
MDT-DSL	0.357	0.326
LHDT1-DSL	3.014	2.734
LHDT2-DSL	2.904	2.643
MHDT-DSL	3.674	3.207
HHDT-DSL	6.739	5.773

Travel Link DSL Emissions

Operations 24 hours/day

Travel Link	LDA-DSL (g/sec)	LDT1-DSL (g/sec)	LDT2-DSL (g/sec)	MDT-DSL (g/sec)	LHDT1-DSL (g/sec)	LHDT2-DSL (g/sec)	MHDT-DSL (g/sec)	HHDT-DSL (g/sec)	Total (g/sec)
Cherry Ave: I10 to Driveway 1	3.18E-06	8.02E-06	0.00E+00	0.00E+00	4.69E-04	3.01E-04	2.50E-03	2.01E-02	2.34E-02
Cherry Ave: DRWY1 to Street 2	1.75E-06	4.41E-06	0.00E+00	0.00E+00	2.58E-04	1.65E-04	1.37E-03	1.10E-02	1.28E-02

San Gorgonio Crossing Project
Onsite GASTraffic Allocation Annual Nox

Location	Vehicle type	Number of GAS Trips	% Trips
San Gorgonio Crossing Project	LDA	1056	49.5%
	LDT1	146	6.8%
	LDT2	472	22.1%
	MDT	217	10.2%
	LHDT1	159	7.5%
	LHDT2	37	1.7%
	MHDT	46	2.2%
	HHDT	0	0.0%
Total		**2132**	**1**

Vehicle trips derived from the project traffic study

Vehicle Entry Allocation - GAS Vehicles

	Daily Trips (all Veicles)
Building 1	948
Building 2	1184

Roadway Segment	Total GAS Vehicle Trips	Number of GAS Vehicle Trips Transiting to Each Roadway Segment							
		LDA	LDT1	LDT2	MDT	LHDT1	LHDT2	MHDT	HHDT
Driveway 1 to Building 1 South Parking	162	80	11	36	17	12	3	3	0
Street 2 to Building 1 South Parking	786	389	54	174	80	59	14	17	0
Driveway 3 to Building 2 East Parking	216	107	15	48	22	16	4	5	0
Street 2 to Building 2 East Parking	376	186	26	83	38	28	6	8	0
Street 2 to Building 2 West Parking	592	293	40	131	60	44	10	13	0
	2132	1056	146	472	217	159	37	46	0

San Gorgonio Crossing Project
GAS Vehicle Emissions **Annual Nox**

Processes Modeled
Gas Vehicle exhaust

Facility Operations:
I10 Gateway (warehouse) 24 **hrs/day, 52weeks/year**

Roadway Links Modeled **Annual Nox Emissions**

Link	Vehicle Type	Average Speed (mph)	Emission Factor (g/mi)	Trips per day (in and out)	Link Length (m)	Link Length (mi)	Emissions Over Link (g/day)	Daily Emissions (lbs/day)	Average Emissions (g/sec)	
Driveway 1 to/from Building 1	**LDA**	15	0.116	80	280	0.17	1.619E+00	3.57E-03	1.87E-05	
South Parking Area	**LDT1**	15	0.366	11	280	0.17	7.046E-01	1.55E-03	8.15E-06	
	LDT2	15	0.220	36	280	0.17	1.371E+00	3.02E-03	1.59E-05	
	MDT	15	0.377	17	280	0.17	1.083E+00	2.39E-03	1.25E-05	
	LHDT1	15	0.378	12	280	0.17	7.937E-01	1.75E-03	9.19E-06	
	LHDT2	15	0.334	3	280	0.17	1.619E-01	3.57E-04	1.87E-06	
	MHDT	15	0.830	3	280	0.17	5.030E-01	1.11E-03	5.82E-06	
	HHDT	15	3.577	0	280	0.17	0.000E+00	0.00E+00	0.00E+00	7.22E-05
Street 2 to Building 1	**LDA**	15	0.116	389	260	0.16	7.294E+00	1.61E-02	8.44E-05	
South Parking Area	**LDT1**	15	0.366	54	260	0.16	3.174E+00	6.99E-03	3.67E-05	
	LDT2	15	0.220	174	260	0.16	6.178E+00	1.36E-02	7.15E-05	
	MDT	15	0.377	80	260	0.16	4.879E+00	1.07E-02	5.65E-05	
	LHDT1	15	0.378	59	260	0.16	3.576E+00	7.88E-03	4.14E-05	
	LHDT2	15	0.334	14	260	0.16	7.295E-01	1.61E-03	8.44E-06	
	MHDT	15	0.830	17	260	0.16	2.266E+00	4.99E-03	2.62E-05	
	HHDT	15	3.577	0	260	0.16	0.000E+00	0.00E+00	0.00E+00	3.25E-04
Driveway 3 to Building 2	**LDA**	15	0.116	107	469	0.29	3.616E+00	7.96E-03	4.18E-05	
East Parking Area	**LDT1**	15	0.366	15	469	0.29	1.574E+00	3.47E-03	1.82E-05	
	LDT2	15	0.220	48	469	0.29	3.063E+00	6.75E-03	3.54E-05	
	MDT	15	0.377	22	469	0.29	2.419E+00	5.33E-03	2.80E-05	
	LHDT1	15	0.378	16	469	0.29	1.773E+00	3.90E-03	2.05E-05	
	LHDT2	15	0.334	4	469	0.29	3.617E-01	7.97E-04	4.19E-06	
	MHDT	15	0.830	5	469	0.29	1.123E+00	2.47E-03	1.30E-05	
	HHDT	15	3.577	0	469	0.29	0.000E+00	0.00E+00	0.00E+00	1.61E-04
Street 2 to Building 2	**LDA**	15	0.116	186	867	0.54	1.163E+01	2.56E-02	1.35E-04	
East Parking Area	**LDT1**	15	0.366	26	867	0.54	5.062E+00	1.12E-02	5.86E-05	
	LDT2	15	0.220	83	867	0.54	9.853E+00	2.17E-02	1.14E-04	
	MDT	15	0.377	38	867	0.54	7.782E+00	1.71E-02	9.01E-05	
	LHDT1	15	0.378	28	867	0.54	5.702E+00	1.26E-02	6.60E-05	
	LHDT2	15	0.334	6	867	0.54	1.163E+00	2.56E-03	1.35E-05	
	MHDT	15	0.830	8	867	0.54	3.614E+00	7.96E-03	4.18E-05	
	HHDT	15	3.577	0	867	0.54	0.000E+00	0.00E+00	0.00E+00	5.19E-04
Street 2 to Building 2	**LDA**	15	0.116	293	438	0.27	9.253E+00	2.04E-02	1.07E-04	
West Parking Area	**LDT1**	15	0.366	40	438	0.27	4.027E+00	8.87E-03	4.66E-05	
	LDT2	15	0.220	131	438	0.27	7.838E+00	1.73E-02	9.07E-05	
	MDT	15	0.377	60	438	0.27	6.190E+00	1.36E-02	7.16E-05	
	LHDT1	15	0.378	44	438	0.27	4.536E+00	9.99E-03	5.25E-05	
	LHDT2	15	0.334	10	438	0.27	9.255E-01	2.04E-03	1.07E-05	
	MHDT	15	0.830	13	438	0.27	2.875E+00	6.33E-03	3.33E-05	
	HHDT	15	3.577	0	438	0.27	0.000E+00	0.00E+00	0.00E+00	4.13E-04
TOTAL	**LDA**			1056			3.34E+01	2.760E-02	1.450E-04	
	LDT1			146			1.45E+01	1.201E-02	6.310E-05	
	LDT2			472			2.83E+01	2.337E-02	1.228E-04	
	MDT			217			2.24E+01	1.846E-02	9.700E-05	
	LHDT1			159			1.64E+01	1.353E-02	7.109E-05	
	LHDT2			37			3.34E+00	2.760E-03	1.450E-05	
	MHDT			46			1.04E+01	8.573E-03	4.505E-05	
	HHDT			0			0.00E+00	0.000E+00	0.000E+00	
	Total			2132			**1.29E+02**	**1.06E-01**	**5.59E-04**	**1.29E+02**

Offsite GAS Vehicle Travel Emissions **Annual Nox** **2017**

Total Number of Daily GAS Vehicle Trips

Vehicle Class	Daily Gas Trips	Daily Trips East of Drwy 3 (20% of Total)	Daily Trips Drwy 3 to Street 2 (15% of Total)	Daily Trips Street 2 to DRWY 1 (75% of total)	Daily Trips Drwy 1 to I10 (80% of Total)
LDA-GAS	1056	211	158	792	845
LDT1-GAS	146	29	22	109	117
LDT2-GAS	472	94	71	354	377
MDT-GAS	217	43	33	163	174
LHDT1-GAS	159	32	24	119	127
LHDT2-GAS	37	7	6	28	29
MHDT-GAS	46	9	7	34	37
HHDT-GAS	0	0	0	0	0
Total	2132	426	320	1599	1705

Travel Link GAS Vehicle Trips

Travel Link	Length (m)	LDA-GAS (trips/day)	LDT1-GAS (trips/day)	LDT2-GAS (trips/day)	MDT-GAS (trips/day)	LHDT1-GAS (trips/day)	LHDT2-GAS (trips/day)	MHDT-GAS (trips/day)	HHDT-GAS (trips/day)	Total (trips/day)
Cherry Valley Blvd East of Drwy 3	961	211	29	94	43	32	7	9	0	426
Cherry Valley Blvd Drwy 3 to Street 2	780	158	22	71	33	24	6	7	0	320
Cherry Valley Blvd Street 2 to Drwy 1	323	792	109	354	163	119	28	34	0	1599
Cherry Valley Blvd West of Drwy 1	614	845	117	377	174	127	29	37	0	1705

Emission Factors

Vehicle Class	Emission Factor @ 25 mph (g/mi)	Emission Factor @ 35 mph (g/mi)
LDA-GAS	0.096	0.085
LDT1-GAS	0.286	0.240
LDT2-GAS	0.176	0.151
MDT-GAS	0.302	0.259
LHDT1-GAS	0.408	0.432
LHDT2-GAS	0.362	0.385
MHDT-GAS	0.904	0.970
HHDT-GAS	3.908	4.247

Travel Link GAS Emissions

Operations 24 hours/day

Travel Link	LDA-GAS (g/sec)	LDT1-GAS (g/sec)	LDT2-GAS (g/sec)	MDT-GAS (g/sec)	LHDT1-GAS (g/sec)	LHDT2-GAS (g/sec)	MHDT-GAS (g/sec)	HHDT-GAS (g/sec)	Total (g/sec)
Cherry Valley Blvd East of Drwy 3	1.23E-04	4.84E-05	9.83E-05	7.78E-05	8.96E-05	1.83E-05	5.73E-05	0.00E+00	5.13E-04
Cherry Valley Blvd Drwy 3 to Street 2	7.51E-05	2.95E-05	5.99E-05	4.73E-05	5.45E-05	1.12E-05	3.49E-05	0.00E+00	3.12E-04
Cherry Valley Blvd Street 2 to Drwy 1	1.56E-04	6.10E-05	1.24E-04	9.80E-05	1.13E-04	2.31E-05	7.22E-05	0.00E+00	6.47E-04
Cherry Valley Blvd West of Drwy 1	3.15E-04	1.24E-04	2.51E-04	1.99E-04	2.29E-04	4.69E-05	1.46E-04	0.00E+00	1.31E-03

EMFAC2011 Running Exhaust and Idling Emission Factors Annual Nox 2017

Emission Factors @ 15 mph

Vehicle Class	Running Exhaust Emission Factor (g/mi)
LDA-DSL	0.467
LDT1-DSL	0.652
LDT2-DSL	0.581
MDV-DSL	0.431
LHDT1-DSL	3.810
LHDT2-DSL	3.665
MHDT-DSL	5.289
HHDT-DSL	9.767
LDA-GAS	0.116
LDT1-GAS	0.366
LDT2-GAS	0.220
MDV-GAS	0.377
LHDT1-GAS	0.378
LHDT2-GAS	0.334
MHDT-GAS	0.830
HHDT-GAS	3.577

Emission Factors @ 25 mph

Vehicle Class	Running Exhaust Emission Factor (g/mi)
LDA-DSL	0.384
LDT1-DSL	0.524
LDT2-DSL	0.472
MDV-DSL	0.357
LHDT1-DSL	3.014
LHDT2-DSL	2.904
MHDT-DSL	3.674
HHDT-DSL	6.739
LDA-GAS	0.096
LDT1-GAS	0.286
LDT2-GAS	0.176
MDV-GAS	0.302
LHDT1-GAS	0.408
LHDT2-GAS	0.362
MHDT-GAS	0.904
HHDT-GAS	3.908

Emission Factors @ 35 mph

Vehicle Class	Running Exhaust Emission Factor (g/mi)
LDA-DSL	0.3549
LDT1-DSL	0.4688
LDT2-DSL	0.4254
MDV-DSL	0.3264
LHDT1-DSL	2.7341
LHDT2-DSL	2.6428
MHDT-DSL	3.2073
HHDT-DSL	5.7726
LDA-GAS	0.0846
LDT1-GAS	0.2404
LDT2-GAS	0.1509
MDV-GAS	0.2589
LHDT1-GAS	0.4319
LHDT2-GAS	0.3846
MHDT-GAS	0.9704
HHDT-GAS	4.2468

Idling Emissions

Vehicle Class	Emission Factor (g/hr)
LHDT1-DSL	24.600
LHDT2-DSL	23.820
MHDT-DSL	71.012
HHDT-DSL	54.808

LHDT1 and LHDT2 idling emissions calculated by muiltiplying the running exhast emission factor at 5 mph by 5 mph

San Gorgonio Crossing **2017** REV3
Emission Assumptions **PM10** Emissions

Emission Factors

1) Vehicle Emissions

a) Truck and Auto Traffic
(1) EMFAC2011
(a) Calculations for SoCAB
(b) Truck Mix
Traffic Impact Study used to derive fleet mix
EMFAC2011 to derive the % of diesel truck vehicles
(d) Vehicle Travel Speed
Onsite Travel 15 mph
Offsite Travel 35 mph
(e) Truck Idle time: 15 minutes (truck idling only applies to LHDT1, LHDT2, MHDT, and HHDT diesel vehicles)
(f) Emission factors for PM10 emissions
(g) Emissions calculated for 2017

Traffic Allocation

1) Traffic was allocated to each building as a function of building size (square footage), number of loading docks, and driveway
2) Trip generation from the traffic study - Urban Crossroads 2013
3) Onsite travel emssions generated from diesel vehicles at all buildings
4) Onsite idling emissions generated only for diesel trucks

Emission Source Configuration

1) Vehicle traffic represented by a line source
2) Onsite idling represented as a point source

Onsite Travel Links

Diesel Vehicles	Travel Distance (m)
Building 1 West - (Enter/Exit Street 2)	999
Building 1 West - Enter Street 2/Exit Drwy 1)	1318
Building 1 East - (Enter/Exit Street 2)	342
Building 2 North - (Enter/Exit Street 2)	770
Building 2 South - (Enter/Exit Street 2)	549

Gas Vehicles	Travel Distance (m)
Driveway 1 to Building 1 South	280
Street 2 to Building 1 South	260
Driveway 3 to Building 2 East	469
Street 2 to Building 2 East	867
Street 2 to Building 2 West	438

Off site Travel Links

Diesel Vehicles	Travel Distance (m)
Cherry Ave: I10 to Driveway 1	589
Cherry Ave: DRWY1 to Street 2	370

Gas Vehicles	Travel Distance (m)
Cherry Valley Blvd East of Drwy 3	961
Cherry Valley Blvd Drwy 3 to Street 2	780
Cherry Valley Blvd Street 2 to Drwy 1	323
Cherry Valley Blvd West of Drwy 1	614

Other Input Parameters

Facility Operations for Warehouses (hr): 24

San Gorgonio Crossing
Emissions Summary for **PM10**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	1.35E-04
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	2.17E-04
Building 1 - East (Enter/Exit Street 2) - DB1E22	9.37E-05
Building 2 - North (Enter/Exit Street 2) -DB2N22	2.76E-04
Building 2 - South (Enter/Exit Street 2) - DB2S22	1.97E-04
Total	**9.18E-04**

Onsite GAS Running Emissions

Location / AERMOD Source ID	GAS Emissions (g/sec)
Building 1 - South Parking (Enter/Exit Drwy 1) - GB1SD1	1.62E-05
Building 1- South Parking (Enter/Exit Street 2) - GB1SS2	7.31E-05
Building 2 - East Parking (Enter/Exit Drwy 3) - GB2ED3	3.63E-05
Building 2 - East Parking (Enter/Exit Street 2) - GB2ES2	1.17E-04
Building 2 - West Parking (Enter/Exit Street 2) - GB2WS2	9.28E-05

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	5.21E-05	1.04E-05
Building 1 - East (DB1E 1 to 5)	5	4.77E-05	9.53E-06
Building 2 - North (DB1N 1 to 5)	5	6.23E-05	1.25E-05
Building 2 - South (DB1S 1 to 5)	5	6.23E-05	1.25E-05
TOTAL		**2.24E-04**	

Offsite DSL Emissions / AERMOD Source ID	Diesel Emissions (g/sec)	Entrained Road Dust (g/sec)	Total Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd (DOFFD1)	6.68E-04	4.12E-03	4.79E-03
Driveway 1 to Street 2 along Cherry Valley Blvd (DOFFST2)	3.67E-04	1.90E-03	2.27E-03

Offsite GAS Emissions / AERMOD Source ID		Gas Emissions (g/sec)	Entrained Dust	Total
Cherry Valley Blvd I10 of Drwy 1	(GDW1I10)	3.50E-04	9.65E-04	1.31E-03
Cherry Valley Blvd Drwy 1 to Street 2	(GST2DR1)	1.73E-04	4.76E-04	6.48E-04
Cherry Valley Blvd Street 2 to Drwy 3	(GDR3ST2)	8.34E-05	2.30E-04	3.13E-04
Cherry Valley Blvd East of Drwy 3	(GDW3)	1.37E-04	3.77E-04	5.14E-04

San Gorgonio Crossing **2017**

Vehicle Trip Allocation to Buildings

Building	Building Size Warehouse (sq-ft)
Building 1	811000
Building 2	1012760
Total	1823760

Trip Generation

Trip Generation Rate 1.68 trips/TSF as per Traffic Study

Building	trips/day (Non-PCE)
Building 1	1362
Building 2	1701
Total	3064

Diesel Vehicle Allocation for Warehouse Buildings

	Urban Crossroads Vehicle Distribution	EMFAC2011 Vehicle Default	Adjusted Fleet	EMFAC2011 % Diesel	Number of Daily Diesel Trips	Number of Daily GAS Trips	Total Number of Diesel+GAS Trips
LDA (Passenger Car)	61.90%	51.6%	34.53%	0.2%	2	1056	1058
LDT1		7.3%	4.89%	2.7%	4	146	150
LDT2		23.0%	15.39%	0.0%	0	472	472
MDT		10.6%	7.09%	0.0%	0	217	217
LHDT1 (2 axle truck)	8.38%	1.6%	6.38%	18.8%	37	159	196
LHDT2		0.5%	2.00%	40.0%	24	37	61
MHDT (3 axle truck)	6.74%	0.9%	6.74%	77.8%	161	46	207
HHDT (4+ axle truck)	22.98%	0.5%	22.98%	100.0%	704	0	704
	100.00%	96.0%	100.00%		932	2132	3064

Vehicle Distribution taken from Urban Crossroads 2014, Traffic Impact Study
Vehicle Default taken from EMFAC2011 for the SCAQMD in 2017
% Diesel taken from EMFAC2011 for the SoCAB in 2017

San Gorgonio Crossing
Traffic Allocation PM10

Location	Vehicle type	Number of Diesel Trips	% of Fleet
San Gorgonio Crossing	LDA	2	0.2%
	LDT1	4	0.4%
	LDT2	0	0.0%
	MDT	0	0.0%
	LHDT1	37	3.9%
	LHDT2	24	2.6%
	MHDT	161	17.2%
	HHDT	704	75.5%
Total		**932**	

NOTE: % Fleet and % diesel vehicles derived from the project traffic impact study and EMFAC2011 for the SCAQMD in 2017
Vehicle trips derived from the project traffic study

Vehicle Trip Allocation - Diesel Vehicles

Vehicle trips are allocated to building by square footage, number of loading docks, and by driveway

Loading Dock Allocations:

Building 1	70	docks on west side	64	docks on east side	134 Total Docks
Building 2	85	docks on north side	85	docks on south side	170 Total Docks

Total Trips to Building 1	415
Total Trips to Building 2	518
Total Trips to Building 1 East docks Enter and Exit Street 2	198
Total Trips to Building 1 West docks Enter Street 2 Exit Driveway 1	119
Total Trips to Building 1 West docks Enter Street 2 and Exit Street 2	98
Total Trips to Building 2 North Docks Enter Street 2 Exit Street 2	259
Total Trips to Building 2 South docks Enter Street 2 Exist Street 2	259

Onsite Truck Travel Segments	Total Diesel Vehicle Trips	Number of Diesel Vehicle Trips Transiting to Each Building							
		LDA	LDT1	LDT2	MDT	LHDT1	LHDT2	MHDT	HHDT
Building 1 - West (Enter Street 2/Exit Street 2)	98	0	0	0	0	4	3	17	74
Building 1 - West (Enter Street 2/Exit Driveway 1)	119	0	1	0	0	5	3	21	90
Building 1 - East (Enter/Exit Street 2)	198	0	1	0	0	8	5	34	150
Building 2 - North (Enter/Exit Street 2)	259	1	1	0	0	10	7	45	195
Building 2 - South (Enter/Exit Street 2)	259	1	1	0	0	10	7	45	195
Total Number of Diesel Vehicle Trips	932	2	4	0	0	37	24	161	704

Allocation to Driveways

Assume # incoming trucks = # outgoing trucks

All incoming trucks must use Street 2	466	trucks/day
75% outgoing trucks use Street 2	350	trucks/day
25% outgoing trucks use Driveway 1	117	trucks/day
Total Street 2	816	87.5%
Total Driveway 1	117	12.5%
Total	932	100.0%

Total Vehicles - All Vehicles Trips

Location	Diesel
Building 1	415
Building 2	518
Total	932

San Gorgonio Crossing
Diesel Vehicle Emissions **PM10**

Processes Modeled
Diesel truck exhaust
Diesel truck idling

Facility Operations:
I10 Gateway (warehouse) 24 **hrs/day, 52weeks/year**

Onsite Roadway Links **PM10 Emissions**

Link	Truck Type	Average Speed (mph)	Emission Factor (g/mi)	Trips per day (in and out)	Link Length (m)	Link Length (mi)	Emissions Over Link (g/day)	Daily Emissions (lbs/day)	Average Emissions (g/sec)	
Travel to Building 1 - West Docks	**LDA**	15	0.090	0	999	0.62	1.236E-02	2.72E-05	1.43E-07	
(Enter/Exit Street 2)	**LDT1**	15	0.148	0	999	0.62	3.875E-02	8.54E-05	4.48E-07	
	LDT2	15	0.097	0	999	0.62	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.093	0	999	0.62	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	0.159	4	999	0.62	3.797E-01	8.36E-04	4.39E-06	
	LHDT2	15	0.172	3	999	0.62	2.731E-01	6.02E-04	3.16E-06	
	MHDT	15	0.251	17	999	0.62	2.620E+00	5.77E-03	3.03E-05	
	HHDT	15	0.182	74	999	0.62	8.322E+00	1.83E-02	9.63E-05	1.35E-04
Travel to Bulding 1 - West Docks	**LDA**	15	0.090	0	1318	0.82	1.990E-02	4.38E-05	2.30E-07	
(Enter Street 2 / Exit Driveway 1)	**LDT1**	15	0.148	1	1318	0.82	6.238E-02	1.37E-04	7.22E-07	
	LDT2	15	0.097	0	1318	0.82	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.093	0	1318	0.82	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	0.159	5	1318	0.82	6.111E-01	1.35E-03	7.07E-06	
	LHDT2	15	0.172	3	1318	0.82	4.396E-01	9.68E-04	5.09E-06	
	MHDT	15	0.251	21	1318	0.82	4.217E+00	9.29E-03	4.88E-05	
	HHDT	15	0.182	90	1318	0.82	1.340E+01	2.95E-02	1.55E-04	2.17E-04
Travel to Building 1 - East Docks	**LDA**	15	0.090	0	342	0.21	8.590E-03	1.89E-05	9.94E-08	
(Enter/Exit Street 2)	**LDT1**	15	0.148	1	342	0.21	2.693E-02	5.93E-05	3.12E-07	
	LDT2	15	0.097	0	342	0.21	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.093	0	342	0.21	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	0.159	8	342	0.21	2.638E-01	5.81E-04	3.05E-06	
	LHDT2	15	0.172	5	342	0.21	1.898E-01	4.18E-04	2.20E-06	
	MHDT	15	0.251	34	342	0.21	1.820E+00	4.01E-03	2.11E-05	
	HHDT	15	0.182	150	342	0.21	5.783E+00	1.27E-02	6.69E-05	9.37E-05
Travel to Building 2 - North Docks	**LDA**	15	0.090	1	770	0.48	2.528E-02	5.57E-05	2.93E-07	
(Enter/Exit Street 2)	**LDT1**	15	0.148	1	770	0.48	7.926E-02	1.75E-04	9.17E-07	
	LDT2	15	0.097	0	770	0.48	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.093	0	770	0.48	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	0.159	10	770	0.48	7.765E-01	1.71E-03	8.99E-06	
	LHDT2	15	0.172	7	770	0.48	5.586E-01	1.23E-03	6.47E-06	
	MHDT	15	0.251	45	770	0.48	5.358E+00	1.18E-02	6.20E-05	
	HHDT	15	0.182	195	770	0.48	1.702E+01	3.75E-02	1.97E-04	2.76E-04
Travel to Building 2 - South Docks	**LDA**	15	0.090	1	549	0.34	1.803E-02	3.97E-05	2.09E-07	
(Enter/Exit Street 2)	**LDT1**	15	0.148	1	549	0.34	5.651E-02	1.24E-04	6.54E-07	
	LDT2	15	0.097	0	549	0.34	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.093	0	549	0.34	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	0.159	10	549	0.34	5.536E-01	1.22E-03	6.41E-06	
	LHDT2	15	0.172	7	549	0.34	3.983E-01	8.77E-04	4.61E-06	
	MHDT	15	0.251	45	549	0.34	3.820E+00	8.41E-03	4.42E-05	
	HHDT	15	0.182	195	549	0.34	1.214E+01	2.67E-02	1.40E-04	1.97E-04
TOTAL	**LDA**			2			8.416E-02	1.854E-04	9.741E-07	
	LDT1			4			2.638E-01	5.811E-04	3.053E-06	
	LDT2			0			0.000E+00	0.000E+00	0.000E+00	
	MDT			0			0.000E+00	0.000E+00	0.000E+00	
	LHDT1			37			2.585E+00	5.693E-03	2.992E-05	
	LHDT2			24			1.859E+00	4.095E-03	2.152E-05	
	MHDT			161			1.784E+01	3.929E-02	2.064E-04	
	HHDT			704			5.666E+01	1.248E-01	6.557E-04	
	Total			932			**7.93E+01**	**1.75E-01**	**9.18E-04**	**9.18E-04**

Diesel truck Idling Emissions **PM10 Emissions** Idle Time (minutes) 15

Building/Location	Truck Type	Emission Factor (g/idle-hour)	Idling Time (min)	# Vehicles	Emissions (g/day)	Daily Emissions (lbs/day)	Average Emissions (g/sec)	
Idle at Building 1 - West	**LHDT1**	0.478	15	4	5.10E-01	1.12E-03	5.90E-06	
	LHDT2	0.483	15	3	3.43E-01	7.55E-04	3.97E-06	
	MHDT	0.235	15	19	1.10E+00	2.41E-03	1.27E-05	
	HHDT	0.125	15	82	2.56E+00	5.63E-03	2.96E-05	5.21E-05
Idle at Building 1 - East	**LHDT1**	0.478	15	4	4.66E-01	1.03E-03	5.40E-06	
	LHDT2	0.483	15	3	3.14E-01	6.91E-04	3.63E-06	
	MHDT	0.235	15	17	1.00E+00	2.21E-03	1.16E-05	
	HHDT	0.125	15	75	2.34E+00	5.15E-03	2.70E-05	4.77E-05
Idle at Building 2 - North	**LHDT1**	0.478	15	5	6.09E-01	1.34E-03	7.05E-06	
	LHDT2	0.483	15	3	4.10E-01	9.03E-04	4.74E-06	
	MHDT	0.235	15	22	1.31E+00	2.89E-03	1.52E-05	
	HHDT	0.125	15	98	3.05E+00	6.73E-03	3.54E-05	6.23E-05
Idle at Building 2 - South	**LHDT1**	0.478	15	5	6.09E-01	1.34E-03	7.05E-06	
	LHDT2	0.483	15	3	4.10E-01	9.03E-04	4.74E-06	
	MHDT	0.235	15	22	1.31E+00	2.89E-03	1.52E-05	
	HHDT	0.125	15	98	3.05E+00	6.73E-03	3.54E-05	6.23E-05
TOTAL Vehicles	**LHDT1**			18	2.20E+00	4.84E-03	2.54E-05	
	LHDT2			12	1.48E+00	3.25E-03	1.71E-05	
	MHDT			80	4.72E+00	1.04E-02	5.46E-05	
	HHDT			352	1.10E+01	2.42E-02	1.27E-04	
	Total			463	**1.94E+01**	**4.27E-02**	**2.24E-04**	**2.24E-04**

NOTES:
Onsite diesel truck travel emissions as per CARB EMFAC2011 for SoCAB, 15 mph
Onsite diesel truck Idle emissions as per CARB EMFAC2011 for SoCAB

Offsite DSL Vehicle Travel Emissions **PM10** **2017**

Total Number of Daily DSL Vehicle Trips

Vehicle Class	Daily DSL Trips	Daily DSL Trips (I10 to/from DRWY1	Daily DSL Trips (DRWY1 to Str2)
LDA-DSL	2	2	2
LDT1-DSL	4	4	4
LDT2-DSL	0	0	0
MDT-DSL	0	0	0
LHDT1-DSL	37	37	32
LHDT2-DSL	24	24	21
MHDT-DSL	161	161	141
HHDT-DSL	704	704	616
Total	932	932	816

Travel Link DSL Vehicle Trips

Travel Link	Link Length (m)	LDA-DSL (trips/day)	LDT1-DSL (trips/day)	LDT2-DSL (trips/day)	MDT-DSL (trips/day)	LHDT1-DSL (trips/day)	LHDT2-DSL (trips/day)	MHDT-DSL (trips/day)	HHDT-DSL (trips/day)	Total (trips/day)
Cherry Ave: I10 to Driveway 1	589	2	4	0	0	37	24	161	704	932
Cherry Ave: DRWY1 to Street 2	370	2	4	0	0	32	21	141	616	816

Emission Factors

Vehicle Class	Emission Factor @ 25 mph (g/mi)	Emission Factor @ 35 mph (g/mi)
LDA-DSL	0.075	0.066
LDT1-DSL	0.112	0.092
LDT2-DSL	0.079	0.069
MDT-DSL	0.077	0.068
LHDT1-DSL	0.135	0.122
LHDT2-DSL	0.148	0.135
MHDT-DSL	0.215	0.208
HHDT-DSL	0.162	0.161

Travel Link DSL Emissions

Operations 24 hours/day

Travel Link	LDA-DSL (g/sec)	LDT1-DSL (g/sec)	LDT2-DSL (g/sec)	MDT-DSL (g/sec)	LHDT1-DSL (g/sec)	LHDT2-DSL (g/sec)	MHDT-DSL (g/sec)	HHDT-DSL (g/sec)	Total (g/sec)
Cherry Ave: I10 to Driveway 1	5.93E-07	1.58E-06	0.00E+00	0.00E+00	2.11E-05	1.54E-05	1.46E-04	4.83E-04	6.68E-04
Cherry Ave: DRWY1 to Street 2	3.26E-07	8.66E-07	0.00E+00	0.00E+00	1.16E-05	8.45E-06	8.03E-05	2.65E-04	3.67E-04

San Gorgonio Crossing
Onsite GASTraffic Allocation PM10

Location	Vehicle type	Number of GAS Trips	% Trips
San Gorgonio Crossing	LDA	1056	49.5%
	LDT1	146	6.8%
	LDT2	472	22.1%
	MDT	217	10.2%
	LHDT1	159	7.5%
	LHDT2	37	1.7%
	MHDT	46	2.2%
	HHDT	0	0.0%
Total		**2132**	**1**

Vehicle trips derived from the project traffic study

Vehicle Entry Allocation - GAS Vehicles

	Daily Trips (all Veicles)
Building 1	948
Building 2	1184

Roadway Segment	Total GAS Vehicle Trips	Number of GAS Vehicle Trips Transiting to Each Roadway Segment							
		LDA	LDT1	LDT2	MDT	LHDT1	LHDT2	MHDT	HHDT
Driveway 1 to Building 1 South Parking	162	80	11	36	17	12	3	3	0
Street 2 to Building 1 South Parking	786	389	54	174	80	59	14	17	0
Driveway 3 to Building 2 East Parking	216	107	15	48	22	16	4	5	0
Street 2 to Building 2 East Parking	376	186	26	83	38	28	6	8	0
Street 2 to Building 2 West Parking	592	293	40	131	60	44	10	13	0
	2132	1056	146	472	217	159	37	46	0

San Gorgonio Crossing
GAS Vehicle Emissions **PM10**

Processes Modeled
Gas Vehicle exhaust

Facility Operations:
I10 Gateway (warehouse) 24 **hrs/day, 52weeks/year**

Roadway Links Modeled **PM10 Emissions**

Link	Vehicle Type	Average Speed (mph)	Emission Factor (g/mi)	Trips per day (in and out)	Link Length (m)	Link Length (mi)	Emissions Over Link (g/day)	Daily Emissions (lbs/day)	Average Emissions (g/sec)	
Driveway 1 to/from Building 1	**LDA**	15	0.049	80	280	0.17	6.879E-01	1.52E-03	7.96E-06	
South Parking Area	**LDT1**	15	0.055	11	280	0.17	1.063E-01	2.34E-04	1.23E-06	
	LDT2	15	0.050	36	280	0.17	3.093E-01	6.81E-04	3.58E-06	
	MDT	15	0.050	17	280	0.17	1.447E-01	3.19E-04	1.67E-06	
	LHDT1	15	0.049	12	280	0.17	1.024E-01	2.26E-04	1.19E-06	
	LHDT2	15	0.048	3	280	0.17	2.333E-02	5.14E-05	2.70E-07	
	MHDT	15	0.048	3	280	0.17	2.887E-02	6.36E-05	3.34E-07	
	HHDT	15	0.046	0	280	0.17	0.000E+00	0.00E+00	0.00E+00	1.62E-05
Street 2 to Building 1	**LDA**	15	0.049	389	260	0.16	3.099E+00	6.83E-03	3.59E-05	
South Parking Area	**LDT1**	15	0.055	54	260	0.16	4.789E-01	1.05E-03	5.54E-06	
	LDT2	15	0.050	174	260	0.16	1.393E+00	3.07E-03	1.61E-05	
	MDT	15	0.050	80	260	0.16	6.519E-01	1.44E-03	7.54E-06	
	LHDT1	15	0.049	59	260	0.16	4.614E-01	1.02E-03	5.34E-06	
	LHDT2	15	0.048	14	260	0.16	1.051E-01	2.32E-04	1.22E-06	
	MHDT	15	0.048	17	260	0.16	1.301E-01	2.86E-04	1.51E-06	
	HHDT	15	0.046	0	260	0.16	0.000E+00	0.00E+00	0.00E+00	7.31E-05
Driveway 3 to Building 2	**LDA**	15	0.049	107	469	0.29	1.536E+00	3.38E-03	1.78E-05	
East Parking Area	**LDT1**	15	0.055	15	469	0.29	2.374E-01	5.23E-04	2.75E-06	
	LDT2	15	0.050	48	469	0.29	6.907E-01	1.52E-03	7.99E-06	
	MDT	15	0.050	22	469	0.29	3.232E-01	7.12E-04	3.74E-06	
	LHDT1	15	0.049	16	469	0.29	2.287E-01	5.04E-04	2.65E-06	
	LHDT2	15	0.048	4	469	0.29	5.211E-02	1.15E-04	6.03E-07	
	MHDT	15	0.048	5	469	0.29	6.448E-02	1.42E-04	7.46E-07	
	HHDT	15	0.046	0	469	0.29	0.000E+00	0.00E+00	0.00E+00	3.63E-05
Street 2 to Building 2	**LDA**	15	0.049	186	867	0.54	4.943E+00	1.09E-02	5.72E-05	
East Parking Area	**LDT1**	15	0.055	26	867	0.54	7.638E-01	1.68E-03	8.84E-06	
	LDT2	15	0.050	83	867	0.54	2.222E+00	4.89E-03	2.57E-05	
	MDT	15	0.050	38	867	0.54	1.040E+00	2.29E-03	1.20E-05	
	LHDT1	15	0.049	28	867	0.54	7.358E-01	1.62E-03	8.52E-06	
	LHDT2	15	0.048	6	867	0.54	1.676E-01	3.69E-04	1.94E-06	
	MHDT	15	0.048	8	867	0.54	2.074E-01	4.57E-04	2.40E-06	
	HHDT	15	0.046	0	867	0.54	0.000E+00	0.00E+00	0.00E+00	1.17E-04
Street 2 to Building 2	**LDA**	15	0.049	293	438	0.27	3.932E+00	8.66E-03	4.55E-05	
West Parking Area	**LDT1**	15	0.055	40	438	0.27	6.076E-01	1.34E-03	7.03E-06	
	LDT2	15	0.050	131	438	0.27	1.768E+00	3.89E-03	2.05E-05	
	MDT	15	0.050	60	438	0.27	8.270E-01	1.82E-03	9.57E-06	
	LHDT1	15	0.049	44	438	0.27	5.853E-01	1.29E-03	6.77E-06	
	LHDT2	15	0.048	10	438	0.27	1.334E-01	2.94E-04	1.54E-06	
	MHDT	15	0.048	13	438	0.27	1.650E-01	3.63E-04	1.91E-06	
	HHDT	15	0.046	0	438	0.27	0.000E+00	0.00E+00	0.00E+00	9.28E-05
TOTAL	**LDA**			1056			1.42E+01	1.173E-02	6.161E-05	
	LDT1			146			2.19E+00	1.812E-03	9.522E-06	
	LDT2			472			6.38E+00	5.271E-03	2.770E-05	
	MDT			217			2.99E+00	2.466E-03	1.296E-05	
	LHDT1			159			2.11E+00	1.746E-03	9.172E-06	
	LHDT2			37			4.82E-01	3.977E-04	2.090E-06	
	MHDT			46			5.96E-01	4.921E-04	2.586E-06	
	HHDT			0			0.00E+00	0.000E+00	0.000E+00	
	Total			2132			**2.90E+01**	**2.39E-02**	**1.26E-04**	**2.90E+01**

Offsite GAS Vehicle Travel Emissions **PM10** **2017**

Total Number of Daily GAS Vehicle Trips

Vehicle Class	Daily Gas Trips	Daily Trips East of Drwy 3 (20% of Total)	Daily Trips Drwy 3 to Street 2 (15% of Total)	Daily Trips Street 2 to DRWY 1 (75% of total)	Daily Trips Drwy 1 to I10 (80% of Total)
LDA-GAS	1056	211	158	792	845
LDT1-GAS	146	29	22	109	117
LDT2-GAS	472	94	71	354	377
MDT-GAS	217	43	33	163	174
LHDT1-GAS	159	32	24	119	127
LHDT2-GAS	37	7	6	28	29
MHDT-GAS	46	9	7	34	37
HHDT-GAS	0	0	0	0	0
Total	2132	426	320	1599	1705

Travel Link GAS Vehicle Trips

Travel Link	Length (m)	LDA-GAS (trips/day)	LDT1-GAS (trips/day)	LDT2-GAS (trips/day)	MDT-GAS (trips/day)	LHDT1-GAS (trips/day)	LHDT2-GAS (trips/day)	MHDT-GAS (trips/day)	HHDT-GAS (trips/day)	Total (trips/day)
Cherry Valley Blvd I10 to Drwy 1	614	845	117	377	174	127	29	37	0	1705
Cherry Valley Blvd Drwy 1 to Street 2	323	792	109	354	163	119	28	34	0	1599
Cherry Valley Blvd Street 2 to Drwy 3	780	158	22	71	33	24	6	7	0	320
Cherry Valley Blvd East of Drwy 3	961	211	29	94	43	32	7	9	0	426

Emission Factors

Vehicle Class	Emission Factor @ 25 mph (g/mi)	Emission Factor @ 35 mph (g/mi)
LDA-GAS	0.047	0.046
LDT1-GAS	0.050	0.048
LDT2-GAS	0.047	0.046
MDT-GAS	0.048	0.047
LHDT1-GAS	0.047	0.046
LHDT2-GAS	0.046	0.046
MHDT-GAS	0.046	0.046
HHDT-GAS	0.045	0.045

Travel Link GAS Emissions

Operations 24 hours/day

Travel Link	LDA-GAS (g/sec)	LDT1-GAS (g/sec)	LDT2-GAS (g/sec)	MDT-GAS (g/sec)	LHDT1-GAS (g/sec)	LHDT2-GAS (g/sec)	MHDT-GAS (g/sec)	HHDT-GAS (g/sec)	Total (g/sec)
Cherry Valley Blvd I10 to Drwy 1	1.73E-04	2.49E-05	7.72E-05	3.58E-05	2.62E-05	6.02E-06	7.48E-06	0.00E+00	3.50E-04
Cherry Valley Blvd Drwy 1 to Street 2	8.51E-05	1.23E-05	3.81E-05	1.77E-05	1.29E-05	2.97E-06	3.69E-06	0.00E+00	1.73E-04
Cherry Valley Blvd Street 2 to Drwy 3	4.11E-05	5.92E-06	1.84E-05	8.53E-06	6.25E-06	1.43E-06	1.78E-06	0.00E+00	8.34E-05
Cherry Valley Blvd East of Drwy 3	6.75E-05	9.72E-06	3.02E-05	1.40E-05	1.03E-05	2.35E-06	2.93E-06	0.00E+00	1.37E-04

San Gorgonio Crossing

Entrained Road Dust

Calculation Parameters - Median Vehicle Weight

Vehicle Class	Averaged Weight Tons
Pass, LHDT,MDT	2.13
LHDT	5.63
MHDT	11.75
HHDT	23.25

Calculation Parameters - Silt Loading

	Road Type	Silt Loading (g/m2)
Freeway	F	0.022
Arterial, Major Collector	A	0.035
Minor Collector	M	0.32

Particle Size Multiplier for PM10 = 0.0022 lb/VMT

Roadway Segment	Road Type	Segment Length (m)	Segment Length (mi)	Pass (trips/Day)	Daily Pass VMT	LHDT (trips/day)	Daily LHDT VMT	MHDT (trips/day)	Daily MHDT VMT	HHDT (trips/day)	Daily HHDT VMT	Daily Total VMT	Average Vehicle Wt (tons)	Silt Loading (g/m2)	Emission Factor (lb/VMT)	Entrained Dust (lb/day)	Emissions (g/sec)
Diesel Vehicles																	
Cherry Ave: I10 to Driveway 1	A	614	0.38	6	2	61	23	161	61	704	269	356	19.97	0.035	0.0022	0.8	4.12E-03
Cherry Ave: Drwy1 to Street 2	A	323	0.20	5	1	54	11	141	28	616	124	164	19.97	0.035	0.0022	0.4	1.90E-03
Cherry Valley Blvd Street 2 to Drwy 3	A	780	0.48	0	0	0	0	0	0	0	0	0	0.00	0.035	0.0000	0.0	0.00E+00
Cherry Valley Blvd East of Drwy 3	A	961	0.60	0	0	0	0	0	0	0	0	0	0.00	0.035	0.0000	0.0	0.00E+00
Gas Vehicles																	
Cherry Valley Ave: I10 to Driveway 1	A	614	0.38	1,512	577	156	60	37	14	0	0	650	2.66	0.035	0.0003	0.2	9.65E-04
Cherry Valley Ave: Drwy1 to Street 2	A	323	0.20	1,418	284	147	29	34	7	0	0	321	2.66	0.035	0.0003	0.1	4.76E-04
Cherry Valley Blvd Street 2 to Drwy 3	A	780	0.48	284	137	29	14	7	3	0	0	155	2.66	0.035	0.0003	0.0	2.30E-04
Cherry Valley Blvd East of Drwy 3	A	961	0.60	378	226	39	23	9	5	0	0	255	2.66	0.035	0.0003	0.1	3.77E-04

EMFAC2011 Running Exhaust and Idling Emission Factors PM10 2017

Emission Factors @ 15 mph

Vehicle Class	Running Exhaust Emission Factor (g/mi)	RunEx+TW+BW Emission Factor (g/mi)
LDA-DSL	0.045	0.090
LDT1-DSL	0.103	0.148
LDT2-DSL	0.052	0.097
MDV-DSL	0.048	0.093
LHDT1-DSL	0.071	0.159
LHDT2-DSL	0.071	0.172
MHDT-DSL	0.109	0.251
HHDT-DSL	0.086	0.182
LDA-GAS	0.005	0.049
LDT1-GAS	0.010	0.055
LDT2-GAS	0.005	0.050
MDV-GAS	0.006	0.050
LHDT1-GAS	0.004	0.049
LHDT2-GAS	0.003	0.048
MHDT-GAS	0.003	0.048
HHDT-GAS	0.001	0.046

Emission Factors @ 25 mph

Vehicle Class	Running Exhaust Emission Factor (g/mi)	RunEx+TW+BW Emission Factor (g/mi)
LDA-DSL	0.030	0.075
LDT1-DSL	0.068	0.112
LDT2-DSL	0.034	0.079
MDV-DSL	0.032	0.077
LHDT1-DSL	0.047	0.135
LHDT2-DSL	0.047	0.148
MHDT-DSL	0.072	0.215
HHDT-DSL	0.066	0.162
LDA-GAS	0.002	0.047
LDT1-GAS	0.006	0.050
LDT2-GAS	0.003	0.047
MDV-GAS	0.003	0.048
LHDT1-GAS	0.002	0.047
LHDT2-GAS	0.002	0.046
MHDT-GAS	0.001	0.046
HHDT-GAS	0.001	0.045

Emission Factors @ 35 mph

Emission Factor (g/mi)	Running Exhaust Emission Factor (g/mi)	RunEx+TW+BW Emission Factor (g/mi)	Vehicle Class	Tire Wear (g/mi)	Brake Wear (g/mi)	Total (g/mi)
LDA-DSL	0.0214	0.0661	LDA-DSL	0.008	0.037	0.045
LDT1-DSL	0.0473	0.0921	LDT1-DSL	0.008	0.037	0.045
LDT2-DSL	0.0239	0.0686	LDT2-DSL	0.008	0.037	0.045
MDV-DSL	0.0232	0.0679	MDV-DSL	0.008	0.037	0.045
LHDT1-DSL	0.0336	0.1221	LHDT1-DSL	0.012	0.076	0.088
LHDT2-DSL	0.0339	0.1351	LHDT2-DSL	0.012	0.089	0.101
MHDT-DSL	0.0660	0.2084	MHDT-DSL	0.012	0.130	0.142
HHDT-DSL	0.0647	0.1605	HHDT-DSL	0.035	0.061	0.096
LDA-GAS	0.0015	0.0463	LDA-GAS	0.008	0.037	0.045
LDT1-GAS	0.0036	0.0483	LDT1-GAS	0.008	0.037	0.045
LDT2-GAS	0.0016	0.0464	LDT2-GAS	0.008	0.037	0.045
MDV-GAS	0.0019	0.0466	MDV-GAS	0.008	0.037	0.045
LHDT1-GAS	0.0012	0.0459	LHDT1-GAS	0.008	0.037	0.045
LHDT2-GAS	0.0010	0.0457	LHDT2-GAS	0.008	0.037	0.045
MHDT-GAS	0.0009	0.0456	MHDT-GAS	0.008	0.037	0.045
HHDT-GAS	0.0004	0.0451	HHDT-GAS	0.008	0.037	0.045

Idling Emissions

Vehicle Class	Emission Factor (g/hr)
LHDT1-DSL	0.478
LHDT2-DSL	0.483
MHDT-DSL	0.235
HHDT-DSL	0.125

LHDT1 and LHDT2 idling emissions calculated by muiltiplying the running exhast emission factor at 5 mph by 5 mph

San Gorgonio Crossing Project **2017** REV3
Emission Assumptions **PM2.5** Emissions

Emission Factors

1) Vehicle Emissions

a) Truck and Auto Traffic
(1) EMFAC2011
(a) Calculations for SoCAB
(b) Truck Mix
Traffic Impact Study used to derive fleet mix
EMFAC2011 to derive the % of diesel truck vehicles
(d) Vehicle Travel Speed
Onsite Travel 15 mph
Offsite Travel 35 mph
(e) Truck Idle time: 15 minutes (truck idling only applies to LHDT1, LHDT2, MHDT, and HHDT diesel vehicles)
(f) Emission factors for PM2.5 emissions
(g) Emissions calculated for 2017

Traffic Allocation

1) Traffic was allocated to each building as a function of building size (square footage), number of loading docks, and driveway
2) Trip generation from the traffic study - Urban Crossroads 2013
3) Onsite travel emssions generated from diesel vehicles at all buildings
4) Onsite idling emissions generated only for diesel trucks

Emission Source Configuration

1) Vehicle traffic represented by a line source
2) Onsite idling represented as a point source

Onsite Travel Links

Diesel Vehicles	Travel Distance (m)
Building 1 West - (Enter/Exit Street 2)	999
Building 1 West - Enter Street 2/Exit Drwy 1)	1318
Building 1 East - (Enter/Exit Street 2)	342
Building 2 North - (Enter/Exit Street 2)	770
Building 2 South - (Enter/Exit Street 2)	549

Gas Vehicles	Travel Distance (m)
Driveway 1 to Building 1 South	280
Street 2 to Building 1 South	260
Driveway 3 to Building 2 East	469
Street 2 to Building 2 East	867
Street 2 to Building 2 West	438

Off site Travel Links

Diesel Vehicles	Travel Distance (m)
Cherry Ave: I10 to Driveway 1	589
Cherry Ave: DRWY1 to Street 2	370

Gas Vehicles	Travel Distance (m)
Cherry Valley Blvd East of Drwy 3	961
Cherry Valley Blvd Drwy 3 to Street 2	780
Cherry Valley Blvd Street 2 to Drwy 1	323
Cherry Valley Blvd West of Drwy 1	614

Other Input Parameters

Facility Operations for Warehouses (hr): 24

San Gorgonio Crossing Project
Emissions Summary for **PM2.5**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	8.47E-05
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	1.36E-04
Building 1 - East (Enter/Exit Street 2) - DB1E22	5.89E-05
Building 2 - North (Enter/Exit Street 2) -DB2N22	1.73E-04
Building 2 - South (Enter/Exit Street 2) - DB2S22	1.24E-04
Total	**5.77E-04**

Onsite GAS Running Emissions

Location / AERMOD Source ID	GAS Emissions (g/sec)
Building 1 - South Parking (Enter/Exit Drwy 1) - GB1SD1	7.33E-06
Building 1- South Parking (Enter/Exit Street 2) - GB1SS2	3.30E-05
Building 2 - East Parking (Enter/Exit Drwy 3) - GB2ED3	1.64E-05
Building 2 - East Parking (Enter/Exit Street 2) - GB2ES2	5.27E-05
Building 2 - West Parking (Enter/Exit Street 2) - GB2WS2	4.19E-05

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	4.80E-05	9.59E-06
Building 1 - East (DB1E 1 to 5)	5	4.39E-05	8.77E-06
Building 2 - North (DB1N 1 to 5)	5	5.73E-05	1.15E-05
Building 2 - South (DB1S 1 to 5)	5	5.73E-05	1.15E-05
TOTAL		**2.07E-04**	

Offsite DSL Emissions / AERMOD Source ID	Diesel Emissions (g/sec)	Entrained Road Dust (g/sec)	Total Diesel Vehicle Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd (DOFFD1)	3.94E-04	1.01E-03	1.41E-03
I10 to Street 2 along Cherry Valley Blvd (DOFFST2)	2.17E-04	4.66E-04	6.83E-04

Offsite GAS Emissions / AERMOD Source ID	Gas Emissions (g/sec)	Entrained Road Dust (g/sec)	Total Gas Vehicle Emissions (g/sec)
Cherry Valley Blvd I10 to Drwy 1 (GDW1I10)	1.48E-04	9.26E-05	2.40E-04
Cherry Valley Blvd Drwy 1 to Street 2 (GST2DR1)	7.29E-05	5.64E-05	1.29E-04
Cherry Valley Blvd Street 2 to Drwy 3 (GDR3ST2)	3.52E-05	1.17E-04	1.52E-04
Cherry Valley Blvd East of Drwy 3 (GDW3)	5.78E-05	2.37E-04	2.95E-04

San Gorgonio Crossing Project **2017**

Vehicle Trip Allocation to Buildings

Building	Building Size Warehouse (sq-ft)
Building 1	811000
Building 2	1012760
Total	1823760

Trip Generation

Trip Generation Rate 1.68 trips/TSF as per Traffic Study

Building	trips/day (Non-PCE)
Building 1	1362
Building 2	1701
Total	3064

Diesel Vehicle Allocation for Warehouse Buildings

	Urban Crossroads Vehicle Distribution	EMFAC2011 Vehicle Default	Adjusted Fleet	EMFAC2011 % Diesel	Number of Daily Diesel Trips	Number of Daily GAS Trips	Total Number of Diesel+GAS Trips
LDA (Passenger Car)	61.90%	51.6%	34.53%	0.2%	2	1056	1058
LDT1		7.3%	4.89%	2.7%	4	146	150
LDT2		23.0%	15.39%	0.0%	0	472	472
MDT		10.6%	7.09%	0.0%	0	217	217
LHDT1 (2 axle truck)	8.38%	1.6%	6.38%	18.8%	37	159	196
LHDT2		0.5%	2.00%	40.0%	24	37	61
MHDT (3 axle truck)	6.74%	0.9%	6.74%	77.8%	161	46	207
HHDT (4+ axle truck)	22.98%	0.5%	22.98%	100.0%	704	0	704
	100.00%	96.0%	100.00%		932	2132	3064

Vehicle Distribution taken from Urban Crossroads 2014, Traffic Impact Study
Vehicle Default taken from EMFAC2011 for the SCAQMD in 2017
% Diesel taken from EMFAC2011 for the SoCAB in 2017

San Gorgonio Crossing Project
Traffic Allocation PM2.5

Location	Vehicle type	Number of Diesel Trips	% of Fleet
San Gorgonio Crossing Project	LDA	2	0.2%
	LDT1	4	0.4%
	LDT2	0	0.0%
	MDT	0	0.0%
	LHDT1	37	3.9%
	LHDT2	24	2.6%
	MHDT	161	17.2%
	HHDT	704	75.5%
Total		**932**	

NOTE: % Fleet and % diesel vehicles derived from the project traffic impact study and EMFAC2011 for the SCAQMD in 2017
Vehicle trips derived from the project traffic study

Vehicle Trip Allocation - Diesel Vehicles

Vehicle trips are allocated to building by square footage, number of loading docks, and by driveway

Loading Dock Allocations:

Building 1	70	docks on west side	64	docks on east side	134	Total Docks
Building 2	85	docks on north side	85	docks on south side	170	Total Docks

Total Trips to Building 1	415
Total Trips to Building 2	518
Total Trips to Building 1 East docks Enter and Exit Street 2	198
Total Trips to Building 1 West docks Enter Street 2 Exit Driveway 1	119
Total Trips to Building 1 West docks Enter Street 2 and Exit Street 2	98
Total Trips to Building 2 North Docks Enter Street 2 Exit Street 2	259
Total Trips to Building 2 South docks Enter Street 2 Exist Street 2	259

Onsite Truck Travel Segments	Total Diesel Vehicle Trips	Number of Diesel Vehicle Trips Transiting to Each Building							
		LDA	LDT1	LDT2	MDT	LHDT1	LHDT2	MHDT	HHDT
Building 1 - West (Enter Street 2/Exit Street 2)	98	0	0	0	0	4	3	17	74
Building 1 - West (Enter Street 2/Exit Driveway 1)	119	0	1	0	0	5	3	21	90
Building 1 - East (Enter/Exit Street 2)	198	0	1	0	0	8	5	34	150
Building 2 - North (Enter/Exit Street 2)	259	1	1	0	0	10	7	45	195
Building 2 - South (Enter/Exit Street 2)	259	1	1	0	0	10	7	45	195
Total Number of Diesel Vehicle Trips	932	2	4	0	0	37	24	161	704

Allocation to Driveways

Assume # incoming trucks = # outgoing trucks

All incoming trucks must use Street 2	466	trucks/day
75% outgoing trucks use Street 2	350	trucks/day
25% outgoing trucks use Driveway 1	117	trucks/day
Total Street 2	816	87.5%
Total Driveway 1	117	12.5%
Total	932	100.0%

Total Vehicles - All Vehicles Trips

Location	Diesel
Building 1	415
Building 2	518
Total	932

San Gorgonio Crossing Project
Diesel Vehicle Emissions **PM2.5**

Processes Modeled
Diesel truck exhaust
Diesel truck idling

Facility Operations:
I10 Gateway (warehouse) 24 **hrs/day, 52weeks/year**

Onsite Roadway Links **PM2.5 Emissions**

Link	Truck Type	Average Speed (mph)	Emission Factor (g/mi)	Trips per day (in and out)	Link Length (m)	Link Length (mi)	Emissions Over Link (g/day)	Daily Emissions (lbs/day)	Average Emissions (g/sec)	
Travel to Building 1 - West Docks	**LDA**	15	0.060	0	999	0.62	8.244E-03	1.82E-05	9.54E-08	
(Enter/Exit Street 2)	**LDT1**	15	0.113	0	999	0.62	2.965E-02	6.53E-05	3.43E-07	
	LDT2	15	0.066	0	999	0.62	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.062	0	999	0.62	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	0.101	4	999	0.62	2.412E-01	5.31E-04	2.79E-06	
	LHDT2	15	0.106	3	999	0.62	1.683E-01	3.71E-04	1.95E-06	
	MHDT	15	0.159	17	999	0.62	1.659E+00	3.65E-03	1.92E-05	
	HHDT	15	0.114	74	999	0.62	5.212E+00	1.15E-02	6.03E-05	8.47E-05
Travel to Bulding 1 - West Docks	**LDA**	15	0.060	0	1318	0.82	1.327E-02	2.92E-05	1.54E-07	
(Enter Street 2 / Exit Driveway 1)	**LDT1**	15	0.113	1	1318	0.82	4.773E-02	1.05E-04	5.52E-07	
	LDT2	15	0.066	0	1318	0.82	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.062	0	1318	0.82	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	0.101	5	1318	0.82	3.883E-01	8.55E-04	4.49E-06	
	LHDT2	15	0.106	3	1318	0.82	2.709E-01	5.97E-04	3.14E-06	
	MHDT	15	0.159	21	1318	0.82	2.670E+00	5.88E-03	3.09E-05	
	HHDT	15	0.114	90	1318	0.82	8.390E+00	1.85E-02	9.71E-05	1.36E-04
Travel to Building 1 - East Docks	**LDA**	15	0.060	0	342	0.21	5.729E-03	1.26E-05	6.63E-08	
(Enter/Exit Street 2)	**LDT1**	15	0.113	1	342	0.21	2.061E-02	4.54E-05	2.38E-07	
	LDT2	15	0.066	0	342	0.21	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.062	0	342	0.21	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	0.101	8	342	0.21	1.676E-01	3.69E-04	1.94E-06	
	LHDT2	15	0.106	5	342	0.21	1.170E-01	2.58E-04	1.35E-06	
	MHDT	15	0.159	34	342	0.21	1.153E+00	2.54E-03	1.33E-05	
	HHDT	15	0.114	150	342	0.21	3.622E+00	7.98E-03	4.19E-05	5.89E-05
Travel to Building 2 - North Docks	**LDA**	15	0.060	1	770	0.48	1.686E-02	3.71E-05	1.95E-07	
(Enter/Exit Street 2)	**LDT1**	15	0.113	1	770	0.48	6.065E-02	1.34E-04	7.02E-07	
	LDT2	15	0.066	0	770	0.48	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.062	0	770	0.48	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	0.101	10	770	0.48	4.933E-01	1.09E-03	5.71E-06	
	LHDT2	15	0.106	7	770	0.48	3.443E-01	7.58E-04	3.98E-06	
	MHDT	15	0.159	45	770	0.48	3.393E+00	7.47E-03	3.93E-05	
	HHDT	15	0.114	195	770	0.48	1.066E+01	2.35E-02	1.23E-04	1.73E-04
Travel to Building 2 - South Docks	**LDA**	15	0.060	1	549	0.34	1.202E-02	2.65E-05	1.39E-07	
(Enter/Exit Street 2)	**LDT1**	15	0.113	1	549	0.34	4.324E-02	9.52E-05	5.00E-07	
	LDT2	15	0.066	0	549	0.34	0.000E+00	0.00E+00	0.00E+00	
	MDT	15	0.062	0	549	0.34	0.000E+00	0.00E+00	0.00E+00	
	LHDT1	15	0.101	10	549	0.34	3.517E-01	7.75E-04	4.07E-06	
	LHDT2	15	0.106	7	549	0.34	2.454E-01	5.41E-04	2.84E-06	
	MHDT	15	0.159	45	549	0.34	2.419E+00	5.33E-03	2.80E-05	
	HHDT	15	0.114	195	549	0.34	7.601E+00	1.67E-02	8.80E-05	1.24E-04
TOTAL	**LDA**			2			5.613E-02	1.236E-04	6.496E-07	
	LDT1			4			2.019E-01	4.447E-04	2.337E-06	
	LDT2			0			0.000E+00	0.000E+00	0.000E+00	
	MDT			0			0.000E+00	0.000E+00	0.000E+00	
	LHDT1			37			1.642E+00	3.617E-03	1.901E-05	
	LHDT2			24			1.146E+00	2.524E-03	1.326E-05	
	MHDT			161			1.129E+01	2.488E-02	1.307E-04	
	HHDT			704			3.548E+01	7.816E-02	4.107E-04	
	Total			932			**4.98E+01**	**1.10E-01**	**5.77E-04**	**5.77E-04**

Diesel truck Idling Emissions **PM2.5 Emissions** Idle Time (minutes) 15

Building/Location	Truck Type	Emission Factor (g/idle-hour)	Idling Time (min)	# Vehicles	Emissions (g/day)	Daily Emissions (lbs/day)	Average Emissions (g/sec)	
Idle at Building 1 - West	**LHDT1**	0.440	15	4	4.70E-01	1.03E-03	5.44E-06	
	LHDT2	0.445	15	3	3.16E-01	6.96E-04	3.66E-06	
	MHDT	0.216	15	19	1.01E+00	2.22E-03	1.17E-05	
	HHDT	0.115	15	82	2.35E+00	5.18E-03	2.72E-05	4.80E-05
Idle at Building 1 - East	**LHDT1**	0.440	15	4	4.30E-01	9.46E-04	4.97E-06	
	LHDT2	0.445	15	3	2.89E-01	6.36E-04	3.34E-06	
	MHDT	0.216	15	17	9.21E-01	2.03E-03	1.07E-05	
	HHDT	0.115	15	75	2.15E+00	4.73E-03	2.49E-05	4.39E-05
Idle at Building 2 - North	**LHDT1**	0.440	15	5	5.62E-01	1.24E-03	6.50E-06	
	LHDT2	0.445	15	3	3.78E-01	8.32E-04	4.37E-06	
	MHDT	0.216	15	22	1.20E+00	2.65E-03	1.39E-05	
	HHDT	0.115	15	98	2.81E+00	6.19E-03	3.25E-05	5.73E-05
Idle at Building 2 - South	**LHDT1**	0.440	15	5	5.62E-01	1.24E-03	6.50E-06	
	LHDT2	0.445	15	3	3.78E-01	8.32E-04	4.37E-06	
	MHDT	0.216	15	22	1.20E+00	2.65E-03	1.39E-05	
	HHDT	0.115	15	98	2.81E+00	6.19E-03	3.25E-05	5.73E-05
TOTAL Vehicles	**LHDT1**			18	2.02E+00	4.46E-03	2.34E-05	
	LHDT2			12	1.36E+00	3.00E-03	1.57E-05	
	MHDT			80	4.34E+00	9.55E-03	5.02E-05	
	HHDT			352	1.01E+01	2.23E-02	1.17E-04	
	Total			463	**1.78E+01**	**3.93E-02**	**2.07E-04**	**2.07E-04**

NOTES:
Onsite diesel truck travel emissions as per CARB EMFAC2011 for SoCAB, 15 mph
Onsite diesel truck Idle emissions as per CARB EMFAC2011 for SoCAB

Offsite DSL Vehicle Travel Emissions **PM2.5** **2017**

Total Number of Daily DSL Vehicle Trips

Vehicle Class	Daily DSL Trips	Daily DSL Trips (I10 to/from DRWY1	Daily DSL Trips (DRWY1 to Str2)
LDA-DSL	2	2	2
LDT1-DSL	4	4	4
LDT2-DSL	0	0	0
MDT-DSL	0	0	0
LHDT1-DSL	37	37	32
LHDT2-DSL	24	24	21
MHDT-DSL	161	161	141
HHDT-DSL	704	704	616
Total	932	932	816

Travel Link DSL Vehicle Trips

Travel Link	Link Length (m)	LDA-DSL (trips/day)	LDT1-DSL (trips/day)	LDT2-DSL (trips/day)	MDT-DSL (trips/day)	LHDT1-DSL (trips/day)	LHDT2-DSL (trips/day)	MHDT-DSL (trips/day)	HHDT-DSL (trips/day)	Total (trips/day)
Cherry Ave: I10 to Driveway 1	589	2	4	0	0	37	24	161	704	932
Cherry Ave: DRWY1 to Street 2	370	2	4	0	0	32	21	141	616	816

Emission Factors

Vehicle Class	Emission Factor @ 25 mph (g/mi)	Emission Factor @ 35 mph (g/mi)
LDA-DSL	0.045	0.038
LDT1-DSL	0.080	0.062
LDT2-DSL	0.049	0.040
MDT-DSL	0.047	0.039
LHDT1-DSL	0.079	0.067
LHDT2-DSL	0.084	0.072
MHDT-DSL	0.126	0.120
HHDT-DSL	0.096	0.095

Travel Link DSL Emissions

Operations 24 hours/day

Travel Link	LDA-DSL (g/sec)	LDT1-DSL (g/sec)	LDT2-DSL (g/sec)	MDT-DSL (g/sec)	LHDT1-DSL (g/sec)	LHDT2-DSL (g/sec)	MHDT-DSL (g/sec)	HHDT-DSL (g/sec)	Total (g/sec)
Cherry Ave: I10 to Driveway 1	3.38E-07	1.05E-06	0.00E+00	0.00E+00	1.23E-05	8.70E-06	8.57E-05	2.86E-04	3.94E-04
Cherry Ave: DRWY1 to Street 2	1.86E-07	5.79E-07	0.00E+00	0.00E+00	6.76E-06	4.78E-06	4.71E-05	1.57E-04	2.17E-04

San Gorgonio Crossing Project
Onsite GASTraffic Allocation PM2.5

Location	Vehicle type	Number of GAS Trips	% Trips
San Gorgonio Crossing Project	LDA	1056	49.5%
	LDT1	146	6.8%
	LDT2	472	22.1%
	MDT	217	10.2%
	LHDT1	159	7.5%
	LHDT2	37	1.7%
	MHDT	46	2.2%
	HHDT	0	0.0%
Total		**2132**	**1**

Vehicle trips derived from the project traffic study

Vehicle Entry Allocation - GAS Vehicles

	Daily Trips (all Veicles)
Building 1	948
Building 2	1184

Roadway Segment	Total GAS Vehicle Trips	Number of GAS Vehicle Trips Transiting to Each Roadway Segment							
		LDA	LDT1	LDT2	MDT	LHDT1	LHDT2	MHDT	HHDT
Driveway 1 to Building 1 South Parking	162	80	11	36	17	12	3	3	0
Street 2 to Building 1 South Parking	786	389	54	174	80	59	14	17	0
Driveway 3 to Building 2 East Parking	216	107	15	48	22	16	4	5	0
Street 2 to Building 2 East Parking	376	186	26	83	38	28	6	8	0
Street 2 to Building 2 West Parking	592	293	40	131	60	44	10	13	0
	2132	1056	146	472	217	159	37	46	0

San Gorgonio Crossing Project
GAS Vehicle Emissions **PM2.5**

Processes Modeled
Gas Vehicle exhaust

Facility Operations:
I10 Gateway (warehouse) 24 **hrs/day, 52weeks/year**

Roadway Links Modeled **PM2.5 Emissions**

Link	Vehicle Type	Average Speed (mph)	Emission Factor (g/mi)	Trips per day (in and out)	Link Length (m)	Link Length (mi)	Emissions Over Link (g/day)	Daily Emissions (lbs/day)	Average Emissions (g/sec)	
Driveway 1 to/from Building 1	**LDA**	15	0.022	80	280	0.17	3.070E-01	6.76E-04	3.55E-06	
South Parking Area	**LDT1**	15	0.028	11	280	0.17	5.390E-02	1.19E-04	6.24E-07	
	LDT2	15	0.022	36	280	0.17	1.371E-01	3.02E-04	1.59E-06	
	MDT	15	0.023	17	280	0.17	6.607E-02	1.46E-04	7.65E-07	
	LHDT1	15	0.022	12	280	0.17	4.619E-02	1.02E-04	5.35E-07	
	LHDT2	15	0.021	3	280	0.17	1.018E-02	2.24E-05	1.18E-07	
	MHDT	15	0.021	3	280	0.17	1.273E-02	2.80E-05	1.47E-07	
	HHDT	15	0.019	0	280	0.17	0.000E+00	0.00E+00	0.00E+00	7.33E-06
Street 2 to Building 1	**LDA**	15	0.022	389	260	0.16	1.383E+00	3.05E-03	1.60E-05	
South Parking Area	**LDT1**	15	0.028	54	260	0.16	2.428E-01	5.35E-04	2.81E-06	
	LDT2	15	0.022	174	260	0.16	6.178E-01	1.36E-03	7.15E-06	
	MDT	15	0.023	80	260	0.16	2.977E-01	6.56E-04	3.45E-06	
	LHDT1	15	0.022	59	260	0.16	2.081E-01	4.58E-04	2.41E-06	
	LHDT2	15	0.021	14	260	0.16	4.587E-02	1.01E-04	5.31E-07	
	MHDT	15	0.021	17	260	0.16	5.733E-02	1.26E-04	6.64E-07	
	HHDT	15	0.019	0	260	0.16	0.000E+00	0.00E+00	0.00E+00	3.30E-05
Driveway 3 to Building 2	**LDA**	15	0.022	107	469	0.29	6.857E-01	1.51E-03	7.94E-06	
East Parking Area	**LDT1**	15	0.028	15	469	0.29	1.204E-01	2.65E-04	1.39E-06	
	LDT2	15	0.022	48	469	0.29	3.063E-01	6.75E-04	3.54E-06	
	MDT	15	0.023	22	469	0.29	1.476E-01	3.25E-04	1.71E-06	
	LHDT1	15	0.022	16	469	0.29	1.032E-01	2.27E-04	1.19E-06	
	LHDT2	15	0.021	4	469	0.29	2.274E-02	5.01E-05	2.63E-07	
	MHDT	15	0.021	5	469	0.29	2.842E-02	6.26E-05	3.29E-07	
	HHDT	15	0.019	0	469	0.29	0.000E+00	0.00E+00	0.00E+00	1.64E-05
Street 2 to Building 2	**LDA**	15	0.022	186	867	0.54	2.206E+00	4.86E-03	2.55E-05	
East Parking Area	**LDT1**	15	0.028	26	867	0.54	3.873E-01	8.53E-04	4.48E-06	
	LDT2	15	0.022	83	867	0.54	9.853E-01	2.17E-03	1.14E-05	
	MDT	15	0.023	38	867	0.54	4.747E-01	1.05E-03	5.49E-06	
	LHDT1	15	0.022	28	867	0.54	3.319E-01	7.31E-04	3.84E-06	
	LHDT2	15	0.021	6	867	0.54	7.315E-02	1.61E-04	8.47E-07	
	MHDT	15	0.021	8	867	0.54	9.143E-02	2.01E-04	1.06E-06	
	HHDT	15	0.019	0	867	0.54	0.000E+00	0.00E+00	0.00E+00	5.27E-05
Street 2 to Building 2	**LDA**	15	0.022	293	438	0.27	1.755E+00	3.87E-03	2.03E-05	
West Parking Area	**LDT1**	15	0.028	40	438	0.27	3.081E-01	6.79E-04	3.57E-06	
	LDT2	15	0.022	131	438	0.27	7.838E-01	1.73E-03	9.07E-06	
	MDT	15	0.023	60	438	0.27	3.776E-01	8.32E-04	4.37E-06	
	LHDT1	15	0.022	44	438	0.27	2.640E-01	5.82E-04	3.06E-06	
	LHDT2	15	0.021	10	438	0.27	5.819E-02	1.28E-04	6.74E-07	
	MHDT	15	0.021	13	438	0.27	7.273E-02	1.60E-04	8.42E-07	
	HHDT	15	0.019	0	438	0.27	0.000E+00	0.00E+00	0.00E+00	4.19E-05
TOTAL	**LDA**			1056			6.34E+00	5.234E-03	2.750E-05	
	LDT1			146			1.11E+00	9.187E-04	4.828E-06	
	LDT2			472			2.83E+00	2.337E-03	1.228E-05	
	MDT			217			1.36E+00	1.126E-03	5.918E-06	
	LHDT1			159			9.53E-01	7.874E-04	4.137E-06	
	LHDT2			37			2.10E-01	1.735E-04	9.119E-07	
	MHDT			46			2.63E-01	2.169E-04	1.140E-06	
	HHDT			0			0.00E+00	0.000E+00	0.000E+00	
	Total			2132			**1.31E+01**	**1.08E-02**	**5.67E-05**	**1.31E+01**

Offsite GAS Vehicle Travel Emissions **PM2.5** **2017**

Total Number of Daily GAS Vehicle Trips

Vehicle Class	Daily Gas Trips	Daily Trips East of Drwy 3 (20% of Total)	Daily Trips Drwy 3 to Street 2 (15% of Total)	Daily Trips Street 2 to DRWY 1 (75% of total)	Daily Trips Drwy 1 to I10 (80% of Total)
LDA-GAS	1056	211	158	792	845
LDT1-GAS	146	29	22	109	117
LDT2-GAS	472	94	71	354	377
MDT-GAS	217	43	33	163	174
LHDT1-GAS	159	32	24	119	127
LHDT2-GAS	37	7	6	28	29
MHDT-GAS	46	9	7	34	37
HHDT-GAS	0	0	0	0	0
Total	2132	426	320	1599	1705

Travel Link GAS Vehicle Trips

Travel Link	Length (m)	LDA-GAS (trips/day)	LDT1-GAS (trips/day)	LDT2-GAS (trips/day)	MDT-GAS (trips/day)	LHDT1-GAS (trips/day)	LHDT2-GAS (trips/day)	MHDT-GAS (trips/day)	HHDT-GAS (trips/day)	Total (trips/day)
Cherry Valley Blvd I10 to Drwy 1	614	845	117	377	174	127	29	37	0	1705
Cherry Valley Blvd Drwy 1 to Street 2	323	792	109	354	163	119	28	34	0	1599
Cherry Valley Blvd Street 2 to Drwy 3	780	158	22	71	33	24	6	7	0	320
Cherry Valley Blvd East of Drwy 3	961	211	29	94	43	32	7	9	0	426

Emission Factors

Vehicle Class	Emission Factor @ 25 mph (g/mi)	Emission Factor @ 35 mph (g/mi)
LDA-GAS	0.020	0.019
LDT1-GAS	0.023	0.021
LDT2-GAS	0.020	0.020
MDT-GAS	0.021	0.020
LHDT1-GAS	0.020	0.019
LHDT2-GAS	0.020	0.019
MHDT-GAS	0.019	0.019
HHDT-GAS	0.019	0.018

Travel Link GAS Emissions

Operations 24 hours/day

Travel Link	LDA-GAS (g/sec)	LDT1-GAS (g/sec)	LDT2-GAS (g/sec)	MDT-GAS (g/sec)	LHDT1-GAS (g/sec)	LHDT2-GAS (g/sec)	MHDT-GAS (g/sec)	HHDT-GAS (g/sec)	Total (g/sec)
Cherry Valley Blvd I10 to Drwy 1	7.23E-05	1.10E-05	3.25E-05	1.51E-05	1.12E-05	2.59E-06	3.08E-06	0.00E+00	1.48E-04
Cherry Valley Blvd Drwy 1 to Street 2	3.57E-05	5.40E-06	1.60E-05	7.46E-06	5.53E-06	1.28E-06	1.52E-06	0.00E+00	7.29E-05
Cherry Valley Blvd Street 2 to Drwy 3	1.72E-05	2.61E-06	7.74E-06	3.60E-06	2.67E-06	6.17E-07	7.33E-07	0.00E+00	3.52E-05
Cherry Valley Blvd East of Drwy 3	2.83E-05	4.29E-06	1.27E-05	5.92E-06	4.39E-06	1.01E-06	1.20E-06	0.00E+00	5.78E-05

EMFAC2011 Running Exhaust and Idling Emission Factors **PM2.5** **2017**

Emission Factors @ 15 mph

Vehicle Class	Running Exhaust Emission Factor (g/mi)	RunEx+TW+BW Emission Factor (g/mi)
LDA-DSL	0.042	0.060
LDT1-DSL	0.095	0.113
LDT2-DSL	0.048	0.066
MDV-DSL	0.044	0.062
LHDT1-DSL	0.065	0.101
LHDT2-DSL	0.065	0.106
MHDT-DSL	0.100	0.159
HHDT-DSL	0.079	0.114
LDA-GAS	0.004	0.022
LDT1-GAS	0.010	0.028
LDT2-GAS	0.004	0.022
MDV-GAS	0.005	0.023
LHDT1-GAS	0.004	0.022
LHDT2-GAS	0.003	0.021
MHDT-GAS	0.003	0.021
HHDT-GAS	0.001	0.019

Emission Factors @ 25 mph

Vehicle Class	Running Exhaust Emission Factor (g/mi)	RunEx+TW+BW Emission Factor (g/mi)
LDA-DSL	0.027	0.045
LDT1-DSL	0.062	0.080
LDT2-DSL	0.031	0.049
MDV-DSL	0.029	0.047
LHDT1-DSL	0.043	0.079
LHDT2-DSL	0.043	0.084
MHDT-DSL	0.067	0.126
HHDT-DSL	0.061	0.096
LDA-GAS	0.002	0.020
LDT1-GAS	0.005	0.023
LDT2-GAS	0.002	0.020
MDV-GAS	0.003	0.021
LHDT1-GAS	0.002	0.020
LHDT2-GAS	0.002	0.020
MHDT-GAS	0.001	0.019
HHDT-GAS	0.001	0.019

Emission Factors @ 35 mph

Emission Factor (g/mi)	Running Exhaust Emission Factor (g/mi)	RunEx+TW+BW Emission Factor (g/mi)	Vehicle Class	Tire Wear (g/mi)	Brake Wear (g/mi)	Total (g/mi)
LDA-DSL	0.0197	0.0377	LDA-DSL	0.002	0.016	0.018
LDT1-DSL	0.0435	0.0615	LDT1-DSL	0.002	0.016	0.018
LDT2-DSL	0.0220	0.0400	LDT2-DSL	0.002	0.016	0.018
MDV-DSL	0.0213	0.0393	MDV-DSL	0.002	0.016	0.018
LHDT1-DSL	0.0310	0.0670	LHDT1-DSL	0.003	0.033	0.036
LHDT2-DSL	0.0312	0.0722	LHDT2-DSL	0.003	0.038	0.041
MHDT-DSL	0.0608	0.1198	MHDT-DSL	0.003	0.056	0.059
HHDT-DSL	0.0595	0.0945	HHDT-DSL	0.009	0.026	0.035
LDA-GAS	0.0014	0.0194	LDA-GAS	0.002	0.016	0.018
LDT1-GAS	0.0033	0.0213	LDT1-GAS	0.002	0.016	0.018
LDT2-GAS	0.0015	0.0195	LDT2-GAS	0.002	0.016	0.018
MDV-GAS	0.0017	0.0197	MDV-GAS	0.002	0.016	0.018
LHDT1-GAS	0.0011	0.0191	LHDT1-GAS	0.002	0.016	0.018
LHDT2-GAS	0.0009	0.0189	LHDT2-GAS	0.002	0.016	0.018
MHDT-GAS	0.0008	0.0188	MHDT-GAS	0.002	0.016	0.018
HHDT-GAS	0.0003	0.0183	HHDT-GAS	0.002	0.016	0.018

Idling Emissions

Vehicle Class	Emission Factor (g/hr)
LHDT1-DSL	0.440
LHDT2-DSL	0.445
MHDT-DSL	0.216
HHDT-DSL	0.115

LHDT1 and LHDT2 idling emissions calculated by muiltiplying the running exhast emission factor at 5 mph by 5 mph

San Gorgonio Crossing

Entrained Road Dust

Calculation Parameters - Median Vehicle Weight

Vehicle Class	Averaged Weight Tons
Pass, LHDT,MDT	2.13
LHDT	5.63
MHDT	11.75
HHDT	23.25

Calculation Parameters - Silt Loading

	Road Type	Silt Loading (g/m2)
Freeway	F	0.022
Arterial, Major Collector	A	0.035
Minor Collector	M	0.32

Particle Size Multiplier for PM10 = 0.00054 lb/VMT

Roadway Segment	Road Type	Segment Length (m)	Segment Length (mi)	Pass (trips/Day)	Daily Pass VMT	LHDT (trips/day)	Daily LHDT VMT	MHDT (trips/day)	Daily MHDT VMT	HHDT (trips/day)	Daily HHDT VMT	Daily Total VMT	Average Vehicle Wt (tons)	Silt Loading (g/m2)	Emission Factor (lb/VMT)	Entrained Dust (lb/day)	Emissions (g/sec)
Diesel Vehicles																	
Cherry Ave: I10 to Driveway 1	A	614	0.38	6	2	61	23	161	61	704	269	356	19.97	0.035	0.0005	0.2	1.01E-03
Cherry Ave: Drwy1 to Street 2	A	323	0.20	5	1	54	11	141	28	616	124	164	19.97	0.035	0.0005	0.1	4.66E-04
Cherry Valley Blvd Street 2 to Drwy 3	A	780	0.48	0	0	0	0	0	0	0	0	0	0.00	0.035	0.0000	0.0	0.00E+00
Cherry Valley Blvd East of Drwy 3	A	961	0.60	0	0	0	0	0	0	0	0	0	0.00	0.035	0.0000	0.0	0.00E+00
Gas Vehicles																	
Cherry Valley Ave: I10 to Driveway 1	A	614	0.38	1,512	577	156	60	37	14	0	0	650	2.66	0.035	0.0001	0.0	2.37E-04
Cherry Valley Ave: Drwy1 to Street 2	A	323	0.20	1,418	284	147	29	34	7	0	0	321	2.66	0.035	0.0001	0.0	1.17E-04
Cherry Valley Blvd Street 2 to Drwy 3	A	780	0.48	284	137	29	14	7	3	0	0	155	2.66	0.035	0.0001	0.0	5.64E-05
Cherry Valley Blvd East of Drwy 3	A	961	0.60	378	226	39	23	9	5	0	0	255	2.66	0.035	0.0001	0.0	9.26E-05

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Appendix C:
Health Risk Assessment

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San Gorgonio Crossing **With Mitigation** **Sample Output**

Annual DPM Concentrations During Operations

Annual DPM Concentrations

X	Y	2016 (ug/m3)	2017 (ug/m3)	2018 (ug/m3)	2019 (ug/m3)	2020 (ug/m3)	2021 (ug/m3)	2022 (ug/m3)	2023 (ug/m3)	2024 (ug/m3)	2025 (ug/m3)	2026 (ug/m3)	2027 (ug/m3)	2028 (ug/m3)	2029 (ug/m3)	2030 (ug/m3)	2031 (ug/m3)	2032 (ug/m3)	2033 (ug/m3)	2034 (ug/m3)	2035 (ug/m3)	2036 (ug/m3)	2037 (ug/m3)	2038 (ug/m3)	2039 (ug/m3)	2040 (ug/m3)	2041 (ug/m3)	2042 (ug/m3)	2043 (ug/m3)	2044 (ug/m3)	2045 (ug/m3)
497667.05	3758629.53	0.00E+00	7.98E-03	6.92E-03	6.15E-03	4.78E-03	4.15E-03	3.52E-03	2.90E-03	2.27E-03	1.64E-03	1.61E-03	1.57E-03	1.54E-03	1.50E-03	1.47E-03	1.44E-03	1.42E-03	1.39E-03	1.37E-03	1.34E-03	1.33E-03	1.32E-03	1.30E-03	1.29E-03	1.28E-03	1.27E-03	1.27E-03	1.26E-03	1.26E-03	1.25E-03
497717.05	3758629.53	0.00E+00	7.87E-03	6.83E-03	6.07E-03	4.73E-03	4.11E-03	3.49E-03	2.87E-03	2.25E-03	1.63E-03	1.60E-03	1.56E-03	1.53E-03	1.49E-03	1.46E-03	1.44E-03	1.41E-03	1.39E-03	1.36E-03	1.34E-03	1.33E-03	1.31E-03	1.30E-03	1.29E-03	1.27E-03	1.27E-03	1.26E-03	1.26E-03	1.25E-03	1.25E-03
497767.05	3758629.53	0.00E+00	5.96E-03	5.17E-03	4.61E-03	3.59E-03	3.13E-03	2.67E-03	2.20E-03	1.74E-03	1.28E-03	1.25E-03	1.22E-03	1.20E-03	1.17E-03	1.14E-03	1.12E-03	1.10E-03	1.08E-03	1.06E-03	1.04E-03	1.03E-03	1.02E-03	1.00E-03	9.94E-04	9.80E-04	9.76E-04	9.72E-04	9.68E-04	9.64E-04	9.60E-04
497817.05	3758629.53	0.00E+00	4.96E-03	4.31E-03	3.85E-03	3.00E-03	2.62E-03	2.24E-03	1.86E-03	1.48E-03	1.10E-03	1.07E-03	1.05E-03	1.02E-03	9.96E-04	9.70E-04	9.54E-04	9.38E-04	9.22E-04	9.06E-04	8.90E-04	8.78E-04	8.66E-04	8.54E-04	8.44E-04	8.30E-04	8.26E-04	8.22E-04	8.18E-04	8.14E-04	8.10E-04
497867.05	3758629.53	0.00E+00	4.23E-03	3.67E-03	3.28E-03	2.56E-03	2.24E-03	1.92E-03	1.60E-03	1.28E-03	9.60E-04	9.38E-04	9.16E-04	8.94E-04	8.72E-04	8.50E-04	8.34E-04	8.18E-04	8.02E-04	7.86E-04	7.70E-04	7.60E-04	7.50E-04	7.40E-04	7.32E-04	7.20E-04	7.16E-04	7.12E-04	7.08E-04	7.04E-04	7.00E-04
497917.05	3758629.53	0.00E+00	3.75E-03	3.25E-03	2.92E-03	2.28E-03	2.00E-03	1.72E-03	1.43E-03	1.15E-03	8.70E-04	8.50E-04	8.30E-04	8.10E-04	7.90E-04	7.70E-04	7.54E-04	7.38E-04	7.22E-04	7.06E-04	6.90E-04	6.82E-04	6.74E-04	6.66E-04	6.60E-04	6.50E-04	6.46E-04	6.42E-04	6.38E-04	6.34E-04	6.30E-04
497967.05	3758629.53	0.00E+00	3.30E-03	2.87E-03	2.58E-03	2.01E-03	1.76E-03	1.52E-03	1.27E-03	1.03E-03	7.80E-04	7.62E-04	7.44E-04	7.26E-04	7.08E-04	6.90E-04	6.76E-04	6.62E-04	6.48E-04	6.34E-04	6.20E-04	6.12E-04	6.04E-04	5.96E-04	5.90E-04	5.80E-04	5.76E-04	5.72E-04	5.68E-04	5.64E-04	5.60E-04
498017.05	3758629.53	0.00E+00	2.92E-03	2.54E-03	2.28E-03	1.78E-03	1.56E-03	1.35E-03	1.13E-03	9.16E-04	7.00E-04	6.84E-04	6.68E-04	6.52E-04	6.36E-04	6.20E-04	6.08E-04	5.96E-04	5.84E-04	5.72E-04	5.60E-04	5.52E-04	5.44E-04	5.36E-04	5.30E-04	5.20E-04	5.16E-04	5.12E-04	5.08E-04	5.04E-04	5.00E-04
498067.05	3758629.53	0.00E+00	2.61E-03	2.27E-03	2.04E-03	1.59E-03	1.40E-03	1.21E-03	1.02E-03	8.30E-04	6.40E-04	6.24E-04	6.08E-04	5.92E-04	5.76E-04	5.60E-04	5.48E-04	5.36E-04	5.24E-04	5.12E-04	5.00E-04	4.94E-04	4.88E-04	4.82E-04	4.77E-04	4.70E-04	4.66E-04	4.62E-04	4.58E-04	4.54E-04	4.50E-04
498117.05	3758629.53	0.00E+00	2.35E-03	2.04E-03	1.84E-03	1.44E-03	1.27E-03	1.10E-03	9.24E-04	7.52E-04	5.80E-04	5.66E-04	5.52E-04	5.38E-04	5.24E-04	5.10E-04	5.00E-04	4.90E-04	4.80E-04	4.70E-04	4.60E-04	4.52E-04	4.44E-04	4.36E-04	4.30E-04	4.20E-04	4.18E-04	4.16E-04	4.14E-04	4.12E-04	4.10E-04
498167.05	3758629.53	0.00E+00	2.21E-03	1.92E-03	1.73E-03	1.35E-03	1.19E-03	1.03E-03	8.70E-04	7.10E-04	5.50E-04	5.36E-04	5.22E-04	5.08E-04	4.94E-04	4.80E-04	4.70E-04	4.60E-04	4.50E-04	4.40E-04	4.30E-04	4.24E-04	4.18E-04	4.12E-04	4.07E-04	4.00E-04	3.98E-04	3.96E-04	3.94E-04	3.92E-04	3.90E-04
497667.05	3758679.53	0.00E+00	1.42E-02	1.23E-02	1.09E-02	8.41E-03	7.28E-03	6.16E-03	5.03E-03	3.91E-03	2.78E-03	2.72E-03	2.66E-03	2.61E-03	2.55E-03	2.49E-03	2.45E-03	2.41E-03	2.37E-03	2.33E-03	2.29E-03	2.27E-03	2.25E-03	2.22E-03	2.21E-03	2.18E-03	2.17E-03	2.16E-03	2.16E-03	2.15E-03	2.14E-03
497717.05	3758679.53	0.00E+00	1.17E-02	1.01E-02	8.97E-03	6.87E-03	5.96E-03	5.05E-03	4.13E-03	3.22E-03	2.31E-03	2.26E-03	2.21E-03	2.16E-03	2.11E-03	2.06E-03	2.03E-03	1.99E-03	1.96E-03	1.92E-03	1.89E-03	1.87E-03	1.85E-03	1.84E-03	1.82E-03	1.80E-03	1.79E-03	1.78E-03	1.78E-03	1.77E-03	1.76E-03
497767.05	3758679.53	0.00E+00	1.05E-02	9.15E-03	8.12E-03	6.26E-03	5.44E-03	4.61E-03	3.79E-03	2.96E-03	2.14E-03	2.10E-03	2.05E-03	2.01E-03	1.96E-03	1.92E-03	1.89E-03	1.85E-03	1.82E-03	1.78E-03	1.75E-03	1.73E-03	1.71E-03	1.70E-03	1.68E-03	1.66E-03	1.65E-03	1.65E-03	1.64E-03	1.64E-03	1.63E-03
497817.05	3758679.53	0.00E+00	7.89E-03	6.85E-03	6.10E-03	4.72E-03	4.11E-03	3.50E-03	2.89E-03	2.28E-03	1.67E-03	1.63E-03	1.60E-03	1.56E-03	1.53E-03	1.49E-03	1.46E-03	1.43E-03	1.41E-03	1.38E-03	1.35E-03	1.34E-03	1.32E-03	1.31E-03	1.30E-03	1.28E-03	1.27E-03	1.27E-03	1.26E-03	1.26E-03	1.25E-03
497867.05	3758679.53	0.00E+00	5.97E-03	5.19E-03	4.63E-03	3.60E-03	3.14E-03	2.69E-03	2.23E-03	1.78E-03	1.32E-03	1.29E-03	1.26E-03	1.23E-03	1.20E-03	1.17E-03	1.15E-03	1.13E-03	1.10E-03	1.08E-03	1.06E-03	1.05E-03	1.04E-03	1.02E-03	1.01E-03	1.00E-03	9.94E-04	9.88E-04	9.82E-04	9.76E-04	9.70E-04
497917.05	3758679.53	0.00E+00	5.06E-03	4.40E-03	3.93E-03	3.06E-03	2.68E-03	2.30E-03	1.92E-03	1.54E-03	1.16E-03	1.13E-03	1.10E-03	1.08E-03	1.05E-03	1.02E-03	1.00E-03	9.80E-04	9.60E-04	9.40E-04	9.20E-04	9.10E-04	9.00E-04	8.90E-04	8.82E-04	8.70E-04	8.64E-04	8.58E-04	8.52E-04	8.46E-04	8.40E-04
497967.05	3758679.53	0.00E+00	4.46E-03	3.88E-03	3.47E-03	2.70E-03	2.37E-03	2.04E-03	1.70E-03	1.37E-03	1.04E-03	1.02E-03	9.92E-04	9.68E-04	9.44E-04	9.20E-04	9.02E-04	8.84E-04	8.66E-04	8.48E-04	8.30E-04	8.18E-04	8.06E-04	7.94E-04	7.84E-04	7.70E-04	7.66E-04	7.62E-04	7.58E-04	7.54E-04	7.50E-04
498017.05	3758679.53	0.00E+00	4.01E-03	3.48E-03	3.12E-03	2.43E-03	2.14E-03	1.84E-03	1.55E-03	1.25E-03	9.60E-04	9.36E-04	9.12E-04	8.88E-04	8.64E-04	8.40E-04	8.24E-04	8.08E-04	7.92E-04	7.76E-04	7.60E-04	7.50E-04	7.40E-04	7.30E-04	7.22E-04	7.10E-04	7.04E-04	6.98E-04	6.92E-04	6.86E-04	6.80E-04
498067.05	3758679.53	0.00E+00	3.51E-03	3.05E-03	2.74E-03	2.14E-03	1.88E-03	1.62E-03	1.37E-03	1.11E-03	8.50E-04	8.30E-04	8.10E-04	7.90E-04	7.70E-04	7.50E-04	7.34E-04	7.18E-04	7.02E-04	6.86E-04	6.70E-04	6.60E-04	6.50E-04	6.40E-04	6.32E-04	6.20E-04	6.16E-04	6.12E-04	6.08E-04	6.04E-04	6.00E-04
498117.05	3758679.53	0.00E+00	3.00E-03	2.61E-03	2.35E-03	1.83E-03	1.61E-03	1.39E-03	1.18E-03	9.58E-04	7.40E-04	7.22E-04	7.04E-04	6.86E-04	6.68E-04	6.50E-04	6.36E-04	6.22E-04	6.08E-04	5.94E-04	5.80E-04	5.72E-04	5.64E-04	5.56E-04	5.50E-04	5.40E-04	5.36E-04	5.32E-04	5.28E-04	5.24E-04	5.20E-04
498167.05	3758679.53	0.00E+00	2.73E-03	2.37E-03	2.14E-03	1.67E-03	1.47E-03	1.28E-03	1.08E-03	8.86E-04	6.90E-04	6.72E-04	6.54E-04	6.36E-04	6.18E-04	6.00E-04	5.88E-04	5.76E-04	5.64E-04	5.52E-04	5.40E-04	5.32E-04	5.24E-04	5.16E-04	5.10E-04	5.00E-04	4.96E-04	4.92E-04	4.88E-04	4.84E-04	4.80E-04
497367.05	3758329.53	0.00E+00	1.36E-03	1.19E-03	0.00107	0.00084	7.40E-04	6.40E-04	5.40E-04	4.40E-04	0.00034	3.32E-04	3.24E-04	3.16E-04	3.08E-04	0.0003	2.92E-04	2.84E-04	2.76E-04	2.68E-04	0.00026	2.58E-04	2.56E-04	2.54E-04	2.52E-04	0.00025	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04
497417.05	3758329.53	0.00E+00	1.38E-03	1.20E-03	0.00108	0.00085	7.48E-04	6.46E-04	5.44E-04	4.42E-04	0.00034	3.32E-04	3.24E-04	3.16E-04	3.08E-04	0.0003	2.94E-04	2.88E-04	2.82E-04	2.76E-04	0.00027	2.66E-04	2.62E-04	2.58E-04	2.55E-04	0.00025	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04
497467.05	3758329.53	0.00E+00	1.39E-03	1.21E-03	0.00109	0.00085	7.48E-04	6.46E-04	5.44E-04	4.42E-04	0.00034	3.32E-04	3.24E-04	3.16E-04	3.08E-04	0.0003	2.94E-04	2.88E-04	2.82E-04	2.76E-04	0.00027	2.66E-04	2.62E-04	2.58E-04	2.55E-04	0.00025	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04
497517.05	3758329.53	0.00E+00	1.40E-03	1.22E-03	0.00109	0.00086	7.58E-04	6.56E-04	5.54E-04	4.52E-04	0.00035	3.40E-04	3.30E-04	3.20E-04	3.10E-04	0.0003	2.94E-04	2.88E-04	2.82E-04	2.76E-04	0.00027	2.66E-04	2.62E-04	2.58E-04	2.55E-04	0.00025	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04
497567.05	3758329.53	0.00E+00	1.39E-03	1.21E-03	1.09E-03	8.50E-04	7.50E-04	6.50E-04	5.50E-04	4.50E-04	3.50E-04	3.40E-04	3.30E-04	3.20E-04	3.10E-04	3.00E-04	2.94E-04	2.88E-04	2.82E-04	2.76E-04	2.70E-04	2.66E-04	2.62E-04	2.58E-04	2.55E-04	2.50E-04	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04
497617.05	3758329.53	0.00E+00	1.36E-03	1.18E-03	0.00106	0.00083	7.32E-04	6.34E-04	5.36E-04	4.38E-04	0.00034	3.32E-04	3.24E-04	3.16E-04	3.08E-04	0.0003	2.94E-04	2.88E-04	2.82E-04	2.76E-04	0.00027	2.66E-04	2.62E-04	2.58E-04	2.55E-04	0.00025	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04
497667.05	3758329.53	0.00E+00	1.25E-03	1.09E-03	0.00098	0.00077	6.80E-04	5.90E-04	5.00E-04	4.10E-04	0.00032	3.12E-04	3.04E-04	2.96E-04	2.88E-04	0.00028	2.74E-04	2.68E-04	2.62E-04	2.56E-04	0.00025	2.46E-04	2.42E-04	2.38E-04	2.35E-04	0.00023	2.28E-04	2.26E-04	2.24E-04	2.22E-04	2.20E-04
497717.05	3758329.53	0.00E+00	1.20E-03	1.04E-03	0.00094	0.00074	6.54E-04	5.68E-04	4.82E-04	3.96E-04	0.00031	3.02E-04	2.94E-04	2.86E-04	2.78E-04	0.00027	2.64E-04	2.58E-04	2.52E-04	2.46E-04	0.00024	2.36E-04	2.32E-04	2.28E-04	2.25E-04	0.00022	2.18E-04	2.16E-04	2.14E-04	2.12E-04	2.10E-04
497767.05	3758329.53	0.00E+00	1.16E-03	1.01E-03	0.00091	0.00072	6.36E-04	5.52E-04	4.68E-04	3.84E-04	0.0003	2.92E-04	2.84E-04	2.76E-04	2.68E-04	0.00026	2.54E-04	2.48E-04	2.42E-04	2.36E-04	0.00023	2.28E-04	2.26E-04	2.24E-04	2.22E-04	0.00022	2.18E-04	2.16E-04	2.14E-04	2.12E-04	2.10E-04
497817.05	3758329.53	0.00E+00	1.09E-03	9.50E-04	0.001	0.001	6.02E-04	5.24E-04	4.46E-04	3.68E-04	0.000	2.82E-04	2.74E-04	2.66E-04	2.58E-04	0.000	2.44E-04	2.38E-04	2.32E-04	2.26E-04	0.000	2.18E-04	2.16E-04	2.14E-04	2.12E-04	0.000	2.08E-04	2.06E-04	2.04E-04	2.02E-04	2.00E-04
497867.05	3758329.53	0.00E+00	1.05E-03	9.10E-04	0.00083	0.00065	5.76E-04	5.02E-04	4.28E-04	3.54E-04	0.00028	2.72E-04	2.64E-04	2.56E-04	2.48E-04	0.00024	2.36E-04	2.32E-04	2.28E-04	2.24E-04	0.00022	2.16E-04	2.12E-04	2.08E-04	2.05E-04	0.0002	1.98E-04	1.96E-04	1.94E-04	1.92E-04	1.90E-04
497917.05	3758329.53	0.00E+00	9.30E-04	8.10E-04	0.00073	0.00058	5.14E-04	4.48E-04	3.82E-04	3.16E-04	0.00025	2.44E-04	2.38E-04	2.32E-04	2.26E-04	0.00022	2.14E-04	2.08E-04	2.02E-04	1.96E-04	0.00019	1.88E-04	1.86E-04	1.84E-04	1.82E-04	0.00018	1.78E-04	1.76E-04	1.74E-04	1.72E-04	1.70E-04
497967.05	3758329.53	0.00E+00	8.80E-04	7.60E-04	6.90E-04	5.50E-04	4.88E-04	4.26E-04	3.64E-04	3.02E-04	2.40E-04	2.34E-04	2.28E-04	2.22E-04	2.16E-04	2.10E-04	2.04E-04	1.98E-04	1.92E-04	1.86E-04	1.80E-04	1.78E-04	1.76E-04	1.74E-04	1.72E-04	1.70E-04	1.68E-04	1.66E-04	1.64E-04	1.62E-04	1.60E-04
498017.05	3758329.53	0.00E+00	8.30E-04	7.20E-04	6.50E-04	5.20E-04	4.60E-04	4.00E-04	3.40E-04	2.80E-04	2.20E-04	2.16E-04	2.12E-04	2.08E-04	2.04E-04	2.00E-04	1.94E-04	1.88E-04	1.82E-04	1.76E-04	1.70E-04	1.68E-04	1.66E-04	1.64E-04	1.62E-04	1.60E-04	1.58E-04	1.56E-04	1.54E-04	1.52E-04	1.50E-04
498067.05	3758329.53	0.00E+00	7.80E-04	6.80E-04	6.10E-04	4.80E-04	4.26E-04	3.72E-04	3.18E-04	2.64E-04	2.10E-04	2.04E-04	1.98E-04	1.92E-04	1.86E-04	1.80E-04	1.76E-04	1.72E-04	1.68E-04	1.64E-04	1.60E-04	1.58E-04	1.56E-04	1.54E-04	1.52E-04	1.50E-04	1.48E-04	1.46E-04	1.44E-04	1.42E-04	1.40E-04
498117.05	3758329.53	0.00E+00	7.90E-04	6.90E-04	0.00062	0.00049	4.34E-04	3.78E-04	3.22E-04	2.66E-04	0.00021	2.04E-04	1.98E-04	1.92E-04	1.86E-04	0.00018	1.76E-04	1.72E-04	1.68E-04	1.64E-04	0.00016	1.58E-04	1.56E-04	1.54E-04	1.52E-04	0.00015	1.48E-04	1.46E-04	1.44E-04	1.42E-04	1.40E-04
498167.05	3758329.53	0.00E+00	7.70E-04	6.70E-04	0.00061	0.00048	4.24E-04	3.68E-04	3.12E-04	2.56E-04	0.0002	1.96E-04	1.92E-04	1.88E-04	1.84E-04	0.00018	1.76E-04	1.72E-04	1.68E-04	1.64E-04	0.00016	1.58E-04	1.56E-04	1.54E-04	1.52E-04	0.00015	1.48E-04	1.46E-04	1.44E-04	1.42E-04	1.40E-04
498217.05	3758329.53	0.00E+00	7.20E-04	6.20E-04	0.00056	0.00044	3.90E-04	3.40E-04	2.90E-04	2.40E-04	0.00019	1.84E-04	1.78E-04	1.72E-04	1.66E-04	0.00016	1.58E-04	1.56E-04	1.54E-04	1.52E-04	0.00015	1.46E-04	1.42E-04	1.38E-04	1.35E-04	0.00013	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04
498267.05	3758329.53	0.00E+00	6.50E-04	5.70E-04	0.00051	0.0004	3.54E-04	3.08E-04	2.62E-04	2.16E-04	0.00017	1.66E-04	1.62E-04	1.58E-04	1.54E-04	0.00015	1.46E-04	1.42E-04	1.38E-04	1.34E-04	0.00013	1.28E-04	1.26E-04	1.24E-04	1.22E-04	0.00012	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04
498317.05	3758329.53	0.00E+00	6.40E-04	5.60E-04	0.0005	0.0004	3.52E-04	3.04E-04	2.56E-04	2.08E-04	0.00016	1.56E-04	1.52E-04	1.48E-04	1.44E-04	0.00014	1.38E-04	1.36E-04	1.34E-04	1.32E-04	0.00013	1.28E-04	1.26E-04	1.24E-04	1.22E-04	0.00012	1.18E-04	1.16E-04	1.14E-04	1.12E-04	1.10E-04
498367.05	3758329.53	0.00E+00	6.50E-04	5.60E-04	0.00051	0.0004	3.52E-04	3.04E-04	2.56E-04	2.08E-04	0.00016	1.56E-04	1.52E-04	1.48E-04	1.44E-04	0.00014	1.38E-04	1.36E-04	1.34E-04	1.32E-04	0.00013	1.28E-04	1.26E-04	1.24E-04	1.22E-04	0.00012	1.18E-04	1.16E-04	1.14E-04	1.12E-04	1.10E-04
498417.05	3758329.53	0.00E+00	6.40E-04	5.50E-04	0.0005	0.00039	3.44E-04	2.98E-04	2.52E-04	2.06E-04	0.00016	1.56E-04	1.52E-04	1.48E-04	1.44E-04	0.00014	1.38E-04	1.36E-04	1.34E-04	1.32E-04	0.00013	1.28E-04	1.26E-04	1.24E-04	1.22E-04	0.00012	1.18E-04	1.16E-04	1.14E-04	1.12E-04	1.10E-04
498467.05	3758329.53	0.00E+00	6.20E-04	5.40E-04	0.00049	0.00038	3.36E-04	2.92E-04	2.48E-04	2.04E-04	0.00016	1.56E-04	1.52E-04	1.48E-04	1.44E-04	0.00014	1.36E-04	1.32E-04	1.28E-04	1.24E-04	0.00012	1.20E-04	1.20E-04	1.20E-04	1.20E-04	0.00012	1.18E-04	1.16E-04	1.14E-04	1.12E-04	1.10E-04
497367.05	3758379.53	0.00E+00	1.65E-03	1.43E-03	0.00129	0.00101	8.88E-04	7.66E-04	6.44E-04	5.22E-04	0.0004	3.90E-04	3.80E-04	3.70E-04	3.60E-04	0.00035	3.44E-04	3.38E-04	3.32E-04	3.26E-04	0.00032	3.14E-04	3.08E-04	3.02E-04	2.97E-04	0.00029	2.88E-04	2.86E-04	2.84E-04	2.82E-04	2.80E-04
497417.05	3758379.53	0.00E+00	1.67E-03	1.45E-03	0.00131	0.00102	8.96E-04	7.72E-04	6.48E-04	5.24E-04	0.0004	3.92E-04	3.84E-04	3.76E-04	3.68E-04	0.00036	3.52E-04	3.44E-04	3.36E-04	3.28E-04	0.00032	3.16E-04	3.12E-04	3.08E-04	3.05E-04	0.0003	2.98E-04	2.96E-04	2.94E-04	2.92E-04	2.90E-04
497467.05	3758379.53	0.00E+00	1.65E-03	1.44E-03	0.00129	0.00101	8.88E-04	7.66E-04	6.44E-04	5.22E-04	0.0004	3.90E-04	3.80E-04	3.70E-04	3.60E-04	0.00035	3.44E-04	3.38E-04	3.32E-04	3.26E-04	0.00032	3.14E-04	3.08E-04	3.02E-04	2.97E-04	0.00029	2.88E-04	2.86E-04	2.84E-04	2.82E-04	2.80E-04
497517.05	3758379.53	0.00E+00	1.63E-03	1.41E-03	0.00127	0.00099	8.70E-04	7.50E-04	6.30E-04	5.10E-04	0.00039	3.82E-04	3.74E-04	3.66E-04	3.58E-04	0.00035	3.42E-04	3.34E-04	3.26E-04	3.18E-04	0.00031	3.06E-04	3.02E-04	2.98E-04	2.95E-04	0.00029	2.88E-04	2.86E-04	2.84E-04	2.82E-04	2.80E-04
497567.05	3758379.53	0.00E+00	1.59E-03	1.38E-03	0.00124	0.00097	8.54E-04	7.38E-04	6.22E-04	5.06E-04	0.00039	3.80E-04	3.70E-04	3.60E-04	3.50E-04	0.00034	3.34E-04	3.28E-04	3.22E-04	3.16E-04	0.00031	3.04E-04	2.98E-04	2.92E-04	2.87E-04	0.00028	2.78E-04	2.76E-04	2.74E-04	2.72E-04	2.70E-04
497617.05	3758379.53	0.00E+00	1.60E-03	1.39E-03	0.00125	0.00098	8.62E-04	7.44E-04	6.26E-04	5.08E-04	0.00039	3.80E-04	3.70E-04	3.60E-04	3.50E-04	0.00034	3.34E-04	3.28E-04	3.22E-04	3.16E-04	0.00031	3.06E-04	3.02E-04	2.98E-04	2.95E-04	0.00029	2.88E-04	2.86E-04	2.84E-04	2.82E-04	2.80E-04
497667.05	3758379.53	0.00E+00	1.53E-03	1.33E-03	0.00119	0.00093	8.20E-04	7.10E-04	6.00E-04	4.90E-04	0.00038	3.70E-04	3.60E-04	3.50E-04	3.40E-04	0.00033	3.24E-04	3.18E-04	3.12E-04	3.06E-04	0.0003	2.96E-04	2.92E-04	2.88E-04	2.85E-04	0.00028	2.78E-04	2.76E-04	2.74E-04	2.72E-04	2.70E-04
497717.05	3758379.53	0.00E+00	1.47E-03	1.28E-03	0.00115	0.0009	7.94E-04	6.88E-04	5.82E-04	4.76E-04	0.00037	3.60E-04	3.50E-04	3.40E-04	3.30E-04	0.00032	3.14E-04	3.08E-04	3.02E-04	2.96E-04	0.00029	2.86E-04	2.82E-04	2.78E-04	2.75E-04	0.00027	2.68E-04	2.66E-04	2.64E-04	2.62E-04	2.60E-04
497767.05	3758379.53	0.00E+00	1.41E-03	1.22E-03	0.0011	0.00087	7.68E-04	6.66E-04	5.64E-04	4.62E-04	0.00036	3.50E-04	3.40E-04	3.30E-04	3.20E-04	0.00031	3.04E-04	2.98E-04	2.92E-04	2.86E-04	0.00028	2.76E-04	2.72E-04	2.68E-04	2.65E-04	0.00026	2.58E-04	2.56E-04	2.54E-04	2.52E-04	2.50E-04
497817.05	3758379.53	0.00E+00	1.27E-03	1.11E-03	0.001	0.00079	6.98E-04	6.06E-04	5.14E-04	4.22E-04	0.00033	3.22E-04	3.14E-04	3.06E-04	2.98E-04	0.00029	2.84E-04	2.78E-04	2.72E-04	2.66E-04	0.00026	2.56E-04	2.52E-04	2.48E-04	2.45E-04	0.00024	2.38E-04	2.36E-04	2.34E-04	2.32E-04	2.30E-04
497867.05	3758379.53	0.00E+00	1.14E-03	9.90E-04	0.0009	0.00071	6.28E-04

San Gorgonio Crossing **With Mitigation** **Sample Output**

Annual DPM Concentrations During Construction

		Annual DPM Concentrations	
		2016	2017
X	Y	(ug/m3)	(ug/m3)
497667.05	3758629.5	2.43E-03	3.79E-03
497717.05	3758629.5	2.68E-03	4.03E-03
497767.05	3758629.5	2.86E-03	4.22E-03
497817.05	3758629.5	3.19E-03	4.15E-03
497867.05	3758629.5	3.58E-03	3.86E-03
497917.05	3758629.5	3.73E-03	3.48E-03
497967.05	3758629.5	3.84E-03	3.14E-03
498017.05	3758629.5	3.76E-03	2.82E-03
498067.05	3758629.5	3.69E-03	2.55E-03
498117.05	3758629.5	3.56E-03	2.32E-03
498167.05	3758629.5	3.50E-03	2.14E-03
497667.05	3758679.5	4.37E-03	1.26E-02
497717.05	3758679.5	5.37E-03	1.19E-02
497767.05	3758679.5	7.36E-03	9.86E-03
497817.05	3758679.5	9.50E-03	8.07E-03
497867.05	3758679.5	1.17E-02	6.61E-03
497917.05	3758679.5	1.18E-02	5.47E-03
497967.05	3758679.5	1.20E-02	4.70E-03
498017.05	3758679.5	1.20E-02	4.10E-03
498067.05	3758679.5	1.13E-02	3.59E-03
498117.05	3758679.5	9.60E-03	3.12E-03
498167.05	3758679.5	8.86E-03	2.78E-03

San Gorgonio Crossing **Sample Output**

Annual DPM Concentrations During Construction and Operations **With Mitigation**

Annual Max (ug/m3) 2.68E-02

Annual DPM Concentrations

X	Y	2016 (ug/m3)	2017 (ug/m3)	2018 (ug/m3)	2019 (ug/m3)	2020 (ug/m3)	2021 (ug/m3)	2022 (ug/m3)	2023 (ug/m3)	2024 (ug/m3)	2025 (ug/m3)	2026 (ug/m3)	2027 (ug/m3)	2028 (ug/m3)	2029 (ug/m3)	2030 (ug/m3)	2031 (ug/m3)	2032 (ug/m3)	2033 (ug/m3)	2034 (ug/m3)	2035 (ug/m3)	2036 (ug/m3)	2037 (ug/m3)	2038 (ug/m3)	2039 (ug/m3)	2040 (ug/m3)	2041 (ug/m3)	2042 (ug/m3)	2043 (ug/m3)	2044 (ug/m3)	2045 (ug/m3)	2046 (ug/m3)	Max (ug/m3)
497667.05	3758629.5	2.43E-03	1.18E-02	6.92E-03	6.15E-03	4.78E-03	4.15E-03	3.52E-03	2.90E-03	2.27E-03	1.64E-03	1.61E-03	1.57E-03	1.54E-03	1.50E-03	1.47E-03	1.44E-03	1.42E-03	1.39E-03	1.37E-03	1.34E-03	1.33E-03	1.32E-03	1.30E-03	1.29E-03	1.28E-03	1.27E-03	1.27E-03	1.26E-03	1.26E-03	1.25E-03	1.25E-03	1.18E-02
497717.05	3758629.5	2.68E-03	1.19E-02	6.83E-03	6.07E-03	4.73E-03	4.11E-03	3.49E-03	2.87E-03	2.25E-03	1.63E-03	1.60E-03	1.56E-03	1.53E-03	1.49E-03	1.46E-03	1.44E-03	1.41E-03	1.39E-03	1.36E-03	1.34E-03	1.33E-03	1.31E-03	1.30E-03	1.29E-03	1.27E-03	1.27E-03	1.26E-03	1.26E-03	1.25E-03	1.25E-03	1.25E-03	1.19E-02
497767.05	3758629.5	2.86E-03	1.02E-02	5.17E-03	4.61E-03	3.59E-03	3.13E-03	2.67E-03	2.20E-03	1.74E-03	1.28E-03	1.25E-03	1.22E-03	1.20E-03	1.17E-03	1.14E-03	1.12E-03	1.10E-03	1.08E-03	1.06E-03	1.04E-03	1.03E-03	1.02E-03	1.00E-03	9.94E-04	9.80E-04	9.76E-04	9.72E-04	9.68E-04	9.64E-04	9.60E-04	1.25E-03	1.02E-02
497817.05	3758629.5	3.19E-03	9.11E-03	4.31E-03	3.85E-03	3.00E-03	2.62E-03	2.24E-03	1.86E-03	1.48E-03	1.10E-03	1.07E-03	1.05E-03	1.02E-03	9.96E-04	9.70E-04	9.54E-04	9.38E-04	9.22E-04	9.06E-04	8.90E-04	8.78E-04	8.66E-04	8.54E-04	8.44E-04	8.30E-04	8.26E-04	8.22E-04	8.18E-04	8.14E-04	8.10E-04	1.25E-03	9.11E-03
497867.05	3758629.5	3.58E-03	8.09E-03	3.67E-03	3.28E-03	2.56E-03	2.24E-03	1.92E-03	1.60E-03	1.28E-03	9.60E-04	9.38E-04	9.16E-04	8.94E-04	8.72E-04	8.50E-04	8.34E-04	8.18E-04	8.02E-04	7.86E-04	7.70E-04	7.60E-04	7.50E-04	7.40E-04	7.32E-04	7.20E-04	7.16E-04	7.12E-04	7.08E-04	7.04E-04	7.00E-04	1.25E-03	8.09E-03
497917.05	3758629.5	3.73E-03	7.23E-03	3.25E-03	2.92E-03	2.28E-03	2.00E-03	1.72E-03	1.43E-03	1.15E-03	8.70E-04	8.50E-04	8.30E-04	8.10E-04	7.90E-04	7.70E-04	7.54E-04	7.38E-04	7.22E-04	7.06E-04	6.90E-04	6.82E-04	6.74E-04	6.66E-04	6.60E-04	6.50E-04	6.46E-04	6.42E-04	6.38E-04	6.34E-04	6.30E-04	1.25E-03	7.23E-03
497967.05	3758629.5	3.84E-03	6.44E-03	2.87E-03	2.58E-03	2.01E-03	1.76E-03	1.52E-03	1.27E-03	1.03E-03	7.80E-04	7.62E-04	7.44E-04	7.26E-04	7.08E-04	6.90E-04	6.76E-04	6.62E-04	6.48E-04	6.34E-04	6.20E-04	6.12E-04	6.04E-04	5.96E-04	5.90E-04	5.80E-04	5.76E-04	5.72E-04	5.68E-04	5.64E-04	5.60E-04	1.25E-03	6.44E-03
498017.05	3758629.5	3.76E-03	5.74E-03	2.54E-03	2.28E-03	1.78E-03	1.56E-03	1.35E-03	1.13E-03	9.16E-04	7.00E-04	6.84E-04	6.68E-04	6.52E-04	6.36E-04	6.20E-04	6.08E-04	5.96E-04	5.84E-04	5.72E-04	5.60E-04	5.52E-04	5.44E-04	5.36E-04	5.30E-04	5.20E-04	5.16E-04	5.12E-04	5.08E-04	5.04E-04	5.00E-04	1.25E-03	5.74E-03
498067.05	3758629.5	3.69E-03	5.16E-03	2.27E-03	2.04E-03	1.59E-03	1.40E-03	1.21E-03	1.02E-03	8.30E-04	6.40E-04	6.24E-04	6.08E-04	5.92E-04	5.76E-04	5.60E-04	5.48E-04	5.36E-04	5.24E-04	5.12E-04	5.00E-04	4.94E-04	4.88E-04	4.82E-04	4.77E-04	4.70E-04	4.66E-04	4.62E-04	4.58E-04	4.54E-04	4.50E-04	1.25E-03	5.16E-03
498117.05	3758629.5	3.56E-03	4.67E-03	2.04E-03	1.84E-03	1.44E-03	1.27E-03	1.10E-03	9.24E-04	7.52E-04	5.80E-04	5.66E-04	5.52E-04	5.38E-04	5.24E-04	5.10E-04	5.00E-04	4.90E-04	4.80E-04	4.70E-04	4.60E-04	4.52E-04	4.44E-04	4.36E-04	4.30E-04	4.20E-04	4.18E-04	4.16E-04	4.14E-04	4.12E-04	4.10E-04	1.25E-03	4.67E-03
498167.05	3758629.5	3.50E-03	4.35E-03	1.92E-03	1.73E-03	1.35E-03	1.19E-03	1.03E-03	8.70E-04	7.10E-04	5.50E-04	5.36E-04	5.22E-04	5.08E-04	4.94E-04	4.80E-04	4.70E-04	4.60E-04	4.50E-04	4.40E-04	4.30E-04	4.24E-04	4.18E-04	4.12E-04	4.07E-04	4.00E-04	3.98E-04	3.96E-04	3.94E-04	3.92E-04	3.90E-04	1.25E-03	4.35E-03
497667.05	3758679.5	4.37E-03	2.68E-02	1.23E-02	1.09E-02	8.41E-03	7.28E-03	6.16E-03	5.03E-03	3.91E-03	2.78E-03	2.72E-03	2.66E-03	2.61E-03	2.55E-03	2.49E-03	2.45E-03	2.41E-03	2.37E-03	2.33E-03	2.29E-03	2.27E-03	2.25E-03	2.22E-03	2.21E-03	2.18E-03	2.17E-03	2.16E-03	2.16E-03	2.15E-03	2.14E-03	1.25E-03	2.68E-02
497717.05	3758679.5	5.37E-03	2.36E-02	1.01E-02	8.97E-03	6.87E-03	5.96E-03	5.05E-03	4.13E-03	3.22E-03	2.31E-03	2.26E-03	2.21E-03	2.16E-03	2.11E-03	2.06E-03	2.03E-03	1.99E-03	1.96E-03	1.92E-03	1.89E-03	1.87E-03	1.85E-03	1.84E-03	1.82E-03	1.80E-03	1.79E-03	1.78E-03	1.78E-03	1.77E-03	1.76E-03	1.25E-03	2.36E-02
497767.05	3758679.5	7.36E-03	2.04E-02	9.15E-03	8.12E-03	6.26E-03	5.44E-03	4.61E-03	3.79E-03	2.96E-03	2.14E-03	2.10E-03	2.05E-03	2.01E-03	1.96E-03	1.92E-03	1.89E-03	1.85E-03	1.82E-03	1.78E-03	1.75E-03	1.73E-03	1.71E-03	1.70E-03	1.68E-03	1.66E-03	1.65E-03	1.65E-03	1.64E-03	1.64E-03	1.63E-03	1.25E-03	2.04E-02
497817.05	3758679.5	9.50E-03	1.60E-02	6.85E-03	6.10E-03	4.72E-03	4.11E-03	3.50E-03	2.89E-03	2.28E-03	1.67E-03	1.63E-03	1.60E-03	1.56E-03	1.53E-03	1.49E-03	1.46E-03	1.43E-03	1.41E-03	1.38E-03	1.35E-03	1.34E-03	1.32E-03	1.31E-03	1.30E-03	1.28E-03	1.27E-03	1.27E-03	1.26E-03	1.26E-03	1.25E-03	1.25E-03	1.60E-02
497867.05	3758679.5	1.17E-02	1.26E-02	5.19E-03	4.63E-03	3.60E-03	3.14E-03	2.69E-03	2.23E-03	1.78E-03	1.32E-03	1.29E-03	1.26E-03	1.23E-03	1.20E-03	1.17E-03	1.15E-03	1.13E-03	1.10E-03	1.08E-03	1.06E-03	1.05E-03	1.04E-03	1.02E-03	1.01E-03	1.00E-03	9.94E-04	9.88E-04	9.82E-04	9.76E-04	9.70E-04	1.25E-03	1.26E-02
497917.05	3758679.5	1.18E-02	1.05E-02	4.40E-03	3.93E-03	3.06E-03	2.68E-03	2.30E-03	1.92E-03	1.54E-03	1.16E-03	1.13E-03	1.10E-03	1.08E-03	1.05E-03	1.02E-03	1.00E-03	9.80E-04	9.60E-04	9.40E-04	9.20E-04	9.10E-04	9.00E-04	8.90E-04	8.82E-04	8.70E-04	8.64E-04	8.58E-04	8.52E-04	8.46E-04	8.40E-04	1.25E-03	1.18E-02
497967.05	3758679.5	1.20E-02	9.16E-03	3.88E-03	3.47E-03	2.70E-03	2.37E-03	2.04E-03	1.70E-03	1.37E-03	1.04E-03	1.02E-03	9.92E-04	9.68E-04	9.44E-04	9.20E-04	9.02E-04	8.84E-04	8.66E-04	8.48E-04	8.30E-04	8.18E-04	8.06E-04	7.94E-04	7.84E-04	7.70E-04	7.66E-04	7.62E-04	7.58E-04	7.54E-04	7.50E-04	1.25E-03	1.20E-02
498017.05	3758679.5	1.20E-02	8.11E-03	3.48E-03	3.12E-03	2.43E-03	2.14E-03	1.84E-03	1.55E-03	1.25E-03	9.60E-04	9.36E-04	9.12E-04	8.88E-04	8.64E-04	8.40E-04	8.24E-04	8.08E-04	7.92E-04	7.76E-04	7.60E-04	7.50E-04	7.40E-04	7.30E-04	7.22E-04	7.10E-04	7.04E-04	6.98E-04	6.92E-04	6.86E-04	6.80E-04	1.25E-03	1.20E-02
498067.05	3758679.5	1.13E-02	7.10E-03	3.05E-03	2.74E-03	2.14E-03	1.88E-03	1.62E-03	1.37E-03	1.11E-03	8.50E-04	8.30E-04	8.10E-04	7.90E-04	7.70E-04	7.50E-04	7.34E-04	7.18E-04	7.02E-04	6.86E-04	6.70E-04	6.60E-04	6.50E-04	6.40E-04	6.32E-04	6.20E-04	6.16E-04	6.12E-04	6.08E-04	6.04E-04	6.00E-04	1.25E-03	1.13E-02
498117.05	3758679.5	9.60E-03	6.12E-03	2.61E-03	2.35E-03	1.83E-03	1.61E-03	1.39E-03	1.18E-03	9.58E-04	7.40E-04	7.22E-04	7.04E-04	6.86E-04	6.68E-04	6.50E-04	6.36E-04	6.22E-04	6.08E-04	5.94E-04	5.80E-04	5.72E-04	5.64E-04	5.56E-04	5.50E-04	5.40E-04	5.36E-04	5.32E-04	5.28E-04	5.24E-04	5.20E-04	1.25E-03	9.60E-03
498167.05	3758679.5	8.86E-03	5.51E-03	2.37E-03	2.14E-03	1.67E-03	1.47E-03	1.28E-03	1.08E-03	8.86E-04	6.90E-04	6.72E-04	6.54E-04	6.36E-04	6.18E-04	6.00E-04	5.88E-04	5.76E-04	5.64E-04	5.52E-04	5.40E-04	5.32E-04	5.24E-04	5.16E-04	5.10E-04	5.00E-04	4.96E-04	4.92E-04	4.88E-04	4.84E-04	4.80E-04	1.25E-03	8.86E-03
497367.05	3758329.5	5.10E-04	1.76E-03	1.19E-03	1.07E-03	8.40E-04	7.40E-04	6.40E-04	5.40E-04	4.40E-04	3.40E-04	3.32E-04	3.24E-04	3.16E-04	3.08E-04	3.00E-04	2.92E-04	2.84E-04	2.76E-04	2.68E-04	2.60E-04	2.58E-04	2.56E-04	2.54E-04	2.52E-04	2.50E-04	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04	1.25E-03	1.76E-03
497417.05	3758329.5	5.30E-04	1.74E-03	1.20E-03	1.08E-03	8.50E-04	7.48E-04	6.46E-04	5.44E-04	4.42E-04	3.40E-04	3.32E-04	3.24E-04	3.16E-04	3.08E-04	3.00E-04	2.94E-04	2.88E-04	2.82E-04	2.76E-04	2.70E-04	2.66E-04	2.62E-04	2.58E-04	2.55E-04	2.50E-04	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04	1.25E-03	1.74E-03
497467.05	3758329.5	5.40E-04	1.71E-03	1.21E-03	1.09E-03	8.50E-04	7.48E-04	6.46E-04	5.44E-04	4.42E-04	3.40E-04	3.32E-04	3.24E-04	3.16E-04	3.08E-04	3.00E-04	2.94E-04	2.88E-04	2.82E-04	2.76E-04	2.70E-04	2.66E-04	2.62E-04	2.58E-04	2.55E-04	2.50E-04	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04	1.25E-03	1.71E-03
497517.05	3758329.5	5.60E-04	1.68E-03	1.22E-03	1.09E-03	8.60E-04	7.58E-04	6.56E-04	5.54E-04	4.52E-04	3.50E-04	3.40E-04	3.30E-04	3.20E-04	3.10E-04	3.00E-04	2.94E-04	2.88E-04	2.82E-04	2.76E-04	2.70E-04	2.66E-04	2.62E-04	2.58E-04	2.55E-04	2.50E-04	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04	1.25E-03	1.68E-03
497567.05	3758329.5	5.70E-04	1.64E-03	1.21E-03	1.09E-03	8.50E-04	7.50E-04	6.50E-04	5.50E-04	4.50E-04	3.50E-04	3.40E-04	3.30E-04	3.20E-04	3.10E-04	3.00E-04	2.94E-04	2.88E-04	2.82E-04	2.76E-04	2.70E-04	2.66E-04	2.62E-04	2.58E-04	2.55E-04	2.50E-04	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04	1.25E-03	1.64E-03
497617.05	3758329.5	5.90E-04	1.59E-03	1.18E-03	1.06E-03	8.30E-04	7.32E-04	6.34E-04	5.36E-04	4.38E-04	3.40E-04	3.32E-04	3.24E-04	3.16E-04	3.08E-04	3.00E-04	2.94E-04	2.88E-04	2.82E-04	2.76E-04	2.70E-04	2.66E-04	2.62E-04	2.58E-04	2.55E-04	2.50E-04	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04	1.25E-03	1.59E-03
497667.05	3758329.5	6.10E-04	1.47E-03	1.09E-03	9.80E-04	7.70E-04	6.80E-04	5.90E-04	5.00E-04	4.10E-04	3.20E-04	3.12E-04	3.04E-04	2.96E-04	2.88E-04	2.80E-04	2.74E-04	2.68E-04	2.62E-04	2.56E-04	2.50E-04	2.46E-04	2.42E-04	2.38E-04	2.35E-04	2.30E-04	2.28E-04	2.26E-04	2.24E-04	2.22E-04	2.20E-04	1.25E-03	1.47E-03
497717.05	3758329.5	6.10E-04	1.42E-03	1.04E-03	9.40E-04	7.40E-04	6.54E-04	5.68E-04	4.82E-04	3.96E-04	3.10E-04	3.02E-04	2.94E-04	2.86E-04	2.78E-04	2.70E-04	2.64E-04	2.58E-04	2.52E-04	2.46E-04	2.40E-04	2.36E-04	2.32E-04	2.28E-04	2.25E-04	2.20E-04	2.18E-04	2.16E-04	2.14E-04	2.12E-04	2.10E-04	1.25E-03	1.42E-03
497767.05	3758329.5	6.00E-04	1.39E-03	1.01E-03	9.10E-04	7.20E-04	6.36E-04	5.52E-04	4.68E-04	3.84E-04	3.00E-04	2.92E-04	2.84E-04	2.76E-04	2.68E-04	2.60E-04	2.54E-04	2.48E-04	2.42E-04	2.36E-04	2.30E-04	2.28E-04	2.26E-04	2.24E-04	2.22E-04	2.20E-04	2.18E-04	2.16E-04	2.14E-04	2.12E-04	2.10E-04	1.25E-03	1.39E-03
497817.05	3758329.5	5.90E-04	1.34E-03	9.50E-04	8.60E-04	6.80E-04	6.02E-04	5.24E-04	4.46E-04	3.68E-04	2.90E-04	2.82E-04	2.74E-04	2.66E-04	2.58E-04	2.50E-04	2.44E-04	2.38E-04	2.32E-04	2.26E-04	2.20E-04	2.18E-04	2.16E-04	2.14E-04	2.12E-04	2.10E-04	2.08E-04	2.06E-04	2.04E-04	2.02E-04	2.00E-04	1.25E-03	1.34E-03
497867.05	3758329.5	5.60E-04	1.32E-03	9.10E-04	8.30E-04	6.50E-04	5.76E-04	5.02E-04	4.28E-04	3.54E-04	2.80E-04	2.72E-04	2.64E-04	2.56E-04	2.48E-04	2.40E-04	2.36E-04	2.32E-04	2.28E-04	2.24E-04	2.20E-04	2.16E-04	2.12E-04	2.08E-04	2.05E-04	2.00E-04	1.98E-04	1.96E-04	1.94E-04	1.92E-04	1.90E-04	1.25E-03	1.32E-03
497917.05	3758329.5	5.50E-04	1.23E-03	8.10E-04	7.30E-04	5.80E-04	5.14E-04	4.48E-04	3.82E-04	3.16E-04	2.50E-04	2.44E-04	2.38E-04	2.32E-04	2.26E-04	2.20E-04	2.14E-04	2.08E-04	2.02E-04	1.96E-04	1.90E-04	1.88E-04	1.86E-04	1.84E-04	1.82E-04	1.80E-04	1.78E-04	1.76E-04	1.74E-04	1.72E-04	1.70E-04	1.25E-03	1.23E-03
497967.05	3758329.5	5.20E-04	1.20E-03	7.60E-04	6.90E-04	5.50E-04	4.88E-04	4.26E-04	3.64E-04	3.02E-04	2.40E-04	2.34E-04	2.28E-04	2.22E-04	2.16E-04	2.10E-04	2.04E-04	1.98E-04	1.92E-04	1.86E-04	1.80E-04	1.78E-04	1.76E-04	1.74E-04	1.72E-04	1.70E-04	1.68E-04	1.66E-04	1.64E-04	1.62E-04	1.60E-04	1.25E-03	1.20E-03
498017.05	3758329.5	5.00E-04	1.18E-03	7.20E-04	6.50E-04	5.20E-04	4.60E-04	4.00E-04	3.40E-04	2.80E-04	2.20E-04	2.16E-04	2.12E-04	2.08E-04	2.04E-04	2.00E-04	1.94E-04	1.88E-04	1.82E-04	1.76E-04	1.70E-04	1.68E-04	1.66E-04	1.64E-04	1.62E-04	1.60E-04	1.58E-04	1.56E-04	1.54E-04	1.52E-04	1.50E-04	1.25E-03	1.18E-03
498067.05	3758329.5	4.70E-04	1.14E-03	6.80E-04	6.10E-04	4.80E-04	4.26E-04	3.72E-04	3.18E-04	2.64E-04	2.10E-04	2.04E-04	1.98E-04	1.92E-04	1.86E-04	1.80E-04	1.76E-04	1.72E-04	1.68E-04	1.64E-04	1.60E-04	1.58E-04	1.56E-04	1.54E-04	1.52E-04	1.50E-04	1.48E-04	1.46E-04	1.44E-04	1.42E-04	1.40E-04	1.25E-03	1.14E-03
498117.05	3758329.5	4.40E-04	1.18E-03	6.90E-04	6.20E-04	4.90E-04	4.34E-04	3.78E-04	3.22E-04	2.66E-04	2.10E-04	2.04E-04	1.98E-04	1.92E-04	1.86E-04	1.80E-04	1.76E-04	1.72E-04	1.68E-04	1.64E-04	1.60E-04	1.58E-04	1.56E-04	1.54E-04	1.52E-04	1.50E-04	1.48E-04	1.46E-04	1.44E-04	1.42E-04	1.40E-04	1.25E-03	1.18E-03
498167.05	3758329.5	4.20E-04	1.17E-03	6.70E-04	6.10E-04	4.80E-04	4.24E-04	3.68E-04	3.12E-04	2.56E-04	2.00E-04	1.96E-04	1.92E-04	1.88E-04	1.84E-04	1.80E-04	1.76E-04	1.72E-04	1.68E-04	1.64E-04	1.60E-04	1.58E-04	1.56E-04	1.54E-04	1.52E-04	1.50E-04	1.48E-04	1.46E-04	1.44E-04	1.42E-04	1.40E-04	1.25E-03	1.17E-03
498217.05	3758329.5	3.70E-04	1.11E-03	6.20E-04	5.60E-04	4.40E-04	3.90E-04	3.40E-04	2.90E-04	2.40E-04	1.90E-04	1.84E-04	1.78E-04	1.72E-04	1.66E-04	1.60E-04	1.58E-04	1.56E-04	1.54E-04	1.52E-04	1.50E-04	1.46E-04	1.42E-04	1.38E-04	1.35E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.25E-03	1.11E-03
498267.05	3758329.5	3.30E-04	1.04E-03	5.70E-04	5.10E-04	4.00E-04	3.54E-04	3.08E-04	2.62E-04	2.16E-04	1.70E-04	1.66E-04	1.62E-04	1.58E-04	1.54E-04	1.50E-04	1.46E-04	1.42E-04	1.38E-04	1.34E-04	1.30E-04	1.28E-04	1.26E-04	1.24E-04	1.22E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.25E-03	1.04E-03
498317.05	3758329.5	3.10E-04	1.05E-03	5.60E-04	5.00E-04	4.00E-04	3.52E-04	3.04E-04	2.56E-04	2.08E-04	1.60E-04	1.56E-04	1.52E-04	1.48E-04	1.44E-04	1.40E-04	1.38E-04	1.36E-04	1.34E-04	1.32E-04	1.30E-04	1.28E-04	1.26E-04	1.24E-04	1.22E-04	1.20E-04	1.18E-04	1.16E-04	1.14E-04	1.12E-04	1.10E-04	1.25E-03	1.05E-03
498367.05	3758329.5	3.10E-04	1.07E-03	5.60E-04	5.10E-04	4.00E-04	3.52E-04	3.04E-04	2.56E-04	2.08E-04	1.60E-04	1.56E-04	1.52E-04	1.48E-04	1.44E-04	1.40E-04	1.38E-04	1.36E-04	1.34E-04	1.32E-04	1.30E-04	1.28E-04	1.26E-04	1.24E-04	1.22E-04	1.20E-04	1.18E-04	1.16E-04	1.14E-04	1.12E-04	1.10E-04	1.25E-03	1.07E-03
498417.05	3758329.5	3.00E-04	1.07E-03	5.50E-04	5.00E-04	3.90E-04	3.44E-04	2.98E-04	2.52E-04	2.06E-04	1.60E-04	1.56E-04	1.52E-04	1.48E-04	1.44E-04	1.40E-04	1.38E-04	1.36E-04	1.34E-04	1.32E-04	1.30E-04	1.28E-04	1.26E-04	1.24E-04	1.22E-04	1.20E-04	1.18E-04	1.16E-04	1.14E-04	1.12E-04	1.10E-04	1.25E-03	1.07E-03
498467.05	3758329.5	2.90E-04	1.05E-03	5.40E-04	4.90E-04	3.80E-04	3.36E-04	2.92E-04	2.48E-04	2.04E-04	1.60E-04	1.56E-04	1.52E-04	1.48E-04	1.44E-04	1.40E-04	1.36E-04	1.32E-04	1.28E-04	1.24E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.18E-04	1.16E-04	1.16E-04	1.14E-04	1.12E-04	1.10E-04	1.25E-03	1.05E-03
497367.05	3758379.5	5.60E-04	2.13E-03	1.43E-03	1.29E-03	1.01E-03	8.88E-04	7.66E-04	6.44E-04	5.22E-04	4.00E-04	3.90E-04	3.80E-04	3.70E-04	3.60E-04	3.50E-04	3.44E-04	3.38E-04	3.32E-04	3.26E-04	3.20E-04	3.14E-04	3.08E-04	3.02E-04	2.97E-04	2.90E-04	2.88E-04	2.86E-04	2.84E-04	2.82E-04	2.80E-04	1.25E-03	2.13E-03
497417.05	3758379.5	5.90E-04	2.11E-03	1.45E-03	1.31E-03	1.02E-03	8.96E-04	7.72E-04	6.48E-04	5.24E-04	4.00E-04	3.92E-04	3.84E-04	3.76E-04	3.68E-04	3.60E-04	3.52E-04	3.44E-04	3.36E-04	3.28E-04	3.20E-04	3.16E-04	3.12E-04	3.08E-04	3.05E-04	3.00E-04	2.98E-04	2.96E-04	2.94E-04	2.92E-04	2.90E-04	1.25E-03	2.11E-03
497467.05	3758379.5	6.30E-04	2.05E-03	1.44E-03	1.29E-03	1.01E-03	8.88E-04	7.66E-04	6.44E-04	5.22E-04	4.00E-04	3.90E-04	3.80E-04	3.70E-04	3.60E-04	3.50E-04	3.44E-04	3.38E-04	3.32E-04	3.26E-04	3.20E-04	3.14E-04	3.08E-04	3.02E-04	2.97E-04	2.90E-04	2.88E-04	2.86E-04	2.84E-04	2.82E-04	2.80E-04	1.25E-03	2.05E-03
497517.05	3758379.5	6.60E-04	1.99E-03	1.41E-03	1.27E-03	9.90E-04	8.70E-04	7.50E-04	6.30E-04	5.10E-04	3.90E-04	3.82E-04	3.74E-04	3.66E-04	3.58E-04	3.50E-04	3.42E-04	3.34E-04	3.26E-04	3.18E-04	3.10E-04	3.06E-04	3.02E-04	2.98E-04	2.95E-04	2.90E-04	2.88E-04	2.86E-04	2.84E-04	2.82E-04	2.80E-04	1.25E-03	1.99E-03
497567.05	3758379.5	6.80E-04	1.92E-03	1.38E-03	1.24E-03	9.70E-04	8.54E-04	7.38E-04	6.22E-04	5.06E-04	3.90E-04	3.80E-04	3.70E-04	3.60E-04	3.50E-04	3.40E-04	3.34E-04	3.28E-04	3.22E-04	3.16E-04	3.10E-04	3.04E-04	2.98E-04	2.92E-04	2.87E-04	2.80E-04	2.78E-04	2.76E-04	2.74E-04	2.72E-04	2.70E-04	1.25E-03	1.92E-03
497617.05	3758379.5	6.90E-04	1.90E-03	1.39E-03	1.25E-03	9.80E-04	8.62E-04	7.44E-04	6.26E-04	5.08E-04	3.90E-04	3.80E-04	3.70E-04	3.60E-04	3.50E-04	3.40E-04	3.34E-04	3.28E-04	3.22E-04	3.16E-04	3.10E

OEHHA Cancer Risk Methodology

Cancer Risk = DPM x CPF x ASF x DBR x ED x EF x TAH / AT

Cancer Risk = probability of an individual contracting cancer out of a population of 1 million people over a lifetime exposure duration of 30 years

DPM = long-term average concentration of diesel PM as predicted by the air dispersion model (ug/m3)

CPF = cancer potency factor for DPM

ASF = age sensitivity factors that are dependent on the age of the exposed individual

DBR = daily breathing rates that are dependent on the age of the exposed individual (liters/kg-day)

ED = exposure duration (years)

EF = exposure frequency (days/year)

TAH = time at home factors that are dependent on the age of the exposed individual (%)

AT = averaging time over the lifetime of an individual

WAF = worker adjustment factor

Cancer Risk Equation Values as recommended by the California Office of Environmental Health Hazards Assessment and SCAQMD via MATES

Sensitive Receptors

CPF	1.1	
Exposure Frequency	350	days
Averaging Time	25550	days

ASF, DBR, TAH Age Factors

Age Group	ASF	90th %/80-DBR	TAH
3rd Trimester	10	333	1
0-2 years	10	934	1
3-16 years	3	572	1
>16 years	1	261	0.73

School Receptors

CPF	1.1	
Exposure Duration	9	years
Averaging Time	25550	days
Daily Breathing Rate	520	liters/kg-day
Exposure Frequency	180	days/year
Age Factor	3	
TAH	1	

Worker Receptors

CPF	1.1	
Exposure Duration	25	years
Averaging Time	25550	days
Daily Breathing Rate	230	liters/kg-day
Exposure Frequency	250	days/year
Age Factor	1	
TAH	1	
Worker Adjustment Factor	1	assumes the project operates 24/7

San Gorgonio Crossing **Sample Output**

Total Cancer Risk from All Sources **With Mitigation**

		Max Risk	Max Risk	Max Risk
		7.72	**1.11**	**0.34**
X	**Y**	**30-year Risk from DPM**	**9-year Risk from DPM**	**25-year Risk from DPM**
(m)	**(m)**	**(risk/million)**	**(risk/million)**	**(risk/million)**
497667.1	3758630	3.76	0.53	0.2
497717.1	3758630	3.76	0.53	0.2
497767.1	3758630	3.04	0.42	0.1
497817.1	3758630	2.64	0.36	0.1
497867.1	3758630	2.30	0.31	0.1
497917.1	3758630	2.06	0.28	0.1
497967.1	3758630	1.83	0.24	0.1
498017.1	3758630	1.63	0.22	0.1
498067.1	3758630	1.46	0.20	0.1
498117.1	3758630	1.32	0.18	0.1
498167.1	3758630	1.24	0.17	0.1
497667.1	3758680	7.55	1.01	0.3
497717.1	3758680	6.44	0.85	0.3
497767.1	3758680	5.70	0.76	0.2
497817.1	3758680	4.39	0.58	0.2
497867.1	3758680	3.42	0.45	0.1
497917.1	3758680	2.89	0.38	0.1
497967.1	3758680	2.53	0.34	0.1
498017.1	3758680	2.26	0.30	0.1
498067.1	3758680	1.99	0.26	0.1

San Gorgonio Crossing **With Mitigation**

Construction DPM Emissions

Construction Scheduling

8	hours/day
5	days/week
52	weeks/year
2080	hours/year

Year	Activity	Onsite Annual DPM Emissions (tons/year)	Onsite Average DPM Emissions (lbs/hr)	Onsite Average DPM Emissions (g/sec)
2016	Site Prep	0.0577		
	Grading	0.0595		
	Building Contruction	0.0341		
	Paving	0		
	Architectural Coating	0		
	Total	0.1513	0.145	0.018
2017	Site Prep	0		
	Grading	0.000		
	Building Contruction	0.084		
	Paving	0.006		
	Architectural Coating	0.035		
	Total	0.1247	0.120	0.015

Construction Area

2016	362454	m2
2017	200803	m2

Construction Area Source Emissions

Year	DPMEmissions (g/m2-sec)
2016	5.062E-08
2017	7.530E-08

SoCAB DPM (as PM10) Emission Factors
EMFAC2014

Vehicle	Fuel	Speed	EF (g/mi)									
		(mph)	2017	2018	2019	2020	2025	2030	2035	2040	2045	
LDA	DSL	15	0.049972	0.042854	0.03723	0.032799	0.014153	0.003674	0.00201	0.001461	0.001294	
LDT1	DSL	15	0.279313	0.265424	0.249966	0.235155	0.160619	0.036634	0.015567	0.011253	0.009274	
LDT2	DSL	15	0.012591	0.011386	0.010637	0.010043	0.008533	0.007519	0.007468	0.007475	0.007499	
LHD1	DSL	15	0.048297	0.045011	0.042333	0.03956	0.027515	0.019821	0.015154	0.012411	0.010991	
LHD2	DSL	15	0.039256	0.035754	0.03301	0.030504	0.021361	0.0167	0.014275	0.012969	0.01248	
MDV	DSL	15	0.01675	0.0152	0.014119	0.013348	0.007391	0.003781	0.002558	0.001885	0.001598	
T6	DSL	15	0.168454	0.138768	0.108298	0.050063	0.004831	0.004714	0.004586	0.004485	0.004452	
T7	DSL	15	0.0362	0.0333	0.0321	0.0303	0.0091	0.0089	0.0086	0.0086	0.0086	Model Year 2007
LDA	DSL	25	0.029817	0.025697	0.022551	0.019991	0.008842	0.002557	0.001449	0.001061	0.000944	
LDT1	DSL	25	0.169672	0.160871	0.151286	0.142025	0.096423	0.022167	0.010051	0.007616	0.00651	
LDT2	DSL	25	0.008255	0.007581	0.007158	0.006832	0.006029	0.005469	0.005449	0.005458	0.005476	
LHD1	DSL	25	0.030682	0.028832	0.027062	0.025478	0.018633	0.013801	0.010733	0.008911	0.007959	
LHD2	DSL	25	0.025288	0.023302	0.021586	0.020162	0.014927	0.01199	0.010372	0.009465	0.009121	
MDV	DSL	25	0.010785	0.00989	0.009265	0.008828	0.005072	0.002727	0.001857	0.001373	0.001166	
T6	DSL	25	0.106478	0.089375	0.072767	0.042296	0.003856	0.003799	0.003712	0.003637	0.003613	
T7	DSL	25	0.026	0.0229	0.0217	0.0201	0.0071	0.0069	0.0067	0.0066	0.006676	Model year 2007
LDA	DSL	35	0.020153	0.017422	0.015361	0.013684	0.006191	0.001964	0.001143	0.000843	0.000753	
LDT1	DSL	35	0.123062	0.116167	0.108779	0.101745	0.067123	0.01479	0.007109	0.005653	0.004997	
LDT2	DSL	35	0.006193	0.00575	0.00547	0.005231	0.004706	0.004355	0.004346	0.004356	0.00437	
LHD1	DSL	35	0.023441	0.02217	0.021027	0.019899	0.014785	0.011034	0.00862	0.007146	0.006374	
LHD2	DSL	35	0.019399	0.01801	0.016852	0.015825	0.011887	0.00959	0.008303	0.007573	0.007296	
MDV	DSL	35	0.008043	0.007418	0.006984	0.006679	0.003918	0.00216	0.001472	0.001092	0.000928	
T6	DSL	35	0.093088	0.078938	0.065662	0.042038	0.003284	0.003244	0.003172	0.003109	0.00309	
T7	DSL	35	0.0225	0.0196	0.0185	0.0171	0.006	0.0056	0.0056	0.005636	0.005633	Model year 2007

Idling Emissions (g/hr)

			2017	2018	2019	2020	2025	2030	2035	2040	2045	
LHDT1	DSL	Idle	0.796888	0.758092	0.785893	0.776866	0.69507	0.584502	0.486447	0.41617	0.372913	
LHDT2	DSL	Idle	0.780886	0.744029	0.771634	0.762011	0.674614	0.581151	0.509374	0.467003	0.449235	
T6	DSL	Idle	0.375301	0.304728	0.265333	0.152423	0.005269	0.002857	0.001926	0.001572	0.001425	
T7	DSL	Idle	0.0258	0.0171	0.016	0.0121	0.0094	0.0078	0.0068	0.006	0.0051	Model year 2007

San Gorgonio Crossing Project
Emissions Summary for **DPM** **2017** **With Mitigation (MY2007 HHDDT)**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	5.05E-05
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	6.87E-05
Building 1 - East (Enter/Exit Street 2) - DB1E22	3.21E-05
Building 2 - North (Enter/Exit Street 2) -DB2N22	9.45E-05
Building 2 - South (Enter/Exit Street 2) - DB2S22	6.74E-05
Total	**3.13E-04**

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	6.02E-05	1.20E-05
Building 1 - East (DB1E 1 to 5)	5	5.50E-05	1.10E-05
Building 2 - North (DB1N 1 to 5)	5	7.19E-05	1.44E-05
Building 2 - South (DB1S 1 to 5)	5	7.19E-05	1.44E-05
TOTAL		**2.59E-04**	

Offsite DSL Emissions / AERMOD Source ID		Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd	(DOFFD1)	1.73E-04
I10 to Street 2 along Cherry Valley Blvd	(DOFFST2)	9.53E-05

San Gorgonio Crossing Project

Emissions Summary for **DPM** **2018** **With Mitigation (MY2007 HHDDT)**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	4.41E-05
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	6.00E-05
Building 1 - East (Enter/Exit Street 2) - DB1E22	2.80E-05
Building 2 - North (Enter/Exit Street 2) -DB2N22	8.25E-05
Building 2 - South (Enter/Exit Street 2) - DB2S22	5.88E-05
Total	**2.73E-04**

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	5.23E-05	1.05E-05
Building 1 - East (DB1E 1 to 5)	5	4.78E-05	9.57E-06
Building 2 - North (DB1N 1 to 5)	5	6.26E-05	1.25E-05
Building 2 - South (DB1S 1 to 5)	5	6.26E-05	1.25E-05
TOTAL		**2.25E-04**	

Offsite DSL Emissions / AERMOD Source ID		Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd	(DOFFD1)	1.50E-04
I10 to Street 2 along Cherry Valley Blvd	(DOFFST2)	8.25E-05

San Gorgonio Crossing Project

Emissions Summary for **DPM** **2019** **With Mitigation (MY2007 HHDDT)**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	3.86E-05
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	5.25E-05
Building 1 - East (Enter/Exit Street 2) - DB1E22	2.45E-05
Building 2 - North (Enter/Exit Street 2) -DB2N22	7.22E-05
Building 2 - South (Enter/Exit Street 2) - DB2S22	5.15E-05
Total	**2.39E-04**

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	5.08E-05	1.02E-05
Building 1 - East (DB1E 1 to 5)	5	4.64E-05	9.29E-06
Building 2 - North (DB1N 1 to 5)	5	6.07E-05	1.21E-05
Building 2 - South (DB1S 1 to 5)	5	6.07E-05	1.21E-05
TOTAL		**2.19E-04**	

Offsite DSL Emissions / AERMOD Source ID		Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd	(DOFFD1)	1.33E-04
I10 to Street 2 along Cherry Valley Blvd	(DOFFST2)	7.31E-05

San Gorgonio Crossing Project

Emissions Summary for **DPM** **2020** **With Mitigation (MY2007 HHDDT)**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	2.86E-05
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	3.90E-05
Building 1 - East (Enter/Exit Street 2) - DB1E22	1.82E-05
Building 2 - North (Enter/Exit Street 2) -DB2N22	5.36E-05
Building 2 - South (Enter/Exit Street 2) - DB2S22	3.82E-05
Total	**1.78E-04**

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	4.27E-05	8.54E-06
Building 1 - East (DB1E 1 to 5)	5	3.90E-05	7.81E-06
Building 2 - North (DB1N 1 to 5)	5	5.10E-05	1.02E-05
Building 2 - South (DB1S 1 to 5)	5	5.10E-05	1.02E-05
TOTAL		**1.84E-04**	

Offsite DSL Emissions / AERMOD Source ID		Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd	(DOFFD1)	1.04E-04
I10 to Street 2 along Cherry Valley Blvd	(DOFFST2)	5.73E-05

San Gorgonio Crossing Project

Emissions Summary for **DPM** **2025** **With Mitigation (MY2007 HHDDT)**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	8.56E-06
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	1.16E-05
Building 1 - East (Enter/Exit Street 2) - DB1E22	5.44E-06
Building 2 - North (Enter/Exit Street 2) -DB2N22	1.60E-05
Building 2 - South (Enter/Exit Street 2) - DB2S22	1.14E-05
Total	**5.31E-05**

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	2.98E-05	5.97E-06
Building 1 - East (DB1E 1 to 5)	5	2.73E-05	5.46E-06
Building 2 - North (DB1N 1 to 5)	5	3.57E-05	7.14E-06
Building 2 - South (DB1S 1 to 5)	5	3.57E-05	7.14E-06
TOTAL		**1.28E-04**	

Offsite DSL Emissions / AERMOD Source ID		Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd	(DOFFD1)	3.30E-05
I10 to Street 2 along Cherry Valley Blvd	(DOFFST2)	1.81E-05

San Gorgonio Crossing Project

Emissions Summary for **DPM** **2030** **with Mitigaiton (MY2007 HHDDT**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	7.67E-06
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	1.04E-05
Building 1 - East (Enter/Exit Street 2) - DB1E22	4.88E-06
Building 2 - North (Enter/Exit Street 2) -DB2N22	1.44E-05
Building 2 - South (Enter/Exit Street 2) - DB2S22	1.02E-05
Total	**4.76E-05**

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	2.51E-05	5.03E-06
Building 1 - East (DB1E 1 to 5)	5	2.30E-05	4.60E-06
Building 2 - North (DB1N 1 to 5)	5	3.01E-05	6.01E-06
Building 2 - South (DB1S 1 to 5)	5	3.01E-05	6.01E-06
TOTAL		**1.08E-04**	

Offsite DSL Emissions / AERMOD Source ID		Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd	(DOFFD1)	3.00E-05
I10 to Street 2 along Cherry Valley Blvd	(DOFFST2)	1.65E-05

San Gorgonio Crossing Project

Emissions Summary for **DPM** **2035** **With Mitigation (MY2007 HHDDT)**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	7.08E-06
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	9.63E-06
Building 1 - East (Enter/Exit Street 2) - DB1E22	4.50E-06
Building 2 - North (Enter/Exit Street 2) -DB2N22	1.32E-05
Building 2 - South (Enter/Exit Street 2) - DB2S22	9.44E-06
Total	**4.39E-05**

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	2.13E-05	4.26E-06
Building 1 - East (DB1E 1 to 5)	5	1.95E-05	3.89E-06
Building 2 - North (DB1N 1 to 5)	5	2.54E-05	5.09E-06
Building 2 - South (DB1S 1 to 5)	5	2.54E-05	5.09E-06
TOTAL		**9.16E-05**	

Offsite DSL Emissions / AERMOD Source ID		Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd	(DOFFD1)	2.80E-05
I10 to Street 2 along Cherry Valley Blvd	(DOFFST2)	1.54E-05

San Gorgonio Crossing Project

Emissions Summary for **DPM** **2040** **With Mitigation (MY2007 HHDDT)**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	6.83E-06
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	9.30E-06
Building 1 - East (Enter/Exit Street 2) - DB1E22	4.34E-06
Building 2 - North (Enter/Exit Street 2) -DB2N22	1.28E-05
Building 2 - South (Enter/Exit Street 2) - DB2S22	9.12E-06
Total	**4.24E-05**

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	1.86E-05	3.72E-06
Building 1 - East (DB1E 1 to 5)	5	1.70E-05	3.40E-06
Building 2 - North (DB1N 1 to 5)	5	2.23E-05	4.45E-06
Building 2 - South (DB1S 1 to 5)	5	2.23E-05	4.45E-06
TOTAL		**8.02E-05**	

Offsite DSL Emissions / AERMOD Source ID		Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd	(DOFFD1)	2.69E-05
I10 to Street 2 along Cherry Valley Blvd	(DOFFST2)	1.48E-05

San Gorgonio Crossing Project

Emissions Summary for **DPM** **2045** **with Mitigation (MY2007 HHDDT)**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	6.72E-06
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	9.14E-06
Building 1 - East (Enter/Exit Street 2) - DB1E22	4.27E-06
Building 2 - North (Enter/Exit Street 2) -DB2N22	1.26E-05
Building 2 - South (Enter/Exit Street 2) - DB2S22	8.96E-06
Total	**4.17E-05**

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	1.70E-05	3.40E-06
Building 1 - East (DB1E 1 to 5)	5	1.55E-05	3.11E-06
Building 2 - North (DB1N 1 to 5)	5	2.03E-05	4.06E-06
Building 2 - South (DB1S 1 to 5)	5	2.03E-05	4.06E-06
TOTAL		**7.31E-05**	

Offsite DSL Emissions / AERMOD Source ID		Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd	(DOFFD1)	2.67E-05
I10 to Street 2 along Cherry Valley Blvd	(DOFFST2)	1.47E-05

Appendix D:
CO Hot Spot Analysis

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 2014 I10 EB Ramp @ Cherry Valley Blvd -
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= 0.0 CM/S
CLAS= 7 (G) VS= 0.0 CM/S
MIXH= 1000. M AMB= 0.0 PPM
SIGTH= 5. DEGREES TEMP= 4.4 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	* LINK COORDINATES (M) * X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. NB External	* 5	0	5	600	* AG	0	4.0	0.0	10.0
B. NB Approach	* 5	600	5	752	* AG	0	4.9	0.0	10.0
C. NB Depart	* 5	752	5	904	* AG	0	4.9	0.0	10.0
D. NB External	* 5	904	5	1504	* AG	0	4.0	0.0	10.0
E. NB Left	* 5	600	3	752	* AG	0	4.9	0.0	10.0
F. SB Left	* 0	904	3	752	* AG	393	4.9	0.0	10.0
G. SB External	* 0	1504	0	904	* AG	820	4.0	0.0	10.0
H. SB Approach	* 0	904	0	752	* AG	427	4.9	0.0	10.0
I. SB Depart	* 0	752	0	600	* AG	157	4.9	0.0	10.0
J. SB External	* 0	600	0	0	* AG	157	4.0	0.0	10.0
K. EB External	* -750	750	-150	750	* AG	276	4.0	0.0	10.0
L. EB Approach	* -150	750	3	750	* AG	276	4.9	0.0	10.0
M. EB Depart	* 3	750	155	750	* AG	620	4.9	0.0	10.0
N. EB External	* 155	750	755	750	* AG	620	4.0	0.0	10.0
O. WB External	* 755	754	155	754	* AG	226	4.0	0.0	10.0
P. WB Approach	* 155	754	3	754	* AG	119	4.9	0.0	10.0
Q. WB Depart	* 3	754	-150	754	* AG	545	4.9	0.0	10.0
R. WB External	* -150	754	-750	754	* AG	545	4.0	0.0	10.0
S. EB Left	* -150	750	3	752	* AG	0	4.9	0.0	10.0
T. WB Left	* 155	754	3	752	* AG	107	4.9	0.0	10.0

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: 2014 I10 EB Ramp @ Cherry Valley Blvd -

RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Receptor	*	-6	745	2.0
2. Receptor	*	11	745	2.0
3. Receptor	*	11	758	2.0
4. Receptor	*	-6	758	2.0

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	* PRED * BRG * (DEG)	* CONC * (PPM)	*	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Receptor	*	87.	* 0.6	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Receptor	*	86.	* 0.6	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Receptor	*	267.	* 0.7	* 0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
4. Receptor	*	94.	* 0.7	* 0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1

RECEPTOR	*	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R	S	T
1. Receptor	*	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0
2. Receptor	*	0.0	0.0	0.0	0.0	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0
3. Receptor	*	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.0
4. Receptor	*	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.1	0.1	0.0	0.0	0.1

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 2014 I10 WB Ramp @ Cherry Valley Blvd -
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= 0.0 CM/S
CLAS= 7 (G) VS= 0.0 CM/S
MIXH= 1000. M AMB= 0.0 PPM
SIGTH= 5. DEGREES TEMP= 4.4 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	*	X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. NB External	*	5	0	5	600	* AG	113	3.7	0.0	10.0
B. NB Approach	*	5	600	5	752	* AG	87	4.5	0.0	10.0
C. NB Depart	*	5	752	5	904	* AG	903	4.5	0.0	10.0
D. NB External	*	5	904	5	1504	* AG	903	3.7	0.0	10.0
E. NB Left	*	5	600	3	752	* AG	26	4.5	0.0	10.0
F. SB Left	*	0	904	3	752	* AG	0	4.5	0.0	10.0
G. SB External	*	0	1504	0	904	* AG	0	3.7	0.0	10.0
H. SB Approach	*	0	904	0	752	* AG	0	4.5	0.0	10.0
I. SB Depart	*	0	752	0	600	* AG	0	4.5	0.0	10.0
J. SB External	*	0	600	0	0	* AG	0	3.7	0.0	10.0
K. EB External	*	-750	750	-150	750	* AG	771	3.7	0.0	10.0
L. EB Approach	*	-150	750	3	750	* AG	291	4.5	0.0	10.0
M. EB Depart	*	3	750	155	750	* AG	378	4.5	0.0	10.0
N. EB External	*	155	750	755	750	* AG	378	3.7	0.0	10.0
O. WB External	*	755	754	155	754	* AG	536	3.7	0.0	10.0
P. WB Approach	*	155	754	3	754	* AG	536	4.5	0.0	10.0
Q. WB Depart	*	3	754	-150	754	* AG	139	4.5	0.0	10.0
R. WB External	*	-150	754	-750	754	* AG	139	3.7	0.0	10.0
S. EB Left	*	-150	750	3	752	* AG	480	4.5	0.0	10.0
T. WB Left	*	155	754	3	752	* AG	0	4.5	0.0	10.0

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: 2014 I10 WB Ramp @ Cherry Valley Blvd -

RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Receptor	*	-6	745	2.0
2. Receptor	*	11	745	2.0
3. Receptor	*	11	758	2.0
4. Receptor	*	-6	758	2.0

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	* PRED * BRG * (DEG)	* CONC * (PPM)	CONC/LINK (PPM) * A	B	C	D	E	F	G	H
1. Receptor	* 274.	* 0.5	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Receptor	* 356.	* 0.6	* 0.0	0.0	0.4	0.1	0.0	0.0	0.0	0.0
3. Receptor	* 266.	* 0.7	* 0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
4. Receptor	* 93.	* 0.6	* 0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0

RECEPTOR	*	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R	S	T
1. Receptor	*	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
2. Receptor	*	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
3. Receptor	*	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.0
4. Receptor	*	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.0	0.0	0.0	0.0

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 2017 I10 EB Ramp @ Cherry Valley Blvd -
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= 0.0 CM/S
CLAS= 7 (G) VS= 0.0 CM/S
MIXH= 1000. M AMB= 0.0 PPM
SIGTH= 5. DEGREES TEMP= 4.4 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	*	X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. NB External	*	5	0	5	600	* AG	0	2.7	0.0	10.0
B. NB Approach	*	5	600	5	752	* AG	0	3.2	0.0	10.0
C. NB Depart	*	5	752	5	904	* AG	377	3.2	0.0	10.0
D. NB External	*	5	904	5	1504	* AG	377	2.7	0.0	10.0
E. NB Left	*	5	600	3	752	* AG	0	3.2	0.0	10.0
F. SB Left	*	0	904	3	752	* AG	699	3.2	0.0	10.0
G. SB External	*	0	1504	0	904	* AG	1313	2.7	0.0	10.0
H. SB Approach	*	0	904	0	752	* AG	614	3.2	0.0	10.0
I. SB Depart	*	0	752	0	600	* AG	239	3.2	0.0	10.0
J. SB External	*	0	600	0	0	* AG	239	2.7	0.0	10.0
K. EB External	*	-750	750	-150	750	* AG	441	2.7	0.0	10.0
L. EB Approach	*	-150	750	3	750	* AG	64	3.2	0.0	10.0
M. EB Depart	*	3	750	155	750	* AG	699	3.2	0.0	10.0
N. EB External	*	155	750	755	750	* AG	699	2.7	0.0	10.0
O. WB External	*	755	754	155	754	* AG	379	2.7	0.0	10.0
P. WB Approach	*	155	754	3	754	* AG	205	3.2	0.0	10.0
Q. WB Depart	*	3	754	-150	754	* AG	818	3.2	0.0	10.0
R. WB External	*	-150	754	-750	754	* AG	818	2.7	0.0	10.0
S. EB Left	*	-150	750	3	752	* AG	377	3.2	0.0	10.0
T. WB Left	*	155	754	3	752	* AG	174	3.2	0.0	10.0

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: 2017 I10 EB Ramp @ Cherry Valley Blvd -

RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Receptor	*	-6	745	2.0
2. Receptor	*	11	745	2.0
3. Receptor	*	11	758	2.0
4. Receptor	*	-6	758	2.0

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	* PRED * BRG * (DEG)	* CONC * (PPM)	CONC/LINK (PPM) *	A	B	C	D	E	F	G	H
1. Receptor	*	4. *	0.6 *	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.2
2. Receptor	*	355. *	0.6 *	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1
3. Receptor	*	267. *	0.7 *	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
4. Receptor	*	93. *	0.6 *	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1

RECEPTOR	*	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R	S	T
1. Receptor	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
2. Receptor	*	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Receptor	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.1	0.0
4. Receptor	*	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.1

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 2017 I10 WB Ramp @ Cherry Valley Blvd -
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= 0.0 CM/S
CLAS= 7 (G) VS= 0.0 CM/S
MIXH= 1000. M AMB= 0.0 PPM
SIGTH= 5. DEGREES TEMP= 4.4 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	* LINK COORDINATES (M) * X1	Y1	X2	Y2 *	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. NB External	* 5	0	5	600 *	AG	167	2.7	0.0	10.0
B. NB Approach	* 5	600	5	752 *	AG	133	3.2	0.0	10.0
C. NB Depart	* 5	752	5	904 *	AG	1354	3.2	0.0	10.0
D. NB External	* 5	904	5	1504 *	AG	1354	2.7	0.0	10.0
E. NB Left	* 5	600	3	752 *	AG	34	3.2	0.0	10.0
F. SB Left	* 0	904	3	752 *	AG	0	3.2	0.0	10.0
G. SB External	* 0	1504	0	904 *	AG	0	2.7	0.0	10.0
H. SB Approach	* 0	904	0	752 *	AG	0	3.2	0.0	10.0
I. SB Depart	* 0	752	0	600 *	AG	0	3.2	0.0	10.0
J. SB External	* 0	600	0	0 *	AG	0	2.7	0.0	10.0
K. EB External	* -750	750	-150	750 *	AG	1113	2.7	0.0	10.0
L. EB Approach	* -150	750	3	750 *	AG	462	3.2	0.0	10.0
M. EB Depart	* 3	750	155	750 *	AG	595	3.2	0.0	10.0
N. EB External	* 155	750	755	750 *	AG	595	2.7	0.0	10.0
O. WB External	* 755	754	155	754 *	AG	931	2.7	0.0	10.0
P. WB Approach	* 155	754	3	754 *	AG	931	3.2	0.0	10.0
Q. WB Depart	* 3	754	-150	754 *	AG	262	3.2	0.0	10.0
R. WB External	* -150	754	-750	754 *	AG	262	2.7	0.0	10.0
S. EB Left	* -150	750	3	752 *	AG	651	3.2	0.0	10.0
T. WB Left	* 155	754	3	752 *	AG	0	3.2	0.0	10.0

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: 2017 I10 WB Ramp @ Cherry Valley Blvd -

RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Receptor	*	-6	745	2.0
2. Receptor	*	11	745	2.0
3. Receptor	*	11	758	2.0
4. Receptor	*	-6	758	2.0

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	* PRED * BRG * (DEG)	* CONC * (PPM)	CONC/LINK (PPM) * A	B	C	D	E	F	G	H
1. Receptor	* 86.	* 0.5	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Receptor	* 356.	* 0.6	* 0.0	0.0	0.4	0.1	0.0	0.0	0.0	0.0
3. Receptor	* 266.	* 0.7	* 0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
4. Receptor	* 93.	* 0.7	* 0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0

RECEPTOR	*	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R	S	T
1. Receptor	*	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.2	0.0	0.0	0.0	0.0
2. Receptor	*	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0
3. Receptor	*	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.0
4. Receptor	*	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.0	0.0	0.0	0.0

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 2035 I10 EB Ramp @ Cherry Valley Blvd -
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= 0.0 CM/S
CLAS= 7 (G) VS= 0.0 CM/S
MIXH= 1000. M AMB= 0.0 PPM
SIGTH= 5. DEGREES TEMP= 4.4 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. NB External	*	5	0	5	600 *	AG	0	1.3	0.0	10.0
B. NB Approach	*	5	600	5	752 *	AG	0	1.4	0.0	10.0
C. NB Depart	*	5	752	5	904 *	AG	0	1.4	0.0	10.0
D. NB External	*	5	904	5	1504 *	AG	0	1.3	0.0	10.0
E. NB Left	*	5	600	3	752 *	AG	0	1.4	0.0	10.0
F. SB Left	*	0	904	3	752 *	AG	769	1.4	0.0	10.0
G. SB External	*	0	1504	0	904 *	AG	1805	1.3	0.0	10.0
H. SB Approach	*	0	904	0	752 *	AG	1036	1.4	0.0	10.0
I. SB Depart	*	0	752	0	600 *	AG	483	1.4	0.0	10.0
J. SB External	*	0	600	0	0 *	AG	483	1.3	0.0	10.0
K. EB External	*	-750	750	-150	750 *	AG	1627	1.3	0.0	10.0
L. EB Approach	*	-150	750	3	750 *	AG	1627	1.4	0.0	10.0
M. EB Depart	*	3	750	155	750 *	AG	2095	1.4	0.0	10.0
N. EB External	*	155	750	755	750 *	AG	2095	1.3	0.0	10.0
O. WB External	*	755	754	155	754 *	AG	1106	1.3	0.0	10.0
P. WB Approach	*	155	754	3	754 *	AG	924	1.4	0.0	10.0
Q. WB Depart	*	3	754	-150	754 *	AG	1960	1.4	0.0	10.0
R. WB External	*	-150	754	-750	754 *	AG	1960	1.3	0.0	10.0
S. EB Left	*	-150	750	3	752 *	AG	0	1.4	0.0	10.0
T. WB Left	*	155	754	3	752 *	AG	182	1.4	0.0	10.0

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: 2035 I10 EB Ramp @ Cherry Valley Blvd -

RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Receptor	*	-6	745	2.0
2. Receptor	*	11	745	2.0
3. Receptor	*	11	758	2.0
4. Receptor	*	-6	758	2.0

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	* PRED * BRG (DEG)	* CONC * (PPM)	CONC/LINK (PPM) * A	B	C	D	E	F	G	H
1. Receptor	* 86.	* 0.5	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Receptor	* 274.	* 0.5	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Receptor	* 267.	* 0.6	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Receptor	* 93.	* 0.6	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	*	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R	S	T
1. Receptor	*	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0
2. Receptor	*	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0
3. Receptor	*	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.0
4. Receptor	*	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.1	0.0	0.0	0.0

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 2035 I10 WB Ramp @ Cherry Valley Blvd -
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= 0.0 CM/S
CLAS= 7 (G) VS= 0.0 CM/S
MIXH= 1000. M AMB= 0.0 PPM
SIGTH= 5. DEGREES TEMP= 4.4 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	* LINK COORDINATES (M) * X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. NB External	* 5	0	5	600 *	AG	911	1.3	0.0	10.0
B. NB Approach	* 5	600	5	752 *	AG	355	1.4	0.0	10.0
C. NB Depart	* 5	752	5	904 *	AG	1092	1.4	0.0	10.0
D. NB External	* 5	904	5	1504 *	AG	1092	1.3	0.0	10.0
E. NB Left	* 5	600	3	752 *	AG	556	1.4	0.0	10.0
F. SB Left	* 0	904	3	752 *	AG	0	1.4	0.0	10.0
G. SB External	* 0	1504	0	904 *	AG	0	1.3	0.0	10.0
H. SB Approach	* 0	904	0	752 *	AG	0	1.4	0.0	10.0
I. SB Depart	* 0	752	0	600 *	AG	0	1.4	0.0	10.0
J. SB External	* 0	600	0	0 *	AG	0	1.3	0.0	10.0
K. EB External	* -750	750	-150	750 *	AG	2095	1.3	0.0	10.0
L. EB Approach	* -150	750	3	750 *	AG	1341	1.4	0.0	10.0
M. EB Depart	* 3	750	155	750 *	AG	1696	1.4	0.0	10.0
N. EB External	* 155	750	755	750 *	AG	1696	1.3	0.0	10.0
O. WB External	* 755	754	155	754 *	AG	1347	1.3	0.0	10.0
P. WB Approach	* 155	754	3	754 *	AG	1347	1.4	0.0	10.0
Q. WB Depart	* 3	754	-150	754 *	AG	1565	1.4	0.0	10.0
R. WB External	* -150	754	-750	754 *	AG	1565	1.3	0.0	10.0
S. EB Left	* -150	750	3	752 *	AG	754	1.4	0.0	10.0
T. WB Left	* 155	754	3	752 *	AG	0	1.4	0.0	10.0

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: 2035 I10 WB Ramp @ Cherry Valley Blvd -

RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Receptor	*	-6	745	2.0
2. Receptor	*	11	745	2.0
3. Receptor	*	11	758	2.0
4. Receptor	*	-6	758	2.0

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	* PRED * BRG * (DEG)	* CONC * (PPM)	CONC/LINK (PPM) * A	B	C	D	E	F	G	H
1. Receptor	* 274.	* 0.5	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Receptor	* 274.	* 0.6	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Receptor	* 267.	* 0.6	* 0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
4. Receptor	* 93.	* 0.5	* 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	*	CONC/LINK (PPM) I	J	K	L	M	N	O	P	Q	R	S	T
1. Receptor	*	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0
2. Receptor	*	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0
3. Receptor	*	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.2	0.0	0.1	0.0
4. Receptor	*	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.1	0.0	0.0	0.0

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Appendix E:
Supplemental Health Risk Assessment

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San Gorgonio Crossing **With Mitigation** **Sample Output**

Annual DPM Concentrations During Operations

Annual DPM Concentrations

X	Y	2016 (ug/m3)	2017 (ug/m3)	2018 (ug/m3)	2019 (ug/m3)	2020 (ug/m3)	2021 (ug/m3)	2022 (ug/m3)	2023 (ug/m3)	2024 (ug/m3)	2025 (ug/m3)	2026 (ug/m3)	2027 (ug/m3)	2028 (ug/m3)	2029 (ug/m3)	2030 (ug/m3)	2031 (ug/m3)	2032 (ug/m3)	2033 (ug/m3)	2034 (ug/m3)	2035 (ug/m3)	2036 (ug/m3)	2037 (ug/m3)	2038 (ug/m3)	2039 (ug/m3)	2040 (ug/m3)	2041 (ug/m3)	2042 (ug/m3)	2043 (ug/m3)	2044 (ug/m3)	2045 (ug/m3)
497667.05	3758629.53	0.00E+00	7.98E-03	6.92E-03	6.15E-03	4.78E-03	4.15E-03	3.52E-03	2.90E-03	2.27E-03	1.64E-03	1.61E-03	1.57E-03	1.54E-03	1.50E-03	1.47E-03	1.44E-03	1.42E-03	1.39E-03	1.37E-03	1.34E-03	1.33E-03	1.32E-03	1.30E-03	1.29E-03	1.28E-03	1.27E-03	1.27E-03	1.26E-03	1.26E-03	1.25E-03
497717.05	3758629.53	0.00E+00	7.87E-03	6.83E-03	6.07E-03	4.73E-03	4.11E-03	3.49E-03	2.87E-03	2.25E-03	1.63E-03	1.60E-03	1.56E-03	1.53E-03	1.49E-03	1.46E-03	1.44E-03	1.41E-03	1.39E-03	1.36E-03	1.34E-03	1.33E-03	1.31E-03	1.30E-03	1.29E-03	1.27E-03	1.27E-03	1.26E-03	1.26E-03	1.25E-03	1.25E-03
497767.05	3758629.53	0.00E+00	5.96E-03	5.17E-03	4.61E-03	3.59E-03	3.13E-03	2.67E-03	2.20E-03	1.74E-03	1.28E-03	1.25E-03	1.22E-03	1.20E-03	1.17E-03	1.14E-03	1.12E-03	1.10E-03	1.08E-03	1.06E-03	1.04E-03	1.03E-03	1.02E-03	1.00E-03	9.94E-04	9.80E-04	9.76E-04	9.72E-04	9.68E-04	9.64E-04	9.60E-04
497817.05	3758629.53	0.00E+00	4.96E-03	4.31E-03	3.85E-03	3.00E-03	2.62E-03	2.24E-03	1.86E-03	1.48E-03	1.10E-03	1.07E-03	1.05E-03	1.02E-03	9.96E-04	9.70E-04	9.54E-04	9.38E-04	9.22E-04	9.06E-04	8.90E-04	8.78E-04	8.66E-04	8.54E-04	8.44E-04	8.30E-04	8.26E-04	8.22E-04	8.18E-04	8.14E-04	8.10E-04
497867.05	3758629.53	0.00E+00	4.23E-03	3.67E-03	3.28E-03	2.56E-03	2.24E-03	1.92E-03	1.60E-03	1.28E-03	9.60E-04	9.38E-04	9.16E-04	8.94E-04	8.72E-04	8.50E-04	8.34E-04	8.18E-04	8.02E-04	7.86E-04	7.70E-04	7.60E-04	7.50E-04	7.40E-04	7.32E-04	7.20E-04	7.16E-04	7.12E-04	7.08E-04	7.04E-04	7.00E-04
497917.05	3758629.53	0.00E+00	3.75E-03	3.25E-03	2.92E-03	2.28E-03	2.00E-03	1.72E-03	1.43E-03	1.15E-03	8.70E-04	8.50E-04	8.30E-04	8.10E-04	7.90E-04	7.70E-04	7.54E-04	7.38E-04	7.22E-04	7.06E-04	6.90E-04	6.82E-04	6.74E-04	6.66E-04	6.60E-04	6.50E-04	6.46E-04	6.42E-04	6.38E-04	6.34E-04	6.30E-04
497967.05	3758629.53	0.00E+00	3.30E-03	2.87E-03	2.58E-03	2.01E-03	1.76E-03	1.52E-03	1.27E-03	1.03E-03	7.80E-04	7.62E-04	7.44E-04	7.26E-04	7.08E-04	6.90E-04	6.76E-04	6.62E-04	6.48E-04	6.34E-04	6.20E-04	6.12E-04	6.04E-04	5.96E-04	5.90E-04	5.80E-04	5.76E-04	5.72E-04	5.68E-04	5.64E-04	5.60E-04
498017.05	3758629.53	0.00E+00	2.92E-03	2.54E-03	2.28E-03	1.78E-03	1.56E-03	1.35E-03	1.13E-03	9.16E-04	7.00E-04	6.84E-04	6.68E-04	6.52E-04	6.36E-04	6.20E-04	6.08E-04	5.96E-04	5.84E-04	5.72E-04	5.60E-04	5.52E-04	5.44E-04	5.36E-04	5.30E-04	5.20E-04	5.16E-04	5.12E-04	5.08E-04	5.04E-04	5.00E-04
498067.05	3758629.53	0.00E+00	2.61E-03	2.27E-03	2.04E-03	1.59E-03	1.40E-03	1.21E-03	1.02E-03	8.30E-04	6.40E-04	6.24E-04	6.08E-04	5.92E-04	5.76E-04	5.60E-04	5.48E-04	5.36E-04	5.24E-04	5.12E-04	5.00E-04	4.94E-04	4.88E-04	4.82E-04	4.77E-04	4.70E-04	4.66E-04	4.62E-04	4.58E-04	4.54E-04	4.50E-04
498117.05	3758629.53	0.00E+00	2.35E-03	2.04E-03	1.84E-03	1.44E-03	1.27E-03	1.10E-03	9.24E-04	7.52E-04	5.80E-04	5.66E-04	5.52E-04	5.38E-04	5.24E-04	5.10E-04	5.00E-04	4.90E-04	4.80E-04	4.70E-04	4.60E-04	4.52E-04	4.44E-04	4.36E-04	4.30E-04	4.20E-04	4.18E-04	4.16E-04	4.14E-04	4.12E-04	4.10E-04
498167.05	3758629.53	0.00E+00	2.21E-03	1.92E-03	1.73E-03	1.35E-03	1.19E-03	1.03E-03	8.70E-04	7.10E-04	5.50E-04	5.36E-04	5.22E-04	5.08E-04	4.94E-04	4.80E-04	4.70E-04	4.60E-04	4.50E-04	4.40E-04	4.30E-04	4.24E-04	4.18E-04	4.12E-04	4.07E-04	4.00E-04	3.98E-04	3.96E-04	3.94E-04	3.92E-04	3.90E-04
497667.05	3758679.53	0.00E+00	1.42E-02	1.23E-02	1.09E-02	8.41E-03	7.28E-03	6.16E-03	5.03E-03	3.91E-03	2.78E-03	2.72E-03	2.66E-03	2.61E-03	2.55E-03	2.49E-03	2.45E-03	2.41E-03	2.37E-03	2.33E-03	2.29E-03	2.27E-03	2.25E-03	2.22E-03	2.21E-03	2.18E-03	2.17E-03	2.16E-03	2.16E-03	2.15E-03	2.14E-03
497717.05	3758679.53	0.00E+00	1.17E-02	1.01E-02	8.97E-03	6.87E-03	5.96E-03	5.05E-03	4.13E-03	3.22E-03	2.31E-03	2.26E-03	2.21E-03	2.16E-03	2.11E-03	2.06E-03	2.03E-03	1.99E-03	1.96E-03	1.92E-03	1.89E-03	1.87E-03	1.85E-03	1.84E-03	1.82E-03	1.80E-03	1.79E-03	1.78E-03	1.78E-03	1.77E-03	1.76E-03
497767.05	3758679.53	0.00E+00	1.05E-02	9.15E-03	8.12E-03	6.26E-03	5.44E-03	4.61E-03	3.79E-03	2.96E-03	2.14E-03	2.10E-03	2.05E-03	2.01E-03	1.96E-03	1.92E-03	1.89E-03	1.85E-03	1.82E-03	1.78E-03	1.75E-03	1.73E-03	1.71E-03	1.70E-03	1.68E-03	1.66E-03	1.65E-03	1.65E-03	1.64E-03	1.64E-03	1.63E-03
497817.05	3758679.53	0.00E+00	7.89E-03	6.85E-03	6.10E-03	4.72E-03	4.11E-03	3.50E-03	2.89E-03	2.28E-03	1.67E-03	1.63E-03	1.60E-03	1.56E-03	1.53E-03	1.49E-03	1.46E-03	1.43E-03	1.41E-03	1.38E-03	1.35E-03	1.34E-03	1.32E-03	1.31E-03	1.30E-03	1.28E-03	1.27E-03	1.27E-03	1.26E-03	1.26E-03	1.25E-03
497867.05	3758679.53	0.00E+00	5.97E-03	5.19E-03	4.63E-03	3.60E-03	3.14E-03	2.69E-03	2.23E-03	1.78E-03	1.32E-03	1.29E-03	1.26E-03	1.23E-03	1.20E-03	1.17E-03	1.15E-03	1.13E-03	1.10E-03	1.08E-03	1.06E-03	1.05E-03	1.04E-03	1.02E-03	1.01E-03	1.00E-03	9.94E-04	9.88E-04	9.82E-04	9.76E-04	9.70E-04
497917.05	3758679.53	0.00E+00	5.06E-03	4.40E-03	3.93E-03	3.06E-03	2.68E-03	2.30E-03	1.92E-03	1.54E-03	1.16E-03	1.13E-03	1.10E-03	1.08E-03	1.05E-03	1.02E-03	1.00E-03	9.80E-04	9.60E-04	9.40E-04	9.20E-04	9.10E-04	9.00E-04	8.90E-04	8.82E-04	8.70E-04	8.64E-04	8.58E-04	8.52E-04	8.46E-04	8.40E-04
497967.05	3758679.53	0.00E+00	4.46E-03	3.88E-03	3.47E-03	2.70E-03	2.37E-03	2.04E-03	1.70E-03	1.37E-03	1.04E-03	1.02E-03	9.92E-04	9.68E-04	9.44E-04	9.20E-04	9.02E-04	8.84E-04	8.66E-04	8.48E-04	8.30E-04	8.18E-04	8.06E-04	7.94E-04	7.84E-04	7.70E-04	7.66E-04	7.62E-04	7.58E-04	7.54E-04	7.50E-04
498017.05	3758679.53	0.00E+00	4.01E-03	3.48E-03	3.12E-03	2.43E-03	2.14E-03	1.84E-03	1.55E-03	1.25E-03	9.60E-04	9.36E-04	9.12E-04	8.88E-04	8.64E-04	8.40E-04	8.24E-04	8.08E-04	7.92E-04	7.76E-04	7.60E-04	7.50E-04	7.40E-04	7.30E-04	7.22E-04	7.10E-04	7.04E-04	6.98E-04	6.92E-04	6.86E-04	6.80E-04
498067.05	3758679.53	0.00E+00	3.51E-03	3.05E-03	2.74E-03	2.14E-03	1.88E-03	1.62E-03	1.37E-03	1.11E-03	8.50E-04	8.30E-04	8.10E-04	7.90E-04	7.70E-04	7.50E-04	7.34E-04	7.18E-04	7.02E-04	6.86E-04	6.70E-04	6.60E-04	6.50E-04	6.40E-04	6.32E-04	6.20E-04	6.16E-04	6.12E-04	6.08E-04	6.04E-04	6.00E-04
498117.05	3758679.53	0.00E+00	3.00E-03	2.61E-03	2.35E-03	1.83E-03	1.61E-03	1.39E-03	1.18E-03	9.58E-04	7.40E-04	7.22E-04	7.04E-04	6.86E-04	6.68E-04	6.50E-04	6.36E-04	6.22E-04	6.08E-04	5.94E-04	5.80E-04	5.72E-04	5.64E-04	5.56E-04	5.50E-04	5.40E-04	5.36E-04	5.32E-04	5.28E-04	5.24E-04	5.20E-04
498167.05	3758679.53	0.00E+00	2.73E-03	2.37E-03	2.14E-03	1.67E-03	1.47E-03	1.28E-03	1.08E-03	8.86E-04	6.90E-04	6.72E-04	6.54E-04	6.36E-04	6.18E-04	6.00E-04	5.88E-04	5.76E-04	5.64E-04	5.52E-04	5.40E-04	5.32E-04	5.24E-04	5.16E-04	5.10E-04	5.00E-04	4.96E-04	4.92E-04	4.88E-04	4.84E-04	4.80E-04
497367.05	3758329.53	0.00E+00	1.36E-03	1.19E-03	0.00107	0.00084	7.40E-04	6.40E-04	5.40E-04	4.40E-04	0.00034	3.32E-04	3.24E-04	3.16E-04	3.08E-04	0.0003	2.92E-04	2.84E-04	2.76E-04	2.68E-04	0.00026	2.58E-04	2.56E-04	2.54E-04	2.52E-04	0.00025	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04
497417.05	3758329.53	0.00E+00	1.38E-03	1.20E-03	0.00108	0.00085	7.48E-04	6.46E-04	5.44E-04	4.42E-04	0.00034	3.32E-04	3.24E-04	3.16E-04	3.08E-04	0.0003	2.94E-04	2.88E-04	2.82E-04	2.76E-04	0.00027	2.66E-04	2.62E-04	2.58E-04	2.55E-04	0.00025	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04
497467.05	3758329.53	0.00E+00	1.39E-03	1.21E-03	0.00109	0.00085	7.48E-04	6.46E-04	5.44E-04	4.42E-04	0.00034	3.32E-04	3.24E-04	3.16E-04	3.08E-04	0.0003	2.94E-04	2.88E-04	2.82E-04	2.76E-04	0.00027	2.66E-04	2.62E-04	2.58E-04	2.55E-04	0.00025	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04
497517.05	3758329.53	0.00E+00	1.40E-03	1.22E-03	0.00109	0.00086	7.58E-04	6.56E-04	5.54E-04	4.52E-04	0.00035	3.40E-04	3.30E-04	3.20E-04	3.10E-04	0.0003	2.94E-04	2.88E-04	2.82E-04	2.76E-04	0.00027	2.66E-04	2.62E-04	2.58E-04	2.55E-04	0.00025	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04
497567.05	3758329.53	0.00E+00	1.39E-03	1.21E-03	1.09E-03	8.50E-04	7.50E-04	6.50E-04	5.50E-04	4.50E-04	3.50E-04	3.40E-04	3.30E-04	3.20E-04	3.10E-04	3.00E-04	2.94E-04	2.88E-04	2.82E-04	2.76E-04	2.70E-04	2.66E-04	2.62E-04	2.58E-04	2.55E-04	2.50E-04	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04
497617.05	3758329.53	0.00E+00	1.36E-03	1.18E-03	0.00106	0.00083	7.32E-04	6.34E-04	5.36E-04	4.38E-04	0.00034	3.32E-04	3.24E-04	3.16E-04	3.08E-04	0.0003	2.94E-04	2.88E-04	2.82E-04	2.76E-04	0.00027	2.66E-04	2.62E-04	2.58E-04	2.55E-04	0.00025	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04
497667.05	3758329.53	0.00E+00	1.25E-03	1.09E-03	0.00098	0.00077	6.80E-04	5.90E-04	5.00E-04	4.10E-04	0.00032	3.12E-04	3.04E-04	2.96E-04	2.88E-04	0.00028	2.74E-04	2.68E-04	2.62E-04	2.56E-04	0.00025	2.46E-04	2.42E-04	2.38E-04	2.35E-04	0.00023	2.28E-04	2.26E-04	2.24E-04	2.22E-04	2.20E-04
497717.05	3758329.53	0.00E+00	1.20E-03	1.04E-03	0.00094	0.00074	6.54E-04	5.68E-04	4.82E-04	3.96E-04	0.00031	3.02E-04	2.94E-04	2.86E-04	2.78E-04	0.00027	2.64E-04	2.58E-04	2.52E-04	2.46E-04	0.00024	2.36E-04	2.32E-04	2.28E-04	2.25E-04	0.00022	2.18E-04	2.16E-04	2.14E-04	2.12E-04	2.10E-04
497767.05	3758329.53	0.00E+00	1.16E-03	1.01E-03	0.00091	0.00072	6.36E-04	5.52E-04	4.68E-04	3.84E-04	0.0003	2.92E-04	2.84E-04	2.76E-04	2.68E-04	0.00026	2.54E-04	2.48E-04	2.42E-04	2.36E-04	0.00023	2.28E-04	2.26E-04	2.24E-04	2.22E-04	0.00022	2.18E-04	2.16E-04	2.14E-04	2.12E-04	2.10E-04
497817.05	3758329.53	0.00E+00	1.09E-03	9.50E-04	0.001	0.001	6.02E-04	5.24E-04	4.46E-04	3.68E-04	0.000	2.82E-04	2.74E-04	2.66E-04	2.58E-04	0.000	2.44E-04	2.38E-04	2.32E-04	2.26E-04	0.000	2.18E-04	2.16E-04	2.14E-04	2.12E-04	0.000	2.08E-04	2.06E-04	2.04E-04	2.02E-04	2.00E-04
497867.05	3758329.53	0.00E+00	1.05E-03	9.10E-04	0.00083	0.00065	5.76E-04	5.02E-04	4.28E-04	3.54E-04	0.00028	2.72E-04	2.64E-04	2.56E-04	2.48E-04	0.00024	2.36E-04	2.32E-04	2.28E-04	2.24E-04	0.00022	2.16E-04	2.12E-04	2.08E-04	2.05E-04	0.0002	1.98E-04	1.96E-04	1.94E-04	1.92E-04	1.90E-04
497917.05	3758329.53	0.00E+00	9.30E-04	8.10E-04	0.00073	0.00058	5.14E-04	4.48E-04	3.82E-04	3.16E-04	0.00025	2.44E-04	2.38E-04	2.32E-04	2.26E-04	0.00022	2.14E-04	2.08E-04	2.02E-04	1.96E-04	0.00019	1.88E-04	1.86E-04	1.84E-04	1.82E-04	0.00018	1.78E-04	1.76E-04	1.74E-04	1.72E-04	1.70E-04
497967.05	3758329.53	0.00E+00	8.80E-04	7.60E-04	6.90E-04	5.50E-04	4.88E-04	4.26E-04	3.64E-04	3.02E-04	2.40E-04	2.34E-04	2.28E-04	2.22E-04	2.16E-04	2.10E-04	2.04E-04	1.98E-04	1.92E-04	1.86E-04	1.80E-04	1.78E-04	1.76E-04	1.74E-04	1.72E-04	1.70E-04	1.68E-04	1.66E-04	1.64E-04	1.62E-04	1.60E-04
498017.05	3758329.53	0.00E+00	8.30E-04	7.20E-04	6.50E-04	5.20E-04	4.60E-04	4.00E-04	3.40E-04	2.80E-04	2.20E-04	2.16E-04	2.12E-04	2.08E-04	2.04E-04	2.00E-04	1.94E-04	1.88E-04	1.82E-04	1.76E-04	1.70E-04	1.68E-04	1.66E-04	1.64E-04	1.62E-04	1.60E-04	1.58E-04	1.56E-04	1.54E-04	1.52E-04	1.50E-04
498067.05	3758329.53	0.00E+00	7.80E-04	6.80E-04	6.10E-04	4.80E-04	4.26E-04	3.72E-04	3.18E-04	2.64E-04	2.10E-04	2.04E-04	1.98E-04	1.92E-04	1.86E-04	1.80E-04	1.76E-04	1.72E-04	1.68E-04	1.64E-04	1.60E-04	1.58E-04	1.56E-04	1.54E-04	1.52E-04	1.50E-04	1.48E-04	1.46E-04	1.44E-04	1.42E-04	1.40E-04
498117.05	3758329.53	0.00E+00	7.90E-04	6.90E-04	0.00062	0.00049	4.34E-04	3.78E-04	3.22E-04	2.66E-04	0.00021	2.04E-04	1.98E-04	1.92E-04	1.86E-04	0.00018	1.76E-04	1.72E-04	1.68E-04	1.64E-04	0.00016	1.58E-04	1.56E-04	1.54E-04	1.52E-04	0.00015	1.48E-04	1.46E-04	1.44E-04	1.42E-04	1.40E-04
498167.05	3758329.53	0.00E+00	7.70E-04	6.70E-04	0.00061	0.00048	4.24E-04	3.68E-04	3.12E-04	2.56E-04	0.0002	1.96E-04	1.92E-04	1.88E-04	1.84E-04	0.00018	1.76E-04	1.72E-04	1.68E-04	1.64E-04	0.00016	1.58E-04	1.56E-04	1.54E-04	1.52E-04	0.00015	1.48E-04	1.46E-04	1.44E-04	1.42E-04	1.40E-04
498217.05	3758329.53	0.00E+00	7.20E-04	6.20E-04	0.00056	0.00044	3.90E-04	3.40E-04	2.90E-04	2.40E-04	0.00019	1.84E-04	1.78E-04	1.72E-04	1.66E-04	0.00016	1.58E-04	1.56E-04	1.54E-04	1.52E-04	0.00015	1.46E-04	1.42E-04	1.38E-04	1.35E-04	0.00013	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04
498267.05	3758329.53	0.00E+00	6.50E-04	5.70E-04	0.00051	0.0004	3.54E-04	3.08E-04	2.62E-04	2.16E-04	0.00017	1.66E-04	1.62E-04	1.58E-04	1.54E-04	0.00015	1.46E-04	1.42E-04	1.38E-04	1.34E-04	0.00013	1.28E-04	1.26E-04	1.24E-04	1.22E-04	0.00012	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04
498317.05	3758329.53	0.00E+00	6.40E-04	5.60E-04	0.0005	0.0004	3.52E-04	3.04E-04	2.56E-04	2.08E-04	0.00016	1.56E-04	1.52E-04	1.48E-04	1.44E-04	0.00014	1.38E-04	1.36E-04	1.34E-04	1.32E-04	0.00013	1.28E-04	1.26E-04	1.24E-04	1.22E-04	0.00012	1.18E-04	1.16E-04	1.14E-04	1.12E-04	1.10E-04
498367.05	3758329.53	0.00E+00	6.50E-04	5.60E-04	0.00051	0.0004	3.52E-04	3.04E-04	2.56E-04	2.08E-04	0.00016	1.56E-04	1.52E-04	1.48E-04	1.44E-04	0.00014	1.38E-04	1.36E-04	1.34E-04	1.32E-04	0.00013	1.28E-04	1.26E-04	1.24E-04	1.22E-04	0.00012	1.18E-04	1.16E-04	1.14E-04	1.12E-04	1.10E-04
498417.05	3758329.53	0.00E+00	6.40E-04	5.50E-04	0.0005	0.00039	3.44E-04	2.98E-04	2.52E-04	2.06E-04	0.00016	1.56E-04	1.52E-04	1.48E-04	1.44E-04	0.00014	1.38E-04	1.36E-04	1.34E-04	1.32E-04	0.00013	1.28E-04	1.26E-04	1.24E-04	1.22E-04	0.00012	1.18E-04	1.16E-04	1.14E-04	1.12E-04	1.10E-04
498467.05	3758329.53	0.00E+00	6.20E-04	5.40E-04	0.00049	0.00038	3.36E-04	2.92E-04	2.48E-04	2.04E-04	0.00016	1.56E-04	1.52E-04	1.48E-04	1.44E-04	0.00014	1.36E-04	1.32E-04	1.28E-04	1.24E-04	0.00012	1.20E-04	1.20E-04	1.20E-04	1.20E-04	0.00012	1.18E-04	1.16E-04	1.14E-04	1.12E-04	1.10E-04
497367.05	3758379.53	0.00E+00	1.65E-03	1.43E-03	0.00129	0.00101	8.88E-04	7.66E-04	6.44E-04	5.22E-04	0.0004	3.90E-04	3.80E-04	3.70E-04	3.60E-04	0.00035	3.44E-04	3.38E-04	3.32E-04	3.26E-04	0.00032	3.14E-04	3.08E-04	3.02E-04	2.97E-04	0.00029	2.88E-04	2.86E-04	2.84E-04	2.82E-04	2.80E-04
497417.05	3758379.53	0.00E+00	1.67E-03	1.45E-03	0.00131	0.00102	8.96E-04	7.72E-04	6.48E-04	5.24E-04	0.0004	3.92E-04	3.84E-04	3.76E-04	3.68E-04	0.00036	3.52E-04	3.44E-04	3.36E-04	3.28E-04	0.00032	3.16E-04	3.12E-04	3.08E-04	3.05E-04	0.0003	2.98E-04	2.96E-04	2.94E-04	2.92E-04	2.90E-04
497467.05	3758379.53	0.00E+00	1.65E-03	1.44E-03	0.00129	0.00101	8.88E-04	7.66E-04	6.44E-04	5.22E-04	0.0004	3.90E-04	3.80E-04	3.70E-04	3.60E-04	0.00035	3.44E-04	3.38E-04	3.32E-04	3.26E-04	0.00032	3.14E-04	3.08E-04	3.02E-04	2.97E-04	0.00029	2.88E-04	2.86E-04	2.84E-04	2.82E-04	2.80E-04
497517.05	3758379.53	0.00E+00	1.63E-03	1.41E-03	0.00127	0.00099	8.70E-04	7.50E-04	6.30E-04	5.10E-04	0.00039	3.82E-04	3.74E-04	3.66E-04	3.58E-04	0.00035	3.42E-04	3.34E-04	3.26E-04	3.18E-04	0.00031	3.06E-04	3.02E-04	2.98E-04	2.95E-04	0.00029	2.88E-04	2.86E-04	2.84E-04	2.82E-04	2.80E-04
497567.05	3758379.53	0.00E+00	1.59E-03	1.38E-03	0.00124	0.00097	8.54E-04	7.38E-04	6.22E-04	5.06E-04	0.00039	3.80E-04	3.70E-04	3.60E-04	3.50E-04	0.00034	3.34E-04	3.28E-04	3.22E-04	3.16E-04	0.00031	3.04E-04	2.98E-04	2.92E-04	2.87E-04	0.00028	2.78E-04	2.76E-04	2.74E-04	2.72E-04	2.70E-04
497617.05	3758379.53	0.00E+00	1.60E-03	1.39E-03	0.00125	0.00098	8.62E-04	7.44E-04	6.26E-04	5.08E-04	0.00039	3.80E-04	3.70E-04	3.60E-04	3.50E-04	0.00034	3.34E-04	3.28E-04	3.22E-04	3.16E-04	0.00031	3.06E-04	3.02E-04	2.98E-04	2.95E-04	0.00029	2.88E-04	2.86E-04	2.84E-04	2.82E-04	2.80E-04
497667.05	3758379.53	0.00E+00	1.53E-03	1.33E-03	0.00119	0.00093	8.20E-04	7.10E-04	6.00E-04	4.90E-04	0.00038	3.70E-04	3.60E-04	3.50E-04	3.40E-04	0.00033	3.24E-04	3.18E-04	3.12E-04	3.06E-04	0.0003	2.96E-04	2.92E-04	2.88E-04	2.85E-04	0.00028	2.78E-04	2.76E-04	2.74E-04	2.72E-04	2.70E-04
497717.05	3758379.53	0.00E+00	1.47E-03	1.28E-03	0.00115	0.0009	7.94E-04	6.88E-04	5.82E-04	4.76E-04	0.00037	3.60E-04	3.50E-04	3.40E-04	3.30E-04	0.00032	3.14E-04	3.08E-04	3.02E-04	2.96E-04	0.00029	2.86E-04	2.82E-04	2.78E-04	2.75E-04	0.00027	2.68E-04	2.66E-04	2.64E-04	2.62E-04	2.60E-04
497767.05	3758379.53	0.00E+00	1.41E-03	1.22E-03	0.0011	0.00087	7.68E-04	6.66E-04	5.64E-04	4.62E-04	0.00036	3.50E-04	3.40E-04	3.30E-04	3.20E-04	0.00031	3.04E-04	2.98E-04	2.92E-04	2.86E-04	0.00028	2.76E-04	2.72E-04	2.68E-04	2.65E-04	0.00026	2.58E-04	2.56E-04	2.54E-04	2.52E-04	2.50E-04
497817.05	3758379.53	0.00E+00	1.27E-03	1.11E-03	0.001	0.00079	6.98E-04	6.06E-04	5.14E-04	4.22E-04	0.00033	3.22E-04	3.14E-04	3.06E-04	2.98E-04	0.00029	2.84E-04	2.78E-04	2.72E-04	2.66E-04	0.00026	2.56E-04	2.52E-04	2.48E-04	2.45E-04	0.00024	2.38E-04	2.36E-04	2.34E-04	2.32E-04	2.30E-04
497867.05	3758379.53	0.00E+00	1.14E-03	9.90E-04	0.0009	0.00071	6.28E-04

San Gorgonio Crossing **With Mitigation** **Sample Output**

Annual DPM Concentrations During Construction

		Annual DPM Concentrations	
		2016	2017
X	Y	(ug/m3)	(ug/m3)
497667.05	3758629.5	2.43E-03	3.79E-03
497717.05	3758629.5	2.68E-03	4.03E-03
497767.05	3758629.5	2.86E-03	4.22E-03
497817.05	3758629.5	3.19E-03	4.15E-03
497867.05	3758629.5	3.58E-03	3.86E-03
497917.05	3758629.5	3.73E-03	3.48E-03
497967.05	3758629.5	3.84E-03	3.14E-03
498017.05	3758629.5	3.76E-03	2.82E-03
498067.05	3758629.5	3.69E-03	2.55E-03
498117.05	3758629.5	3.56E-03	2.32E-03
498167.05	3758629.5	3.50E-03	2.14E-03
497667.05	3758679.5	4.37E-03	1.26E-02
497717.05	3758679.5	5.37E-03	1.19E-02
497767.05	3758679.5	7.36E-03	9.86E-03
497817.05	3758679.5	9.50E-03	8.07E-03
497867.05	3758679.5	1.17E-02	6.61E-03
497917.05	3758679.5	1.18E-02	5.47E-03
497967.05	3758679.5	1.20E-02	4.70E-03
498017.05	3758679.5	1.20E-02	4.10E-03
498067.05	3758679.5	1.13E-02	3.59E-03
498117.05	3758679.5	9.60E-03	3.12E-03
498167.05	3758679.5	8.86E-03	2.78E-03

San Gorgonio Crossing **Sample Output**

Annual DPM Concentrations During Construction and Operations **With Mitigation**

Annual Max (ug/m3) 2.68E-02

Annual DPM Concentrations

X	Y	2016 (ug/m3)	2017 (ug/m3)	2018 (ug/m3)	2019 (ug/m3)	2020 (ug/m3)	2021 (ug/m3)	2022 (ug/m3)	2023 (ug/m3)	2024 (ug/m3)	2025 (ug/m3)	2026 (ug/m3)	2027 (ug/m3)	2028 (ug/m3)	2029 (ug/m3)	2030 (ug/m3)	2031 (ug/m3)	2032 (ug/m3)	2033 (ug/m3)	2034 (ug/m3)	2035 (ug/m3)	2036 (ug/m3)	2037 (ug/m3)	2038 (ug/m3)	2039 (ug/m3)	2040 (ug/m3)	2041 (ug/m3)	2042 (ug/m3)	2043 (ug/m3)	2044 (ug/m3)	2045 (ug/m3)	2046 (ug/m3)	Max (ug/m3)
497667.05	3758629.5	2.43E-03	1.18E-02	6.92E-03	6.15E-03	4.78E-03	4.15E-03	3.52E-03	2.90E-03	2.27E-03	1.64E-03	1.61E-03	1.57E-03	1.54E-03	1.50E-03	1.47E-03	1.44E-03	1.42E-03	1.39E-03	1.37E-03	1.34E-03	1.33E-03	1.32E-03	1.30E-03	1.29E-03	1.28E-03	1.27E-03	1.27E-03	1.26E-03	1.26E-03	1.25E-03	1.25E-03	1.18E-02
497717.05	3758629.5	2.68E-03	1.19E-02	6.83E-03	6.07E-03	4.73E-03	4.11E-03	3.49E-03	2.87E-03	2.25E-03	1.63E-03	1.60E-03	1.56E-03	1.53E-03	1.49E-03	1.46E-03	1.44E-03	1.41E-03	1.39E-03	1.36E-03	1.34E-03	1.33E-03	1.31E-03	1.30E-03	1.29E-03	1.27E-03	1.27E-03	1.26E-03	1.26E-03	1.25E-03	1.25E-03	1.25E-03	1.19E-02
497767.05	3758629.5	2.86E-03	1.02E-02	5.17E-03	4.61E-03	3.59E-03	3.13E-03	2.67E-03	2.20E-03	1.74E-03	1.28E-03	1.25E-03	1.22E-03	1.20E-03	1.17E-03	1.14E-03	1.12E-03	1.10E-03	1.08E-03	1.06E-03	1.04E-03	1.03E-03	1.02E-03	1.00E-03	9.94E-04	9.80E-04	9.76E-04	9.72E-04	9.68E-04	9.64E-04	9.60E-04	1.25E-03	1.02E-02
497817.05	3758629.5	3.19E-03	9.11E-03	4.31E-03	3.85E-03	3.00E-03	2.62E-03	2.24E-03	1.86E-03	1.48E-03	1.10E-03	1.07E-03	1.05E-03	1.02E-03	9.96E-04	9.70E-04	9.54E-04	9.38E-04	9.22E-04	9.06E-04	8.90E-04	8.78E-04	8.66E-04	8.54E-04	8.44E-04	8.30E-04	8.26E-04	8.22E-04	8.18E-04	8.14E-04	8.10E-04	1.25E-03	9.11E-03
497867.05	3758629.5	3.58E-03	8.09E-03	3.67E-03	3.28E-03	2.56E-03	2.24E-03	1.92E-03	1.60E-03	1.28E-03	9.60E-04	9.38E-04	9.16E-04	8.94E-04	8.72E-04	8.50E-04	8.34E-04	8.18E-04	8.02E-04	7.86E-04	7.70E-04	7.60E-04	7.50E-04	7.40E-04	7.32E-04	7.20E-04	7.16E-04	7.12E-04	7.08E-04	7.04E-04	7.00E-04	1.25E-03	8.09E-03
497917.05	3758629.5	3.73E-03	7.23E-03	3.25E-03	2.92E-03	2.28E-03	2.00E-03	1.72E-03	1.43E-03	1.15E-03	8.70E-04	8.50E-04	8.30E-04	8.10E-04	7.90E-04	7.70E-04	7.54E-04	7.38E-04	7.22E-04	7.06E-04	6.90E-04	6.82E-04	6.74E-04	6.66E-04	6.60E-04	6.50E-04	6.46E-04	6.42E-04	6.38E-04	6.34E-04	6.30E-04	1.25E-03	7.23E-03
497967.05	3758629.5	3.84E-03	6.44E-03	2.87E-03	2.58E-03	2.01E-03	1.76E-03	1.52E-03	1.27E-03	1.03E-03	7.80E-04	7.62E-04	7.44E-04	7.26E-04	7.08E-04	6.90E-04	6.76E-04	6.62E-04	6.48E-04	6.34E-04	6.20E-04	6.12E-04	6.04E-04	5.96E-04	5.90E-04	5.80E-04	5.76E-04	5.72E-04	5.68E-04	5.64E-04	5.60E-04	1.25E-03	6.44E-03
498017.05	3758629.5	3.76E-03	5.74E-03	2.54E-03	2.28E-03	1.78E-03	1.56E-03	1.35E-03	1.13E-03	9.16E-04	7.00E-04	6.84E-04	6.68E-04	6.52E-04	6.36E-04	6.20E-04	6.08E-04	5.96E-04	5.84E-04	5.72E-04	5.60E-04	5.52E-04	5.44E-04	5.36E-04	5.30E-04	5.20E-04	5.16E-04	5.12E-04	5.08E-04	5.04E-04	5.00E-04	1.25E-03	5.74E-03
498067.05	3758629.5	3.69E-03	5.16E-03	2.27E-03	2.04E-03	1.59E-03	1.40E-03	1.21E-03	1.02E-03	8.30E-04	6.40E-04	6.24E-04	6.08E-04	5.92E-04	5.76E-04	5.60E-04	5.48E-04	5.36E-04	5.24E-04	5.12E-04	5.00E-04	4.94E-04	4.88E-04	4.82E-04	4.77E-04	4.70E-04	4.66E-04	4.62E-04	4.58E-04	4.54E-04	4.50E-04	1.25E-03	5.16E-03
498117.05	3758629.5	3.56E-03	4.67E-03	2.04E-03	1.84E-03	1.44E-03	1.27E-03	1.10E-03	9.24E-04	7.52E-04	5.80E-04	5.66E-04	5.52E-04	5.38E-04	5.24E-04	5.10E-04	5.00E-04	4.90E-04	4.80E-04	4.70E-04	4.60E-04	4.52E-04	4.44E-04	4.36E-04	4.30E-04	4.20E-04	4.18E-04	4.16E-04	4.14E-04	4.12E-04	4.10E-04	1.25E-03	4.67E-03
498167.05	3758629.5	3.50E-03	4.35E-03	1.92E-03	1.73E-03	1.35E-03	1.19E-03	1.03E-03	8.70E-04	7.10E-04	5.50E-04	5.36E-04	5.22E-04	5.08E-04	4.94E-04	4.80E-04	4.70E-04	4.60E-04	4.50E-04	4.40E-04	4.30E-04	4.24E-04	4.18E-04	4.12E-04	4.07E-04	4.00E-04	3.98E-04	3.96E-04	3.94E-04	3.92E-04	3.90E-04	1.25E-03	4.35E-03
497667.05	3758679.5	4.37E-03	2.68E-02	1.23E-02	1.09E-02	8.41E-03	7.28E-03	6.16E-03	5.03E-03	3.91E-03	2.78E-03	2.72E-03	2.66E-03	2.61E-03	2.55E-03	2.49E-03	2.45E-03	2.41E-03	2.37E-03	2.33E-03	2.29E-03	2.27E-03	2.25E-03	2.22E-03	2.21E-03	2.18E-03	2.17E-03	2.16E-03	2.16E-03	2.15E-03	2.14E-03	1.25E-03	2.68E-02
497717.05	3758679.5	5.37E-03	2.36E-02	1.01E-02	8.97E-03	6.87E-03	5.96E-03	5.05E-03	4.13E-03	3.22E-03	2.31E-03	2.26E-03	2.21E-03	2.16E-03	2.11E-03	2.06E-03	2.03E-03	1.99E-03	1.96E-03	1.92E-03	1.89E-03	1.87E-03	1.85E-03	1.84E-03	1.82E-03	1.80E-03	1.79E-03	1.78E-03	1.78E-03	1.77E-03	1.76E-03	1.25E-03	2.36E-02
497767.05	3758679.5	7.36E-03	2.04E-02	9.15E-03	8.12E-03	6.26E-03	5.44E-03	4.61E-03	3.79E-03	2.96E-03	2.14E-03	2.10E-03	2.05E-03	2.01E-03	1.96E-03	1.92E-03	1.89E-03	1.85E-03	1.82E-03	1.78E-03	1.75E-03	1.73E-03	1.71E-03	1.70E-03	1.68E-03	1.66E-03	1.65E-03	1.65E-03	1.64E-03	1.64E-03	1.63E-03	1.25E-03	2.04E-02
497817.05	3758679.5	9.50E-03	1.60E-02	6.85E-03	6.10E-03	4.72E-03	4.11E-03	3.50E-03	2.89E-03	2.28E-03	1.67E-03	1.63E-03	1.60E-03	1.56E-03	1.53E-03	1.49E-03	1.46E-03	1.43E-03	1.41E-03	1.38E-03	1.35E-03	1.34E-03	1.32E-03	1.31E-03	1.30E-03	1.28E-03	1.27E-03	1.27E-03	1.26E-03	1.26E-03	1.25E-03	1.25E-03	1.60E-02
497867.05	3758679.5	1.17E-02	1.26E-02	5.19E-03	4.63E-03	3.60E-03	3.14E-03	2.69E-03	2.23E-03	1.78E-03	1.32E-03	1.29E-03	1.26E-03	1.23E-03	1.20E-03	1.17E-03	1.15E-03	1.13E-03	1.10E-03	1.08E-03	1.06E-03	1.05E-03	1.04E-03	1.02E-03	1.01E-03	1.00E-03	9.94E-04	9.88E-04	9.82E-04	9.76E-04	9.70E-04	1.25E-03	1.26E-02
497917.05	3758679.5	1.18E-02	1.05E-02	4.40E-03	3.93E-03	3.06E-03	2.68E-03	2.30E-03	1.92E-03	1.54E-03	1.16E-03	1.13E-03	1.10E-03	1.08E-03	1.05E-03	1.02E-03	1.00E-03	9.80E-04	9.60E-04	9.40E-04	9.20E-04	9.10E-04	9.00E-04	8.90E-04	8.82E-04	8.70E-04	8.64E-04	8.58E-04	8.52E-04	8.46E-04	8.40E-04	1.25E-03	1.18E-02
497967.05	3758679.5	1.20E-02	9.16E-03	3.88E-03	3.47E-03	2.70E-03	2.37E-03	2.04E-03	1.70E-03	1.37E-03	1.04E-03	1.02E-03	9.92E-04	9.68E-04	9.44E-04	9.20E-04	9.02E-04	8.84E-04	8.66E-04	8.48E-04	8.30E-04	8.18E-04	8.06E-04	7.94E-04	7.84E-04	7.70E-04	7.66E-04	7.62E-04	7.58E-04	7.54E-04	7.50E-04	1.25E-03	1.20E-02
498017.05	3758679.5	1.20E-02	8.11E-03	3.48E-03	3.12E-03	2.43E-03	2.14E-03	1.84E-03	1.55E-03	1.25E-03	9.60E-04	9.36E-04	9.12E-04	8.88E-04	8.64E-04	8.40E-04	8.24E-04	8.08E-04	7.92E-04	7.76E-04	7.60E-04	7.50E-04	7.40E-04	7.30E-04	7.22E-04	7.10E-04	7.04E-04	6.98E-04	6.92E-04	6.86E-04	6.80E-04	1.25E-03	1.20E-02
498067.05	3758679.5	1.13E-02	7.10E-03	3.05E-03	2.74E-03	2.14E-03	1.88E-03	1.62E-03	1.37E-03	1.11E-03	8.50E-04	8.30E-04	8.10E-04	7.90E-04	7.70E-04	7.50E-04	7.34E-04	7.18E-04	7.02E-04	6.86E-04	6.70E-04	6.60E-04	6.50E-04	6.40E-04	6.32E-04	6.20E-04	6.16E-04	6.12E-04	6.08E-04	6.04E-04	6.00E-04	1.25E-03	1.13E-02
498117.05	3758679.5	9.60E-03	6.12E-03	2.61E-03	2.35E-03	1.83E-03	1.61E-03	1.39E-03	1.18E-03	9.58E-04	7.40E-04	7.22E-04	7.04E-04	6.86E-04	6.68E-04	6.50E-04	6.36E-04	6.22E-04	6.08E-04	5.94E-04	5.80E-04	5.72E-04	5.64E-04	5.56E-04	5.50E-04	5.40E-04	5.36E-04	5.32E-04	5.28E-04	5.24E-04	5.20E-04	1.25E-03	9.60E-03
498167.05	3758679.5	8.86E-03	5.51E-03	2.37E-03	2.14E-03	1.67E-03	1.47E-03	1.28E-03	1.08E-03	8.86E-04	6.90E-04	6.72E-04	6.54E-04	6.36E-04	6.18E-04	6.00E-04	5.88E-04	5.76E-04	5.64E-04	5.52E-04	5.40E-04	5.32E-04	5.24E-04	5.16E-04	5.10E-04	5.00E-04	4.96E-04	4.92E-04	4.88E-04	4.84E-04	4.80E-04	1.25E-03	8.86E-03
497367.05	3758329.5	5.10E-04	1.76E-03	1.19E-03	1.07E-03	8.40E-04	7.40E-04	6.40E-04	5.40E-04	4.40E-04	3.40E-04	3.32E-04	3.24E-04	3.16E-04	3.08E-04	3.00E-04	2.92E-04	2.84E-04	2.76E-04	2.68E-04	2.60E-04	2.58E-04	2.56E-04	2.54E-04	2.52E-04	2.50E-04	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04	1.25E-03	1.76E-03
497417.05	3758329.5	5.30E-04	1.74E-03	1.20E-03	1.08E-03	8.50E-04	7.48E-04	6.46E-04	5.44E-04	4.42E-04	3.40E-04	3.32E-04	3.24E-04	3.16E-04	3.08E-04	3.00E-04	2.94E-04	2.88E-04	2.82E-04	2.76E-04	2.70E-04	2.66E-04	2.62E-04	2.58E-04	2.55E-04	2.50E-04	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04	1.25E-03	1.74E-03
497467.05	3758329.5	5.40E-04	1.71E-03	1.21E-03	1.09E-03	8.50E-04	7.48E-04	6.46E-04	5.44E-04	4.42E-04	3.40E-04	3.32E-04	3.24E-04	3.16E-04	3.08E-04	3.00E-04	2.94E-04	2.88E-04	2.82E-04	2.76E-04	2.70E-04	2.66E-04	2.62E-04	2.58E-04	2.55E-04	2.50E-04	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04	1.25E-03	1.71E-03
497517.05	3758329.5	5.60E-04	1.68E-03	1.22E-03	1.09E-03	8.60E-04	7.58E-04	6.56E-04	5.54E-04	4.52E-04	3.50E-04	3.40E-04	3.30E-04	3.20E-04	3.10E-04	3.00E-04	2.94E-04	2.88E-04	2.82E-04	2.76E-04	2.70E-04	2.66E-04	2.62E-04	2.58E-04	2.55E-04	2.50E-04	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04	1.25E-03	1.68E-03
497567.05	3758329.5	5.70E-04	1.64E-03	1.21E-03	1.09E-03	8.50E-04	7.50E-04	6.50E-04	5.50E-04	4.50E-04	3.50E-04	3.40E-04	3.30E-04	3.20E-04	3.10E-04	3.00E-04	2.94E-04	2.88E-04	2.82E-04	2.76E-04	2.70E-04	2.66E-04	2.62E-04	2.58E-04	2.55E-04	2.50E-04	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04	1.25E-03	1.64E-03
497617.05	3758329.5	5.90E-04	1.59E-03	1.18E-03	1.06E-03	8.30E-04	7.32E-04	6.34E-04	5.36E-04	4.38E-04	3.40E-04	3.32E-04	3.24E-04	3.16E-04	3.08E-04	3.00E-04	2.94E-04	2.88E-04	2.82E-04	2.76E-04	2.70E-04	2.66E-04	2.62E-04	2.58E-04	2.55E-04	2.50E-04	2.48E-04	2.46E-04	2.44E-04	2.42E-04	2.40E-04	1.25E-03	1.59E-03
497667.05	3758329.5	6.10E-04	1.47E-03	1.09E-03	9.80E-04	7.70E-04	6.80E-04	5.90E-04	5.00E-04	4.10E-04	3.20E-04	3.12E-04	3.04E-04	2.96E-04	2.88E-04	2.80E-04	2.74E-04	2.68E-04	2.62E-04	2.56E-04	2.50E-04	2.46E-04	2.42E-04	2.38E-04	2.35E-04	2.30E-04	2.28E-04	2.26E-04	2.24E-04	2.22E-04	2.20E-04	1.25E-03	1.47E-03
497717.05	3758329.5	6.10E-04	1.42E-03	1.04E-03	9.40E-04	7.40E-04	6.54E-04	5.68E-04	4.82E-04	3.96E-04	3.10E-04	3.02E-04	2.94E-04	2.86E-04	2.78E-04	2.70E-04	2.64E-04	2.58E-04	2.52E-04	2.46E-04	2.40E-04	2.36E-04	2.32E-04	2.28E-04	2.25E-04	2.20E-04	2.18E-04	2.16E-04	2.14E-04	2.12E-04	2.10E-04	1.25E-03	1.42E-03
497767.05	3758329.5	6.00E-04	1.39E-03	1.01E-03	9.10E-04	7.20E-04	6.36E-04	5.52E-04	4.68E-04	3.84E-04	3.00E-04	2.92E-04	2.84E-04	2.76E-04	2.68E-04	2.60E-04	2.54E-04	2.48E-04	2.42E-04	2.36E-04	2.30E-04	2.28E-04	2.26E-04	2.24E-04	2.22E-04	2.20E-04	2.18E-04	2.16E-04	2.14E-04	2.12E-04	2.10E-04	1.25E-03	1.39E-03
497817.05	3758329.5	5.90E-04	1.34E-03	9.50E-04	8.60E-04	6.80E-04	6.02E-04	5.24E-04	4.46E-04	3.68E-04	2.90E-04	2.82E-04	2.74E-04	2.66E-04	2.58E-04	2.50E-04	2.44E-04	2.38E-04	2.32E-04	2.26E-04	2.20E-04	2.18E-04	2.16E-04	2.14E-04	2.12E-04	2.10E-04	2.08E-04	2.06E-04	2.04E-04	2.02E-04	2.00E-04	1.25E-03	1.34E-03
497867.05	3758329.5	5.60E-04	1.32E-03	9.10E-04	8.30E-04	6.50E-04	5.76E-04	5.02E-04	4.28E-04	3.54E-04	2.80E-04	2.72E-04	2.64E-04	2.56E-04	2.48E-04	2.40E-04	2.36E-04	2.32E-04	2.28E-04	2.24E-04	2.20E-04	2.16E-04	2.12E-04	2.08E-04	2.05E-04	2.00E-04	1.98E-04	1.96E-04	1.94E-04	1.92E-04	1.90E-04	1.25E-03	1.32E-03
497917.05	3758329.5	5.50E-04	1.23E-03	8.10E-04	7.30E-04	5.80E-04	5.14E-04	4.48E-04	3.82E-04	3.16E-04	2.50E-04	2.44E-04	2.38E-04	2.32E-04	2.26E-04	2.20E-04	2.14E-04	2.08E-04	2.02E-04	1.96E-04	1.90E-04	1.88E-04	1.86E-04	1.84E-04	1.82E-04	1.80E-04	1.78E-04	1.76E-04	1.74E-04	1.72E-04	1.70E-04	1.25E-03	1.23E-03
497967.05	3758329.5	5.20E-04	1.20E-03	7.60E-04	6.90E-04	5.50E-04	4.88E-04	4.26E-04	3.64E-04	3.02E-04	2.40E-04	2.34E-04	2.28E-04	2.22E-04	2.16E-04	2.10E-04	2.04E-04	1.98E-04	1.92E-04	1.86E-04	1.80E-04	1.78E-04	1.76E-04	1.74E-04	1.72E-04	1.70E-04	1.68E-04	1.66E-04	1.64E-04	1.62E-04	1.60E-04	1.25E-03	1.20E-03
498017.05	3758329.5	5.00E-04	1.18E-03	7.20E-04	6.50E-04	5.20E-04	4.60E-04	4.00E-04	3.40E-04	2.80E-04	2.20E-04	2.16E-04	2.12E-04	2.08E-04	2.04E-04	2.00E-04	1.94E-04	1.88E-04	1.82E-04	1.76E-04	1.70E-04	1.68E-04	1.66E-04	1.64E-04	1.62E-04	1.60E-04	1.58E-04	1.56E-04	1.54E-04	1.52E-04	1.50E-04	1.25E-03	1.18E-03
498067.05	3758329.5	4.70E-04	1.14E-03	6.80E-04	6.10E-04	4.80E-04	4.26E-04	3.72E-04	3.18E-04	2.64E-04	2.10E-04	2.04E-04	1.98E-04	1.92E-04	1.86E-04	1.80E-04	1.76E-04	1.72E-04	1.68E-04	1.64E-04	1.60E-04	1.58E-04	1.56E-04	1.54E-04	1.52E-04	1.50E-04	1.48E-04	1.46E-04	1.44E-04	1.42E-04	1.40E-04	1.25E-03	1.14E-03
498117.05	3758329.5	4.40E-04	1.18E-03	6.90E-04	6.20E-04	4.90E-04	4.34E-04	3.78E-04	3.22E-04	2.66E-04	2.10E-04	2.04E-04	1.98E-04	1.92E-04	1.86E-04	1.80E-04	1.76E-04	1.72E-04	1.68E-04	1.64E-04	1.60E-04	1.58E-04	1.56E-04	1.54E-04	1.52E-04	1.50E-04	1.48E-04	1.46E-04	1.44E-04	1.42E-04	1.40E-04	1.25E-03	1.18E-03
498167.05	3758329.5	4.20E-04	1.17E-03	6.70E-04	6.10E-04	4.80E-04	4.24E-04	3.68E-04	3.12E-04	2.56E-04	2.00E-04	1.96E-04	1.92E-04	1.88E-04	1.84E-04	1.80E-04	1.76E-04	1.72E-04	1.68E-04	1.64E-04	1.60E-04	1.58E-04	1.56E-04	1.54E-04	1.52E-04	1.50E-04	1.48E-04	1.46E-04	1.44E-04	1.42E-04	1.40E-04	1.25E-03	1.17E-03
498217.05	3758329.5	3.70E-04	1.11E-03	6.20E-04	5.60E-04	4.40E-04	3.90E-04	3.40E-04	2.90E-04	2.40E-04	1.90E-04	1.84E-04	1.78E-04	1.72E-04	1.66E-04	1.60E-04	1.58E-04	1.56E-04	1.54E-04	1.52E-04	1.50E-04	1.46E-04	1.42E-04	1.38E-04	1.35E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.25E-03	1.11E-03
498267.05	3758329.5	3.30E-04	1.04E-03	5.70E-04	5.10E-04	4.00E-04	3.54E-04	3.08E-04	2.62E-04	2.16E-04	1.70E-04	1.66E-04	1.62E-04	1.58E-04	1.54E-04	1.50E-04	1.46E-04	1.42E-04	1.38E-04	1.34E-04	1.30E-04	1.28E-04	1.26E-04	1.24E-04	1.22E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.25E-03	1.04E-03
498317.05	3758329.5	3.10E-04	1.05E-03	5.60E-04	5.00E-04	4.00E-04	3.52E-04	3.04E-04	2.56E-04	2.08E-04	1.60E-04	1.56E-04	1.52E-04	1.48E-04	1.44E-04	1.40E-04	1.38E-04	1.36E-04	1.34E-04	1.32E-04	1.30E-04	1.28E-04	1.26E-04	1.24E-04	1.22E-04	1.20E-04	1.18E-04	1.16E-04	1.14E-04	1.12E-04	1.10E-04	1.25E-03	1.05E-03
498367.05	3758329.5	3.10E-04	1.07E-03	5.60E-04	5.10E-04	4.00E-04	3.52E-04	3.04E-04	2.56E-04	2.08E-04	1.60E-04	1.56E-04	1.52E-04	1.48E-04	1.44E-04	1.40E-04	1.38E-04	1.36E-04	1.34E-04	1.32E-04	1.30E-04	1.28E-04	1.26E-04	1.24E-04	1.22E-04	1.20E-04	1.18E-04	1.16E-04	1.14E-04	1.12E-04	1.10E-04	1.25E-03	1.07E-03
498417.05	3758329.5	3.00E-04	1.07E-03	5.50E-04	5.00E-04	3.90E-04	3.44E-04	2.98E-04	2.52E-04	2.06E-04	1.60E-04	1.56E-04	1.52E-04	1.48E-04	1.44E-04	1.40E-04	1.38E-04	1.36E-04	1.34E-04	1.32E-04	1.30E-04	1.28E-04	1.26E-04	1.24E-04	1.22E-04	1.20E-04	1.18E-04	1.16E-04	1.14E-04	1.12E-04	1.10E-04	1.25E-03	1.07E-03
498467.05	3758329.5	2.90E-04	1.05E-03	5.40E-04	4.90E-04	3.80E-04	3.36E-04	2.92E-04	2.48E-04	2.04E-04	1.60E-04	1.56E-04	1.52E-04	1.48E-04	1.44E-04	1.40E-04	1.36E-04	1.32E-04	1.28E-04	1.24E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.20E-04	1.18E-04	1.16E-04	1.16E-04	1.14E-04	1.12E-04	1.10E-04	1.25E-03	1.05E-03
497367.05	3758379.5	5.60E-04	2.13E-03	1.43E-03	1.29E-03	1.01E-03	8.88E-04	7.66E-04	6.44E-04	5.22E-04	4.00E-04	3.90E-04	3.80E-04	3.70E-04	3.60E-04	3.50E-04	3.44E-04	3.38E-04	3.32E-04	3.26E-04	3.20E-04	3.14E-04	3.08E-04	3.02E-04	2.97E-04	2.90E-04	2.88E-04	2.86E-04	2.84E-04	2.82E-04	2.80E-04	1.25E-03	2.13E-03
497417.05	3758379.5	5.90E-04	2.11E-03	1.45E-03	1.31E-03	1.02E-03	8.96E-04	7.72E-04	6.48E-04	5.24E-04	4.00E-04	3.92E-04	3.84E-04	3.76E-04	3.68E-04	3.60E-04	3.52E-04	3.44E-04	3.36E-04	3.28E-04	3.20E-04	3.16E-04	3.12E-04	3.08E-04	3.05E-04	3.00E-04	2.98E-04	2.96E-04	2.94E-04	2.92E-04	2.90E-04	1.25E-03	2.11E-03
497467.05	3758379.5	6.30E-04	2.05E-03	1.44E-03	1.29E-03	1.01E-03	8.88E-04	7.66E-04	6.44E-04	5.22E-04	4.00E-04	3.90E-04	3.80E-04	3.70E-04	3.60E-04	3.50E-04	3.44E-04	3.38E-04	3.32E-04	3.26E-04	3.20E-04	3.14E-04	3.08E-04	3.02E-04	2.97E-04	2.90E-04	2.88E-04	2.86E-04	2.84E-04	2.82E-04	2.80E-04	1.25E-03	2.05E-03
497517.05	3758379.5	6.60E-04	1.99E-03	1.41E-03	1.27E-03	9.90E-04	8.70E-04	7.50E-04	6.30E-04	5.10E-04	3.90E-04	3.82E-04	3.74E-04	3.66E-04	3.58E-04	3.50E-04	3.42E-04	3.34E-04	3.26E-04	3.18E-04	3.10E-04	3.06E-04	3.02E-04	2.98E-04	2.95E-04	2.90E-04	2.88E-04	2.86E-04	2.84E-04	2.82E-04	2.80E-04	1.25E-03	1.99E-03
497567.05	3758379.5	6.80E-04	1.92E-03	1.38E-03	1.24E-03	9.70E-04	8.54E-04	7.38E-04	6.22E-04	5.06E-04	3.90E-04	3.80E-04	3.70E-04	3.60E-04	3.50E-04	3.40E-04	3.34E-04	3.28E-04	3.22E-04	3.16E-04	3.10E-04	3.04E-04	2.98E-04	2.92E-04	2.87E-04	2.80E-04	2.78E-04	2.76E-04	2.74E-04	2.72E-04	2.70E-04	1.25E-03	1.92E-03
497617.05	3758379.5	6.90E-04	1.90E-03	1.39E-03	1.25E-03	9.80E-04	8.62E-04	7.44E-04	6.26E-04	5.08E-04	3.90E-04	3.80E-04	3.70E-04	3.60E-04	3.50E-04	3.40E-04	3.34E-04	3.28E-04	3.22E-04	3.16E-04	3.10E

OEHHA Cancer Risk Methodology

Cancer Risk = DPM x CPF x ASF x DBR x ED x EF x TAH / AT

Cancer Risk = probability of an individual contracting cancer out of a population of 1 million people over a lifetime exposure duration of 30 years

DPM = long-term average concentration of diesel PM as predicted by the air dispersion model (ug/m3)

CPF = cancer potency factor for DPM

ASF = age sensitivity factors that are dependent on the age of the exposed individual

DBR = daily breathing rates that are dependent on the age of the exposed individual (liters/kg-day)

ED = exposure duration (years)

EF = exposure frequency (days/year)

TAH = time at home factors that are dependent on the age of the exposed individual (%)

AT = averaging time over the lifetime of an individual

WAF = worker adjustment factor

Cancer Risk Equation Values as recommended by the California Office of Environmental Health Hazards Assessment and SCAQMD via MATES

Sensitive Receptors

CPF	1.1	
Exposure Frequency	350	days
Averaging Time	25550	days

ASF, DBR, TAH Age Factors

Age Group	ASF	90th %/80-DBR	TAH
3rd Trimester	10	333	1
0-2 years	10	934	1
3-16 years	3	572	1
>16 years	1	261	0.73

School Receptors

CPF	1.1	
Exposure Duration	9	years
Averaging Time	25550	days
Daily Breathing Rate	520	liters/kg-day
Exposure Frequency	180	days/year
Age Factor	3	
TAH	1	

Worker Receptors

CPF	1.1	
Exposure Duration	25	years
Averaging Time	25550	days
Daily Breathing Rate	230	liters/kg-day
Exposure Frequency	250	days/year
Age Factor	1	
TAH	1	
Worker Adjustment Factor	1	assumes the project operates 24/7

San Gorgonio Crossing **Sample Output**

Total Cancer Risk from All Sources **With Mitigation**

		Max Risk	Max Risk	Max Risk
		7.72	**1.11**	**0.34**
X	**Y**	**30-year Risk from DPM**	**9-year Risk from DPM**	**25-year Risk from DPM**
(m)	**(m)**	**(risk/million)**	**(risk/million)**	**(risk/million)**
497667.1	3758630	3.76	0.53	0.2
497717.1	3758630	3.76	0.53	0.2
497767.1	3758630	3.04	0.42	0.1
497817.1	3758630	2.64	0.36	0.1
497867.1	3758630	2.30	0.31	0.1
497917.1	3758630	2.06	0.28	0.1
497967.1	3758630	1.83	0.24	0.1
498017.1	3758630	1.63	0.22	0.1
498067.1	3758630	1.46	0.20	0.1
498117.1	3758630	1.32	0.18	0.1
498167.1	3758630	1.24	0.17	0.1
497667.1	3758680	7.55	1.01	0.3
497717.1	3758680	6.44	0.85	0.3
497767.1	3758680	5.70	0.76	0.2
497817.1	3758680	4.39	0.58	0.2
497867.1	3758680	3.42	0.45	0.1
497917.1	3758680	2.89	0.38	0.1
497967.1	3758680	2.53	0.34	0.1
498017.1	3758680	2.26	0.30	0.1
498067.1	3758680	1.99	0.26	0.1

San Gorgonio Crossing **With Mitigation**

Construction DPM Emissions

Construction Scheduling

8	hours/day
5	days/week
52	weeks/year
2080	hours/year

Year	Activity	Onsite Annual DPM Emissions (tons/year)	Onsite Average DPM Emissions (lbs/hr)	Onsite Average DPM Emissions (g/sec)
2016	Site Prep	0.0577		
	Grading	0.0595		
	Building Contruction	0.0341		
	Paving	0		
	Architectural Coating	0		
	Total	0.1513	0.145	0.018
2017	Site Prep	0		
	Grading	0.000		
	Building Contruction	0.084		
	Paving	0.006		
	Architectural Coating	0.035		
	Total	0.1247	0.120	0.015

Construction Area

2016	362454	m2
2017	200803	m2

Construction Area Source Emissions

Year	DPMEmissions (g/m2-sec)
2016	5.062E-08
2017	7.530E-08

SoCAB DPM (as PM10) Emission Factors
EMFAC2014

Vehicle	Fuel	Speed	EF (g/mi)									
		(mph)	2017	2018	2019	2020	2025	2030	2035	2040	2045	
LDA	DSL	15	0.049972	0.042854	0.03723	0.032799	0.014153	0.003674	0.00201	0.001461	0.001294	
LDT1	DSL	15	0.279313	0.265424	0.249966	0.235155	0.160619	0.036634	0.015567	0.011253	0.009274	
LDT2	DSL	15	0.012591	0.011386	0.010637	0.010043	0.008533	0.007519	0.007468	0.007475	0.007499	
LHD1	DSL	15	0.048297	0.045011	0.042333	0.03956	0.027515	0.019821	0.015154	0.012411	0.010991	
LHD2	DSL	15	0.039256	0.035754	0.03301	0.030504	0.021361	0.0167	0.014275	0.012969	0.01248	
MDV	DSL	15	0.01675	0.0152	0.014119	0.013348	0.007391	0.003781	0.002558	0.001885	0.001598	
T6	DSL	15	0.168454	0.138768	0.108298	0.050063	0.004831	0.004714	0.004586	0.004485	0.004452	
T7	DSL	15	0.0362	0.0333	0.0321	0.0303	0.0091	0.0089	0.0086	0.0086	0.0086	Model Year 2007
LDA	DSL	25	0.029817	0.025697	0.022551	0.019991	0.008842	0.002557	0.001449	0.001061	0.000944	
LDT1	DSL	25	0.169672	0.160871	0.151286	0.142025	0.096423	0.022167	0.010051	0.007616	0.00651	
LDT2	DSL	25	0.008255	0.007581	0.007158	0.006832	0.006029	0.005469	0.005449	0.005458	0.005476	
LHD1	DSL	25	0.030682	0.028832	0.027062	0.025478	0.018633	0.013801	0.010733	0.008911	0.007959	
LHD2	DSL	25	0.025288	0.023302	0.021586	0.020162	0.014927	0.01199	0.010372	0.009465	0.009121	
MDV	DSL	25	0.010785	0.00989	0.009265	0.008828	0.005072	0.002727	0.001857	0.001373	0.001166	
T6	DSL	25	0.106478	0.089375	0.072767	0.042296	0.003856	0.003799	0.003712	0.003637	0.003613	
T7	DSL	25	0.026	0.0229	0.0217	0.0201	0.0071	0.0069	0.0067	0.0066	0.006676	Model year 2007
LDA	DSL	35	0.020153	0.017422	0.015361	0.013684	0.006191	0.001964	0.001143	0.000843	0.000753	
LDT1	DSL	35	0.123062	0.116167	0.108779	0.101745	0.067123	0.01479	0.007109	0.005653	0.004997	
LDT2	DSL	35	0.006193	0.00575	0.00547	0.005231	0.004706	0.004355	0.004346	0.004356	0.00437	
LHD1	DSL	35	0.023441	0.02217	0.021027	0.019899	0.014785	0.011034	0.00862	0.007146	0.006374	
LHD2	DSL	35	0.019399	0.01801	0.016852	0.015825	0.011887	0.00959	0.008303	0.007573	0.007296	
MDV	DSL	35	0.008043	0.007418	0.006984	0.006679	0.003918	0.00216	0.001472	0.001092	0.000928	
T6	DSL	35	0.093088	0.078938	0.065662	0.042038	0.003284	0.003244	0.003172	0.003109	0.00309	
T7	DSL	35	0.0225	0.0196	0.0185	0.0171	0.006	0.0056	0.0056	0.005636	0.005633	Model year 2007

Idling Emissions (g/hr)

			2017	2018	2019	2020	2025	2030	2035	2040	2045	
LHDT1	DSL	Idle	0.796888	0.758092	0.785893	0.776866	0.69507	0.584502	0.486447	0.41617	0.372913	
LHDT2	DSL	Idle	0.780886	0.744029	0.771634	0.762011	0.674614	0.581151	0.509374	0.467003	0.449235	
T6	DSL	Idle	0.375301	0.304728	0.265333	0.152423	0.005269	0.002857	0.001926	0.001572	0.001425	
T7	DSL	Idle	0.0258	0.0171	0.016	0.0121	0.0094	0.0078	0.0068	0.006	0.0051	Model year 2007

San Gorgonio Crossing Project

Emissions Summary for **DPM** **2017** **With Mitigation (MY2007 HHDDT)**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	5.05E-05
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	6.87E-05
Building 1 - East (Enter/Exit Street 2) - DB1E22	3.21E-05
Building 2 - North (Enter/Exit Street 2) -DB2N22	9.45E-05
Building 2 - South (Enter/Exit Street 2) - DB2S22	6.74E-05
Total	**3.13E-04**

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	6.02E-05	1.20E-05
Building 1 - East (DB1E 1 to 5)	5	5.50E-05	1.10E-05
Building 2 - North (DB1N 1 to 5)	5	7.19E-05	1.44E-05
Building 2 - South (DB1S 1 to 5)	5	7.19E-05	1.44E-05
TOTAL		**2.59E-04**	

Offsite DSL Emissions / AERMOD Source ID		Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd	(DOFFD1)	1.73E-04
I10 to Street 2 along Cherry Valley Blvd	(DOFFST2)	9.53E-05

San Gorgonio Crossing Project

Emissions Summary for **DPM** **2018** **With Mitigation (MY2007 HHDDT)**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	4.41E-05
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	6.00E-05
Building 1 - East (Enter/Exit Street 2) - DB1E22	2.80E-05
Building 2 - North (Enter/Exit Street 2) -DB2N22	8.25E-05
Building 2 - South (Enter/Exit Street 2) - DB2S22	5.88E-05
Total	**2.73E-04**

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	5.23E-05	1.05E-05
Building 1 - East (DB1E 1 to 5)	5	4.78E-05	9.57E-06
Building 2 - North (DB1N 1 to 5)	5	6.26E-05	1.25E-05
Building 2 - South (DB1S 1 to 5)	5	6.26E-05	1.25E-05
TOTAL		**2.25E-04**	

Offsite DSL Emissions / AERMOD Source ID		Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd	(DOFFD1)	1.50E-04
I10 to Street 2 along Cherry Valley Blvd	(DOFFST2)	8.25E-05

San Gorgonio Crossing Project

Emissions Summary for **DPM** **2019** **With Mitigation (MY2007 HHDDT)**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	3.86E-05
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	5.25E-05
Building 1 - East (Enter/Exit Street 2) - DB1E22	2.45E-05
Building 2 - North (Enter/Exit Street 2) -DB2N22	7.22E-05
Building 2 - South (Enter/Exit Street 2) - DB2S22	5.15E-05
Total	**2.39E-04**

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	5.08E-05	1.02E-05
Building 1 - East (DB1E 1 to 5)	5	4.64E-05	9.29E-06
Building 2 - North (DB1N 1 to 5)	5	6.07E-05	1.21E-05
Building 2 - South (DB1S 1 to 5)	5	6.07E-05	1.21E-05
TOTAL		**2.19E-04**	

Offsite DSL Emissions / AERMOD Source ID		Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd	(DOFFD1)	1.33E-04
I10 to Street 2 along Cherry Valley Blvd	(DOFFST2)	7.31E-05

San Gorgonio Crossing Project

Emissions Summary for **DPM** **2020** **With Mitigation (MY2007 HHDDT)**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	2.86E-05
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	3.90E-05
Building 1 - East (Enter/Exit Street 2) - DB1E22	1.82E-05
Building 2 - North (Enter/Exit Street 2) -DB2N22	5.36E-05
Building 2 - South (Enter/Exit Street 2) - DB2S22	3.82E-05
Total	**1.78E-04**

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	4.27E-05	8.54E-06
Building 1 - East (DB1E 1 to 5)	5	3.90E-05	7.81E-06
Building 2 - North (DB1N 1 to 5)	5	5.10E-05	1.02E-05
Building 2 - South (DB1S 1 to 5)	5	5.10E-05	1.02E-05
TOTAL		**1.84E-04**	

Offsite DSL Emissions / AERMOD Source ID		Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd	(DOFFD1)	1.04E-04
I10 to Street 2 along Cherry Valley Blvd	(DOFFST2)	5.73E-05

San Gorgonio Crossing Project

Emissions Summary for **DPM** **2025** **With Mitigation (MY2007 HHDDT)**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	8.56E-06
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	1.16E-05
Building 1 - East (Enter/Exit Street 2) - DB1E22	5.44E-06
Building 2 - North (Enter/Exit Street 2) -DB2N22	1.60E-05
Building 2 - South (Enter/Exit Street 2) - DB2S22	1.14E-05
Total	**5.31E-05**

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	2.98E-05	5.97E-06
Building 1 - East (DB1E 1 to 5)	5	2.73E-05	5.46E-06
Building 2 - North (DB1N 1 to 5)	5	3.57E-05	7.14E-06
Building 2 - South (DB1S 1 to 5)	5	3.57E-05	7.14E-06
TOTAL		**1.28E-04**	

Offsite DSL Emissions / AERMOD Source ID		Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd	(DOFFD1)	3.30E-05
I10 to Street 2 along Cherry Valley Blvd	(DOFFST2)	1.81E-05

San Gorgonio Crossing Project

Emissions Summary for **DPM** **2030** **with Mitigaiton (MY2007 HHDDT**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	7.67E-06
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	1.04E-05
Building 1 - East (Enter/Exit Street 2) - DB1E22	4.88E-06
Building 2 - North (Enter/Exit Street 2) -DB2N22	1.44E-05
Building 2 - South (Enter/Exit Street 2) - DB2S22	1.02E-05
Total	**4.76E-05**

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	2.51E-05	5.03E-06
Building 1 - East (DB1E 1 to 5)	5	2.30E-05	4.60E-06
Building 2 - North (DB1N 1 to 5)	5	3.01E-05	6.01E-06
Building 2 - South (DB1S 1 to 5)	5	3.01E-05	6.01E-06
TOTAL		**1.08E-04**	

Offsite DSL Emissions / AERMOD Source ID		Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd	(DOFFD1)	3.00E-05
I10 to Street 2 along Cherry Valley Blvd	(DOFFST2)	1.65E-05

San Gorgonio Crossing Project

Emissions Summary for **DPM** **2035** **With Mitigation (MY2007 HHDDT)**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	7.08E-06
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	9.63E-06
Building 1 - East (Enter/Exit Street 2) - DB1E22	4.50E-06
Building 2 - North (Enter/Exit Street 2) -DB2N22	1.32E-05
Building 2 - South (Enter/Exit Street 2) - DB2S22	9.44E-06
Total	**4.39E-05**

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	2.13E-05	4.26E-06
Building 1 - East (DB1E 1 to 5)	5	1.95E-05	3.89E-06
Building 2 - North (DB1N 1 to 5)	5	2.54E-05	5.09E-06
Building 2 - South (DB1S 1 to 5)	5	2.54E-05	5.09E-06
TOTAL		**9.16E-05**	

Offsite DSL Emissions / AERMOD Source ID		Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd	(DOFFD1)	2.80E-05
I10 to Street 2 along Cherry Valley Blvd	(DOFFST2)	1.54E-05

San Gorgonio Crossing Project

Emissions Summary for **DPM** **2040** **With Mitigation (MY2007 HHDDT)**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	6.83E-06
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	9.30E-06
Building 1 - East (Enter/Exit Street 2) - DB1E22	4.34E-06
Building 2 - North (Enter/Exit Street 2) -DB2N22	1.28E-05
Building 2 - South (Enter/Exit Street 2) - DB2S22	9.12E-06
Total	**4.24E-05**

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	1.86E-05	3.72E-06
Building 1 - East (DB1E 1 to 5)	5	1.70E-05	3.40E-06
Building 2 - North (DB1N 1 to 5)	5	2.23E-05	4.45E-06
Building 2 - South (DB1S 1 to 5)	5	2.23E-05	4.45E-06
TOTAL		**8.02E-05**	

Offsite DSL Emissions / AERMOD Source ID		Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd	(DOFFD1)	2.69E-05
I10 to Street 2 along Cherry Valley Blvd	(DOFFST2)	1.48E-05

San Gorgonio Crossing Project

Emissions Summary for **DPM** **2045** **with Mitigation (MY2007 HHDDT)**
Travel and Idling

Onsite DSL Running Emissions

Location / AERMOD Source ID	Diesel Emissions (g/sec)
Building 1 - West (Enter Street 2/Exit Street 2)-DB1W22	6.72E-06
Building 1 - West (Enter Street 2/Exit Driveway 1) - DB1W21	9.14E-06
Building 1 - East (Enter/Exit Street 2) - DB1E22	4.27E-06
Building 2 - North (Enter/Exit Street 2) -DB2N22	1.26E-05
Building 2 - South (Enter/Exit Street 2) - DB2S22	8.96E-06
Total	**4.17E-05**

Onsite Truck Idling - Diesel Only

Location	#Loading Dock Sources	Diesel Emissions (g/sec)	Diesel Emissions per Loading Dock Source (g/sec)
Building 1 - West (DB1W 1 to 5)	5	1.70E-05	3.40E-06
Building 1 - East (DB1E 1 to 5)	5	1.55E-05	3.11E-06
Building 2 - North (DB1N 1 to 5)	5	2.03E-05	4.06E-06
Building 2 - South (DB1S 1 to 5)	5	2.03E-05	4.06E-06
TOTAL		**7.31E-05**	

Offsite DSL Emissions / AERMOD Source ID		Diesel Emissions (g/sec)
I10 to Driveway 1 along Cherry Valley Blvd	(DOFFD1)	2.67E-05
I10 to Street 2 along Cherry Valley Blvd	(DOFFST2)	1.47E-05

B.2 - Alternatives CalEEMod Output

SGC No Project - General Plan Build Alternative

Riverside-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	216.00	Dwelling Unit	155.00	388,800.00	618

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Development of 216 single family units

Vehicle Trips - Trip rates from Urban Crossroads Trip Generation Evalutation

Woodstoves - Comply with Rule 445

Construction Off-road Equipment Mitigation - Comply with rule 403 and use Tier 4 engines

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblFireplaces	NumberGas	183.60	194.40
tblFireplaces	NumberWood	10.80	0.00
tblLandUse	LotAcreage	70.13	155.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleTrips	ST_TR	10.08	10.03
tblVehicleTrips	SU_TR	8.77	8.72
tblVehicleTrips	WD_TR	9.57	9.52

tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.5907	6.2422	4.8605	5.4400e-003	1.1065	0.3190	1.4255	0.6018	0.2963	0.8981	0.0000	502.5540	502.5540	0.1357	0.0000	505.4037
2017	0.7635	8.5322	5.9813	7.6700e-003	2.4563	0.4148	2.8711	1.1607	0.3816	1.5423	0.0000	705.4858	705.4858	0.2102	0.0000	709.9000
2018	0.5223	5.1680	4.0874	6.6400e-003	1.4324	0.2684	1.7007	0.5810	0.2492	0.8303	0.0000	579.8142	579.8142	0.1425	0.0000	582.8059
2019	0.3517	2.9746	2.8834	5.3900e-003	0.1305	0.1723	0.3028	0.0350	0.1619	0.1969	0.0000	444.3424	444.3424	0.0782	0.0000	445.9845
2020	0.3187	2.7094	2.8180	5.4100e-003	0.1310	0.1501	0.2811	0.0352	0.1410	0.1762	0.0000	436.7594	436.7594	0.0773	0.0000	438.3822
2021	0.2871	2.4417	2.7448	5.3900e-003	0.1305	0.1286	0.2591	0.0350	0.1208	0.1559	0.0000	433.7982	433.7982	0.0760	0.0000	435.3947
2022	0.2592	2.1822	2.6827	5.3700e-003	0.1300	0.1087	0.2387	0.0349	0.1022	0.1371	0.0000	430.9471	430.9471	0.0751	0.0000	432.5247
2023	0.2396	1.9944	2.6419	5.3700e-003	0.1300	0.0945	0.2245	0.0349	0.0888	0.1237	0.0000	429.6738	429.6738	0.0745	0.0000	431.2383
2024	0.2270	1.8852	2.6363	5.4100e-003	0.1310	0.0839	0.2149	0.0352	0.0789	0.1140	0.0000	432.1985	432.1985	0.0746	0.0000	433.7646
2025	0.2114	1.7499	2.6003	5.3900e-003	0.1305	0.0725	0.2029	0.0350	0.0681	0.1031	0.0000	429.7798	429.7798	0.0738	0.0000	431.3297
2026	0.2103	1.7458	2.5869	5.3900e-003	0.1305	0.0723	0.2028	0.0350	0.0680	0.1030	0.0000	429.0340	429.0340	0.0737	0.0000	430.5822
2027	0.2095	1.7442	2.5774	5.3900e-003	0.1305	0.0723	0.2028	0.0350	0.0680	0.1030	0.0000	428.4067	428.4067	0.0737	0.0000	429.9536
2028	0.2079	1.7358	2.5586	5.3700e-003	0.1300	0.0721	0.2020	0.0349	0.0677	0.1026	0.0000	426.2305	426.2305	0.0733	0.0000	427.7702
2029	0.2079	1.7413	2.5605	5.3900e-003	0.1305	0.0723	0.2028	0.0350	0.0680	0.1030	0.0000	427.4153	427.4153	0.0736	0.0000	428.9599

2030	0.1857	0.9866	2.2175	4.4500e-003	0.0541	0.0366	0.0907	0.0145	0.0365	0.0510	0.0000	365.2521	365.2521	0.0154	0.0000	365.5748
2031	1.5629	0.2277	0.5303	1.0900e-003	0.0224	8.3600e-003	0.0308	5.9500e-003	8.3500e-003	0.0143	0.0000	86.2374	86.2374	3.6600e-003	0.0000	86.3143
Total	**6.3552**	**44.0610**	**46.9678**	**0.0846**	**6.5065**	**2.1467**	**8.6531**	**2.7492**	**2.0053**	**4.7545**	**0.0000**	**6,987.9290**	**6,987.9290**	**1.3312**	**0.0000**	**7,015.8832**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.6318	0.0262	2.2502	1.2000e-004		0.0155	0.0155		0.0154	0.0154	0.0000	50.3213	50.3213	4.5500e-003	8.6000e-004	50.6821
Energy	0.0393	0.3361	0.1430	2.1500e-003		0.0272	0.0272		0.0272	0.0272	0.0000	863.9115	863.9115	0.0293	0.0117	868.1379
Mobile	1.2460	4.4943	14.3828	0.0375	2.6538	0.0624	2.7162	0.7092	0.0574	0.7666	0.0000	2,892.7726	2,892.7726	0.0945	0.0000	2,894.7579
Waste						0.0000	0.0000		0.0000	0.0000	51.4339	0.0000	51.4339	3.0397	0.0000	115.2666
Water						0.0000	0.0000		0.0000	0.0000	4.4648	80.6473	85.1121	0.4623	0.0116	98.4145
Total	**2.9171**	**4.8566**	**16.7761**	**0.0397**	**2.6538**	**0.1050**	**2.7588**	**0.7092**	**0.1000**	**0.8092**	**55.8987**	**3,887.6526**	**3,943.5513**	**3.6303**	**0.0241**	**4,027.2590**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2016	10/6/2016	5	200	
2	Site Preparation	Site Preparation	10/7/2016	3/23/2017	5	120	
3	Grading	Grading	3/24/2017	5/31/2018	5	310	
4	Building Construction	Building Construction	6/1/2018	4/18/2030	5	3100	
5	Paving	Paving	4/19/2030	2/20/2031	5	220	
6	Architectural Coating	Architectural Coating	2/21/2031	12/25/2031	5	220	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 775

Acres of Paving: 0

Residential Indoor: 787,320; Residential Outdoor: 262,440; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	162	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Scrapers	2	8.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	78.00	23.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	16.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

SGC No Project - General Plan Build Alternative

Riverside-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	216.00	Dwelling Unit	155.00	388,800.00	618

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Development of 216 single family units

Vehicle Trips - Trip rates from Urban Crossroads Trip Generation Evalutation

Woodstoves - Comply with Rule 445

Construction Off-road Equipment Mitigation - Comply with rule 403 and use Tier 4 engines

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblFireplaces	NumberGas	183.60	194.40
tblFireplaces	NumberWood	10.80	0.00
tblLandUse	LotAcreage	70.13	155.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleTrips	ST_TR	10.08	10.03
tblVehicleTrips	SU_TR	8.77	8.72
tblVehicleTrips	WD_TR	9.57	9.52

tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	5.1460	54.7138	42.1261	0.0419	18.2675	2.9399	21.2074	9.9840	2.7047	12.6888	0.0000	4,264.7299	4,264.7299	1.2348	0.0000	4,290.6600
2017	6.1678	69.6732	47.8236	0.0644	18.2675	3.3186	21.0229	9.9840	3.0531	12.5191	0.0000	6,526.5003	6,526.5003	1.9432	0.0000	6,567.3071
2018	5.3514	59.6072	43.2282	0.0644	8.8969	2.7894	11.6863	3.6558	2.5662	6.2220	0.0000	6,417.8486	6,417.8486	1.9423	0.0000	6,458.6359
2019	2.7131	22.7016	22.1347	0.0421	1.0165	1.3201	2.3366	0.2725	1.2406	1.5131	0.0000	3,811.9024	3,811.9024	0.6604	0.0000	3,825.7713
2020	2.4496	20.6019	21.5321	0.0421	1.0165	1.1455	2.1620	0.2725	1.0766	1.3491	0.0000	3,731.4696	3,731.4696	0.6502	0.0000	3,745.1238
2021	2.2161	18.6407	21.0395	0.0421	1.0165	0.9854	2.0018	0.2725	0.9259	1.1984	0.0000	3,719.7532	3,719.7532	0.6421	0.0000	3,733.2370
2022	2.0089	16.7230	20.6396	0.0421	1.0165	0.8359	1.8524	0.2725	0.7860	1.0585	0.0000	3,708.8615	3,708.8615	0.6370	0.0000	3,722.2380
2023	1.8576	15.2909	20.3191	0.0421	1.0164	0.7267	1.7431	0.2725	0.6832	0.9557	0.0000	3,697.3511	3,697.3511	0.6316	0.0000	3,710.6156
2024	1.7467	14.3418	20.1181	0.0421	1.0165	0.6405	1.6569	0.2725	0.6019	0.8744	0.0000	3,690.2282	3,690.2282	0.6275	0.0000	3,703.4051
2025	1.6335	13.3608	19.9177	0.0421	1.0165	0.5551	1.5716	0.2725	0.5216	0.7942	0.0000	3,683.1890	3,683.1890	0.6234	0.0000	3,696.2798
2026	1.6237	13.3318	19.8110	0.0421	1.0165	0.5541	1.5706	0.2725	0.5208	0.7933	0.0000	3,676.4249	3,676.4249	0.6227	0.0000	3,689.5014
2027	1.6169	13.3203	19.7331	0.0421	1.0165	0.5543	1.5707	0.2725	0.5209	0.7934	0.0000	3,670.7327	3,670.7327	0.6222	0.0000	3,683.7980
2028	1.6101	13.3083	19.6611	0.0421	1.0165	0.5541	1.5706	0.2725	0.5208	0.7933	0.0000	3,665.8706	3,665.8706	0.6217	0.0000	3,678.9258
2029	1.6039	13.3001	19.5957	0.0421	1.0165	0.5542	1.5707	0.2725	0.5208	0.7933	0.0000	3,661.7633	3,661.7633	0.6212	0.0000	3,674.8090
2030	1.5406	8.8011	19.6207	0.0461	1.0165	0.3245	1.1934	0.2725	0.3244	0.4471	0.0000	3,997.2470	3,997.2470	0.1391	0.0000	4,000.1678
2031	13.9793	7.0089	15.9043	0.0295	0.1788	0.3245	0.4921	0.0474	0.3244	0.3689	0.0000	2,727.2909	2,727.2909	0.1258	0.0000	2,729.9325

Total	**53.2652**	**374.7253**	**393.2047**	**0.7093**	**57.8083**	**18.1226**	**75.2091**	**26.9415**	**16.8918**	**43.1625**	**0.0000**	**64,651.1631**	**64,651.1631**	**12.3450**	**0.0000**	**64,910.4078**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	9.4692	0.2098	18.0204	9.4000e-004		0.3585	0.3585		0.3557	0.3557	0.0000	4,148.7932	4,148.7932	0.1111	0.0755	4,174.5231
Energy	0.2155	1.8415	0.7836	0.0118		0.1489	0.1489		0.1489	0.1489		2,350.8960	2,350.8960	0.0451	0.0431	2,365.2031
Mobile	7.7652	24.5361	86.8817	0.2313	15.6875	0.3624	16.0499	4.1866	0.3335	4.5202		19,623.1136	19,623.1136	0.6063		19,635.8462
Total	**17.4499**	**26.5875**	**105.6857**	**0.2440**	**15.6875**	**0.8697**	**16.5572**	**4.1866**	**0.8381**	**5.0248**	**0.0000**	**26,122.8027**	**26,122.8027**	**0.7625**	**0.1186**	**26,175.5724**

SGC No Project - General Plan Build Alternative

Riverside-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	216.00	Dwelling Unit	155.00	388,800.00	618

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Development of 216 single family units

Vehicle Trips - Trip rates from Urban Crossroads Trip Generation Evalutation

Woodstoves - Comply with Rule 445

Construction Off-road Equipment Mitigation - Comply with rule 403 and use Tier 4 engines

Table Name	Column Name	Default Value	New Value
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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblFireplaces	NumberGas	183.60	194.40
tblFireplaces	NumberWood	10.80	0.00
tblLandUse	LotAcreage	70.13	155.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleTrips	ST_TR	10.08	10.03
tblVehicleTrips	SU_TR	8.77	8.72
tblVehicleTrips	WD_TR	9.57	9.52

tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	5.1429	54.7191	41.9848	0.0417	18.2675	2.9399	21.2074	9.9840	2.7047	12.6888	0.0000	4,247.5229	4,247.5229	1.2348	0.0000	4,273.4529
2017	6.1644	69.6784	47.6802	0.0642	18.2675	3.3186	21.0229	9.9840	3.0531	12.5191	0.0000	6,508.1152	6,508.1152	1.9432	0.0000	6,548.9221
2018	5.3482	59.6118	43.0960	0.0642	8.8969	2.7894	11.6863	3.6558	2.5662	6.2220	0.0000	6,400.1459	6,400.1459	1.9423	0.0000	6,440.9331
2019	2.7104	22.7519	21.9459	0.0411	1.0165	1.3204	2.3369	0.2725	1.2408	1.5133	0.0000	3,741.3249	3,741.3249	0.6605	0.0000	3,755.1961
2020	2.4472	20.6447	21.3731	0.0411	1.0165	1.1457	2.1622	0.2725	1.0767	1.3492	0.0000	3,663.6204	3,663.6204	0.6503	0.0000	3,677.2770
2021	2.2141	18.6774	20.9054	0.0411	1.0165	0.9855	2.0020	0.2725	0.9261	1.1986	0.0000	3,652.8338	3,652.8338	0.6422	0.0000	3,666.3202
2022	2.0071	16.7565	20.5195	0.0411	1.0165	0.8361	1.8526	0.2725	0.7861	1.0586	0.0000	3,642.8890	3,642.8890	0.6371	0.0000	3,656.2682
2023	1.8562	15.3152	20.2120	0.0411	1.0164	0.7268	1.7433	0.2725	0.6834	0.9559	0.0000	3,632.2132	3,632.2132	0.6318	0.0000	3,645.4804
2024	1.7456	14.3653	20.0187	0.0412	1.0165	0.6406	1.6571	0.2725	0.6021	0.8746	0.0000	3,625.7284	3,625.7284	0.6276	0.0000	3,638.9079
2025	1.6326	13.3836	19.8256	0.0412	1.0165	0.5553	1.5717	0.2725	0.5218	0.7943	0.0000	3,619.3238	3,619.3238	0.6235	0.0000	3,632.4172
2026	1.6231	13.3532	19.7264	0.0412	1.0165	0.5543	1.5708	0.2725	0.5209	0.7934	0.0000	3,613.1025	3,613.1025	0.6228	0.0000	3,626.1816
2027	1.6166	13.3411	19.6564	0.0412	1.0165	0.5544	1.5709	0.2725	0.5210	0.7935	0.0000	3,607.8698	3,607.8698	0.6223	0.0000	3,620.9378
2028	1.6100	13.3285	19.5904	0.0412	1.0165	0.5543	1.5708	0.2725	0.5209	0.7934	0.0000	3,603.3902	3,603.3902	0.6218	0.0000	3,616.4480
2029	1.6041	13.3198	19.5313	0.0412	1.0165	0.5544	1.5709	0.2725	0.5210	0.7935	0.0000	3,599.5960	3,599.5960	0.6214	0.0000	3,612.6444
2030	1.5412	8.8204	19.5622	0.0451	1.0165	0.3245	1.1935	0.2725	0.3244	0.4472	0.0000	3,935.3378	3,935.3378	0.1392	0.0000	3,938.2612
2031	13.9781	7.0105	15.8420	0.0293	0.1788	0.3245	0.4921	0.0474	0.3244	0.3689	0.0000	2,716.1797	2,716.1797	0.1258	0.0000	2,718.8213

Total	**53.2415**	**375.0774**	**391.4698**	**0.6970**	**57.8083**	**18.1245**	**75.2111**	**26.9415**	**16.8935**	**43.1643**	**0.0000**	**63,809.1934**	**63,809.1934**	**12.3465**	**0.0000**	**64,068.4695**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	9.4692	0.2098	18.0204	9.4000e-004		0.3585	0.3585		0.3557	0.3557	0.0000	4,148.7932	4,148.7932	0.1111	0.0755	4,174.5231
Energy	0.2155	1.8415	0.7836	0.0118		0.1489	0.1489		0.1489	0.1489		2,350.8960	2,350.8960	0.0451	0.0431	2,365.2031
Mobile	7.5730	25.5739	81.0441	0.2157	15.6875	0.3637	16.0512	4.1866	0.3347	4.5214		18,371.1000	18,371.1000	0.6071		18,383.8485
Total	**17.2577**	**27.6253**	**99.8481**	**0.2284**	**15.6875**	**0.8710**	**16.5586**	**4.1866**	**0.8393**	**5.0260**	**0.0000**	**24,870.7892**	**24,870.7892**	**0.7632**	**0.1186**	**24,923.5747**

SGC No Project - General Plan Build Alternative BAU

Riverside-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	216.00	Dwelling Unit	155.00	388,800.00	618

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2011
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Development of 216 single family units

Vehicle Trips - Trip rates from Urban Crossroads Trip Generation Evalutation

Woodstoves - Comply with Rule 445

Table Name	Column Name	Default Value	New Value
tblFireplaces	NumberGas	183.60	194.40
tblFireplaces	NumberWood	10.80	0.00
tblLandUse	LotAcreage	70.13	155.00
tblProjectCharacteristics	OperationalYear	2014	2011
tblVehicleTrips	ST_TR	10.08	10.03
tblVehicleTrips	SU_TR	8.77	8.72

tblVehicleTrips	WD_TR	9.57	9.52
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.6435	0.0281	2.3421	1.2000e-004		0.0151	0.0151		0.0151	0.0151	0.0000	50.3213	50.3213	5.1600e-003	8.6000e-004	50.6950
Energy	0.0393	0.3361	0.1430	2.1500e-003		0.0272	0.0272		0.0272	0.0272	0.0000	863.9115	863.9115	0.0293	0.0117	868.1379
Mobile	2.1905	7.4888	24.9110	0.0368	2.6510	0.1883	2.8393	0.7083	0.1729	0.8812	0.0000	3,284.0119	3,284.0119	0.1642	0.0000	3,287.4592
Waste						0.0000	0.0000		0.0000	0.0000	51.4339	0.0000	51.4339	3.0397	0.0000	115.2666
Water						0.0000	0.0000		0.0000	0.0000	4.4648	80.6473	85.1121	0.4623	0.0116	98.4145
Total	**3.8733**	**7.8529**	**27.3961**	**0.0391**	**2.6510**	**0.2306**	**2.8816**	**0.7083**	**0.2152**	**0.9235**	**55.8987**	**4,278.8920**	**4,334.7906**	**3.7005**	**0.0241**	**4,419.9732**

No Project - General Plan Build Alternative 2020

Riverside-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	216.00	Dwelling Unit	155.00	388,800.00	618

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	483.63	**CH4 Intensity (lb/MWhr)**	0.022	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Project Characteristics - apply renewable portfolio standards

Land Use - Development of 216 single family units

Vehicle Trips - Trip rates from Urban Crossroads Trip Generation Evalutation

Woodstoves - Comply with Rule 445

Construction Off-road Equipment Mitigation - Comply with Rule 403

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation - Exceed Title 24 by 25 percent for new residential development

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value

tblFireplaces	NumberGas	183.60	194.40
tblFireplaces	NumberWood	10.80	0.00
tblLandUse	LotAcreage	70.13	155.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.022
tblProjectCharacteristics	CO2IntensityFactor	630.89	483.63
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblProjectCharacteristics	OperationalYear	2014	2020
tblVehicleTrips	ST_TR	10.08	10.03
tblVehicleTrips	SU_TR	8.77	8.72
tblVehicleTrips	WD_TR	9.57	9.52
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	50.3213	50.3213	4.4400e-003	8.6000e-004	50.6799
Energy											0.0000	661.3312	661.3312	0.0220	9.3100e-003	664.6776
Mobile											0.0000	2,579.6703	2,579.6703	0.0764	0.0000	2,581.2742
Waste											41.1471	0.0000	41.1471	2.4317	0.0000	92.2133
Water											4.4648	60.5039	64.9687	0.4613	0.0114	78.2014
Total											**45.6119**	**3,351.8267**	**3,397.4385**	**2.9958**	**0.0216**	**3,467.0463**

Residential Alternative

Riverside-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	240.00	Dwelling Unit	15.00	240,000.00	686
Condo/Townhouse	221.00	Dwelling Unit	13.81	221,000.00	632
Single Family Housing	331.00	Dwelling Unit	107.47	595,800.00	947

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Residential Alternative: 331 single-family homes, 240 apartments and 221 townhomes

Vehicle Trips - Trip rates from Urban Crossroads Trip Generation Evalutation

Woodstoves - Comply with Rule 445

Construction Off-road Equipment Mitigation - comply with rule 403, use Tier 4 engines

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblFireplaces	NumberGas	204.00	216.00
tblFireplaces	NumberGas	187.85	198.90
tblFireplaces	NumberGas	281.35	197.90
tblFireplaces	NumberWood	12.00	0.00
tblFireplaces	NumberWood	11.05	0.00

tblFireplaces	NumberWood	16.55	0.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleTrips	ST_TR	7.16	7.22
tblVehicleTrips	ST_TR	7.16	6.31
tblVehicleTrips	ST_TR	10.08	10.02
tblVehicleTrips	SU_TR	6.07	6.12
tblVehicleTrips	SU_TR	6.07	5.35
tblVehicleTrips	SU_TR	8.77	8.72
tblVehicleTrips	WD_TR	6.59	6.65
tblVehicleTrips	WD_TR	6.59	5.81
tblVehicleTrips	WD_TR	9.57	9.52
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.5907	6.2422	4.8605	5.4400e-003	1.1065	0.3190	1.4255	0.6018	0.2963	0.8981	0.0000	502.5540	502.5540	0.1357	0.0000	505.4037
2017	0.7635	8.5322	5.9813	7.6700e-003	2.4563	0.4148	2.8711	1.1607	0.3816	1.5423	0.0000	705.4858	705.4858	0.2102	0.0000	709.9000
2018	0.6325	5.6259	5.6837	0.0111	1.7732	0.2768	2.0500	0.6721	0.2570	0.9291	0.0000	910.9246	910.9246	0.1535	0.0000	914.1474
2019	0.5260	3.6969	5.4263	0.0131	0.7157	0.1861	0.9018	0.1915	0.1746	0.3661	0.0000	994.6347	994.6347	0.0959	0.0000	996.6481
2020	0.4822	3.3468	5.2162	0.0132	0.7184	0.1631	0.8815	0.1922	0.1530	0.3452	0.0000	969.1528	969.1528	0.0941	0.0000	971.1279
2021	0.4421	2.9918	5.0129	0.0131	0.7157	0.1408	0.8564	0.1915	0.1321	0.3235	0.0000	958.0142	958.0142	0.0920	0.0000	959.9465

2022	0.4066	2.6843	4.8380	0.0131	0.7129	0.1207	0.8337	0.1907	0.1133	0.3040	0.0000	947.0479	947.0479	0.0905	0.0000	948.9476
2023	0.3787	2.4155	4.6944	0.0131	0.7129	0.1064	0.8194	0.1907	0.0999	0.2906	0.0000	939.7455	939.7455	0.0892	0.0000	941.6188
2024	0.3619	2.3012	4.6352	0.0132	0.7184	0.0960	0.8144	0.1922	0.0900	0.2822	0.0000	942.0316	942.0316	0.0890	0.0000	943.9006
2025	0.3409	2.1566	4.5263	0.0131	0.7157	0.0845	0.8002	0.1915	0.0792	0.2707	0.0000	933.5493	933.5493	0.0878	0.0000	935.3926
2026	0.3349	2.1394	4.4562	0.0131	0.7157	0.0841	0.7998	0.1915	0.0788	0.2703	0.0000	929.2619	929.2619	0.0873	0.0000	931.0959
2027	0.3305	2.1315	4.4034	0.0131	0.7157	0.0842	0.7998	0.1915	0.0789	0.2703	0.0000	925.6305	925.6305	0.0870	0.0000	927.4568
2028	0.3250	2.1154	4.3382	0.0131	0.7129	0.0838	0.7967	0.1907	0.0785	0.2693	0.0000	918.9965	918.9965	0.0863	0.0000	920.8089
2029	0.3223	2.1176	4.3108	0.0131	0.7157	0.0842	0.7998	0.1915	0.0789	0.2703	0.0000	919.9043	919.9043	0.0863	0.0000	921.7172
2030	0.2190	1.0978	2.7315	6.7600e-003	0.2290	0.0401	0.2691	0.0612	0.0398	0.1010	0.0000	511.8856	511.8856	0.0191	0.0000	512.2870
2031	4.1870	0.2449	0.7120	2.1000e-003	0.1119	8.9600e-003	0.1208	0.0297	8.9000e-003	0.0386	0.0000	144.2309	144.2309	5.5900e-003	0.0000	144.3483
Total	**10.6436**	**49.8401**	**71.8268**	**0.1774**	**13.5464**	**2.2935**	**15.8399**	**4.6308**	**2.1407**	**6.7716**	**0.0000**	**13,153.0499**	**13,153.0499**	**1.5094**	**0.0000**	**13,184.7473**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.5038	0.0962	8.2507	4.3000e-004		0.0551	0.0551		0.0550	0.0550	0.0000	160.4977	160.4977	0.0162	2.7000e-003	161.6745
Energy	0.1026	0.8766	0.3730	5.6000e-003		0.0709	0.0709		0.0709	0.0709	0.0000	2,331.0870	2,331.0870	0.0800	0.0311	2,342.4150
Mobile	3.6633	13.2140	42.2877	0.1102	7.8026	0.1833	7.9859	2.0851	0.1687	2.2538	0.0000	8,505.1846	8,505.1846	0.2780	0.0000	8,511.0218
Waste						0.0000	0.0000		0.0000	0.0000	121.8616	0.0000	121.8616	7.2018	0.0000	273.0996
Water						0.0000	0.0000		0.0000	0.0000	16.3709	295.7067	312.0776	1.6950	0.0425	360.8532
Total	**8.2697**	**14.1867**	**50.9114**	**0.1162**	**7.8026**	**0.3093**	**8.1118**	**2.0851**	**0.2945**	**2.3797**	**138.2325**	**11,292.4760**	**11,430.7085**	**9.2710**	**0.0763**	**11,649.0642**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2016	10/6/2016	5	200	
2	Site Preparation	Site Preparation	10/7/2016	3/23/2017	5	120	
3	Grading	Grading	3/24/2017	5/31/2018	5	310	
4	Building Construction	Building Construction	6/1/2018	4/18/2030	5	3100	
5	Paving	Paving	4/19/2030	2/20/2031	5	220	
6	Architectural Coating	Architectural Coating	2/21/2031	12/25/2031	5	220	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 775

Acres of Paving: 0

Residential Indoor: 2,140,020; Residential Outdoor: 713,340; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	162	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Scrapers	2	8.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74

Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	451.00	85.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	90.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Residential Alternative

Riverside-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	240.00	Dwelling Unit	15.00	240,000.00	686
Condo/Townhouse	221.00	Dwelling Unit	13.81	221,000.00	632
Single Family Housing	331.00	Dwelling Unit	107.47	595,800.00	947

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Residential Alternative: 331 single-family homes, 240 apartments and 221 townhomes

Vehicle Trips - Trip rates from Urban Crossroads Trip Generation Evalutation

Woodstoves - Comply with Rule 445

Construction Off-road Equipment Mitigation - comply with rule 403, use Tier 4 engines

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblFireplaces	NumberGas	204.00	216.00
tblFireplaces	NumberGas	187.85	198.90
tblFireplaces	NumberGas	281.35	197.90
tblFireplaces	NumberWood	12.00	0.00
tblFireplaces	NumberWood	11.05	0.00

tblFireplaces	NumberWood	16.55	0.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleTrips	ST_TR	7.16	7.22
tblVehicleTrips	ST_TR	7.16	6.31
tblVehicleTrips	ST_TR	10.08	10.02
tblVehicleTrips	SU_TR	6.07	6.12
tblVehicleTrips	SU_TR	6.07	5.35
tblVehicleTrips	SU_TR	8.77	8.72
tblVehicleTrips	WD_TR	6.59	6.65
tblVehicleTrips	WD_TR	6.59	5.81
tblVehicleTrips	WD_TR	9.57	9.52
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	5.1460	54.7138	42.1261	0.0419	18.2675	2.9399	21.2074	9.9840	2.7047	12.6888	0.0000	4,264.7299	4,264.7299	1.2348	0.0000	4,290.6600
2017	6.1678	69.6732	47.8236	0.0644	18.2675	3.3186	21.0229	9.9840	3.0531	12.5191	0.0000	6,526.5003	6,526.5003	1.9432	0.0000	6,567.3071
2018	5.3514	59.6072	44.9452	0.1051	8.8969	2.7894	11.6863	3.6558	2.5662	6.2220	0.0000	8,968.5289	8,968.5289	1.9423	0.0000	9,009.3161
2019	4.1496	27.9283	42.5187	0.1051	5.5757	1.4256	7.0012	1.4896	1.3378	2.8274	0.0000	8,736.9115	8,736.9115	0.8097	0.0000	8,753.9147
2020	3.7920	25.1980	40.6427	0.1050	5.5755	1.2445	6.8200	1.4895	1.1678	2.6573	0.0000	8,477.2018	8,477.2018	0.7913	0.0000	8,493.8182
2021	3.4932	22.6191	39.1439	0.1051	5.5755	1.0784	6.6539	1.4895	1.0117	2.5012	0.0000	8,409.8221	8,409.8221	0.7770	0.0000	8,426.1398

2022	3.2285	20.3669	37.9041	0.1051	5.5755	0.9285	6.5039	1.4895	0.8713	2.3608	0.0000	8,343.2841	8,343.2841	0.7669	0.0000	8,359.3879
2023	3.0084	18.3493	36.7477	0.1050	5.5755	0.8185	6.3939	1.4895	0.7679	2.2574	0.0000	8,277.2333	8,277.2333	0.7562	0.0000	8,293.1132
2024	2.8525	17.3420	35.9931	0.1051	5.5755	0.7324	6.3079	1.4895	0.6867	2.1762	0.0000	8,232.4322	8,232.4322	0.7487	0.0000	8,248.1550
2025	2.6984	16.3078	35.2671	0.1051	5.5755	0.6476	6.2231	1.4895	0.6069	2.0965	0.0000	8,188.0150	8,188.0150	0.7413	0.0000	8,203.5812
2026	2.6486	16.1856	34.6999	0.1051	5.5756	0.6442	6.2197	1.4895	0.6038	2.0933	0.0000	8,149.1146	8,149.1146	0.7375	0.0000	8,164.6015
2027	2.6108	16.1303	34.2611	0.1051	5.5756	0.6447	6.2203	1.4896	0.6042	2.0938	0.0000	8,116.1668	8,116.1668	0.7344	0.0000	8,131.5890
2028	2.5740	16.0743	33.8652	0.1051	5.5756	0.6443	6.2200	1.4896	0.6039	2.0935	0.0000	8,088.0948	8,088.0948	0.7316	0.0000	8,103.4587
2029	2.5395	16.0330	33.5001	0.1051	5.5757	0.6446	6.2203	1.4896	0.6042	2.0938	0.0000	8,064.3568	8,064.3568	0.7290	0.0000	8,079.6663
2030	2.4495	11.5044	33.2691	0.1091	5.5757	0.3245	5.8432	1.4896	0.3244	1.7478	0.0000	8,383.3189	8,383.3189	0.2449	0.0000	8,388.4619
2031	37.8474	7.0089	15.9043	0.0295	1.0060	0.3245	1.0328	0.2668	0.3244	0.3689	0.0000	2,727.2909	2,727.2909	0.1258	0.0000	2,729.9325
Total	**90.5574**	**415.0422**	**588.6116**	**1.5062**	**113.3446**	**19.1499**	**131.5768**	**41.7651**	**17.8391**	**58.7976**	**0.0000**	**121,953.0018**	**121,953.0018**	**13.8144**	**0.0000**	**122,243.1033**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	0.5447	2.1430	24.6764	0.0419	8.3310	0.0647	8.3957	4.5222	0.0646	4.5868	0.0000	4,264.7299	4,264.7299	1.2348	0.0000	4,290.6600
2017	0.8251	5.7370	35.7973	0.0644	8.3310	0.1022	8.3957	4.5222	0.1021	4.5867	0.0000	6,526.5003	6,526.5003	1.9432	0.0000	6,567.3071
2018	2.2739	9.8026	44.8236	0.1051	5.5758	0.1878	5.7636	1.6777	0.1762	1.7798	0.0000	8,968.5289	8,968.5289	1.9423	0.0000	9,009.3161
2019	2.1244	9.1922	42.8094	0.1051	5.5757	0.1812	5.7568	1.4896	0.1701	1.6597	0.0000	8,736.9115	8,736.9115	0.8097	0.0000	8,753.9147
2020	2.0072	8.3430	41.2452	0.1050	5.5755	0.1722	5.7477	1.4895	0.1619	1.6514	0.0000	8,477.2018	8,477.2018	0.7913	0.0000	8,493.8182
2021	1.9266	7.5077	40.0172	0.1051	5.5755	0.1642	5.7396	1.4895	0.1545	1.6440	0.0000	8,409.8221	8,409.8221	0.7770	0.0000	8,426.1398
2022	1.8558	7.0594	38.9875	0.1051	5.5755	0.1633	5.7388	1.4895	0.1538	1.6433	0.0000	8,343.2841	8,343.2841	0.7669	0.0000	8,359.3879

2023	1.7687	6.2656	37.9494	0.1050	5.5755	0.1624	5.7378	1.4895	0.1529	1.6424	0.0000	8,277.2333	8,277.2333	0.7562	0.0000	8,293.1132
2024	1.7137	6.1935	37.2709	0.1051	5.5755	0.1625	5.7379	1.4895	0.1529	1.6424	0.0000	8,232.4322	8,232.4322	0.7487	0.0000	8,248.1550
2025	1.6634	6.1270	36.6264	0.1051	5.5755	0.1632	5.7387	1.4895	0.1536	1.6432	0.0000	8,188.0150	8,188.0150	0.7413	0.0000	8,203.5812
2026	1.6136	6.0048	36.0591	0.1051	5.5756	0.1598	5.7353	1.4895	0.1505	1.6400	0.0000	8,149.1146	8,149.1146	0.7375	0.0000	8,164.6015
2027	1.5758	5.9496	35.6203	0.1051	5.5756	0.1603	5.7359	1.4896	0.1509	1.6405	0.0000	8,116.1668	8,116.1668	0.7344	0.0000	8,131.5890
2028	1.5390	5.8935	35.2245	0.1051	5.5756	0.1599	5.7356	1.4896	0.1506	1.6402	0.0000	8,088.0948	8,088.0948	0.7316	0.0000	8,103.4587
2029	1.5045	5.8522	34.8593	0.1051	5.5757	0.1602	5.7359	1.4896	0.1509	1.6405	0.0000	8,064.3568	8,064.3568	0.7290	0.0000	8,079.6663
2030	1.4719	5.8155	34.5488	0.1091	5.5757	0.1605	5.7362	1.4896	0.1512	1.6408	0.0000	8,383.3189	8,383.3189	0.2449	0.0000	8,388.4619
2031	37.7463	1.2184	17.3127	0.0295	1.0060	0.0377	1.0165	0.2668	0.0376	0.2768	0.0000	2,727.2909	2,727.2909	0.1258	0.0000	2,729.9325
Total	**62.1546**	**99.1048**	**573.8280**	**1.5062**	**90.1505**	**2.3620**	**92.4478**	**28.8633**	**2.2344**	**30.9584**	**0.0000**	**121,953.0017**	**121,953.0017**	**13.8144**	**0.0000**	**122,243.1033**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**31.36**	**76.12**	**2.51**	**0.00**	**20.46**	**87.67**	**29.74**	**30.89**	**87.47**	**47.35**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	26.4337	0.7694	66.0641	3.4500e-003		1.1802	1.1802		1.1716	1.1716	0.0000	13,094.5946	13,094.5946	0.3668	0.2379	13,176.0499
Energy	0.5621	4.8033	2.0439	0.0307		0.3884	0.3884		0.3884	0.3884		6,131.8294	6,131.8294	0.1175	0.1124	6,169.1467
Mobile	23.0966	72.9797	258.4190	0.6879	46.6606	1.0778	47.7384	12.4527	0.9920	13.4447		58,366.5533	58,366.5533	1.8034		58,404.4248
Total	**50.0925**	**78.5524**	**326.5270**	**0.7220**	**46.6606**	**2.6464**	**49.3070**	**12.4527**	**2.5520**	**15.0046**	**0.0000**	**77,592.9773**	**77,592.9773**	**2.2877**	**0.3503**	**77,749.6214**

Residential Alternative

Riverside-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	240.00	Dwelling Unit	15.00	240,000.00	686
Condo/Townhouse	221.00	Dwelling Unit	13.81	221,000.00	632
Single Family Housing	331.00	Dwelling Unit	107.47	595,800.00	947

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Residential Alternative: 331 single-family homes, 240 apartments and 221 townhomes

Vehicle Trips - Trip rates from Urban Crossroads Trip Generation Evalutation

Woodstoves - Comply with Rule 445

Construction Off-road Equipment Mitigation - comply with rule 403, use Tier 4 engines

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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblFireplaces	NumberGas	281.35	197.90
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tblFireplaces	NumberWood	11.05	0.00

tblFireplaces	NumberWood	16.55	0.00
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tblVehicleTrips	SU_TR	6.07	5.35
tblVehicleTrips	SU_TR	8.77	8.72
tblVehicleTrips	WD_TR	6.59	6.65
tblVehicleTrips	WD_TR	6.59	5.81
tblVehicleTrips	WD_TR	9.57	9.52
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	5.1429	54.7191	41.9848	0.0417	18.2675	2.9399	21.2074	9.9840	2.7047	12.6888	0.0000	4,247.5229	4,247.5229	1.2348	0.0000	4,273.4529
2017	6.1644	69.6784	47.6802	0.0642	18.2675	3.3186	21.0229	9.9840	3.0531	12.5191	0.0000	6,508.1152	6,508.1152	1.9432	0.0000	6,548.9221
2018	5.3482	59.6118	43.0960	0.0997	8.8969	2.7894	11.6863	3.6558	2.5662	6.2220	0.0000	8,554.2295	8,554.2295	1.9423	0.0000	8,595.0167
2019	4.1153	28.1483	40.8215	0.0996	5.5757	1.4265	7.0021	1.4896	1.3386	2.8282	0.0000	8,337.2274	8,337.2274	0.8101	0.0000	8,354.2394
2020	3.7606	25.3873	39.1154	0.0996	5.5755	1.2452	6.8207	1.4895	1.1684	2.6580	0.0000	8,093.1267	8,093.1267	0.7917	0.0000	8,109.7522
2021	3.4647	22.7837	37.7615	0.0997	5.5755	1.0790	6.6545	1.4895	1.0123	2.5018	0.0000	8,031.1243	8,031.1243	0.7775	0.0000	8,047.4515

2022	3.2022	20.5176	36.6135	0.0997	5.5755	0.9291	6.5045	1.4895	0.8718	2.3613	0.0000	7,970.0559	7,970.0559	0.7673	0.0000	7,986.1695
2023	2.9846	18.4645	35.5405	0.0996	5.5755	0.8191	6.3945	1.4895	0.7685	2.2580	0.0000	7,908.8326	7,908.8326	0.7567	0.0000	7,924.7224
2024	2.8311	17.4525	34.8381	0.0997	5.5755	0.7330	6.3085	1.4895	0.6872	2.1767	0.0000	7,867.7215	7,867.7215	0.7492	0.0000	7,883.4542
2025	2.6785	16.4142	34.1641	0.0997	5.5755	0.6482	6.2237	1.4895	0.6075	2.0970	0.0000	7,826.9740	7,826.9740	0.7417	0.0000	7,842.5500
2026	2.6305	16.2860	33.6455	0.0997	5.5756	0.6448	6.2203	1.4895	0.6043	2.0939	0.0000	7,791.2131	7,791.2131	0.7379	0.0000	7,806.7099
2027	2.5945	16.2275	33.2543	0.0997	5.5756	0.6452	6.2209	1.4896	0.6048	2.0943	0.0000	7,760.9229	7,760.9229	0.7349	0.0000	7,776.3551
2028	2.5594	16.1683	32.8959	0.0997	5.5756	0.6449	6.2206	1.4896	0.6045	2.0940	0.0000	7,735.0625	7,735.0625	0.7321	0.0000	7,750.4363
2029	2.5268	16.1245	32.5692	0.0997	5.5757	0.6452	6.2209	1.4896	0.6048	2.0943	0.0000	7,713.1356	7,713.1356	0.7295	0.0000	7,728.4551
2030	2.4389	11.5937	32.3734	0.1037	5.5757	0.3245	5.8438	1.4896	0.3244	1.7483	0.0000	8,033.5904	8,033.5904	0.2454	0.0000	8,038.7433
2031	37.8408	7.0105	15.8420	0.0293	1.0060	0.3245	1.0328	0.2668	0.3244	0.3689	0.0000	2,716.1797	2,716.1797	0.1258	0.0000	2,718.8213
Total	**90.2831**	**416.5880**	**572.1959**	**1.4348**	**113.3446**	**19.1568**	**131.5843**	**41.7651**	**17.8455**	**58.8045**	**0.0000**	**117,095.0342**	**117,095.0342**	**13.8199**	**0.0000**	**117,385.2517**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	0.5415	2.1483	24.5587	0.0417	8.3310	0.0647	8.3957	4.5222	0.0646	4.5868	0.0000	4,247.5229	4,247.5229	1.2348	0.0000	4,273.4529
2017	0.8217	5.7423	35.6538	0.0642	8.3310	0.1022	8.3957	4.5222	0.1021	4.5867	0.0000	6,508.1152	6,508.1152	1.9432	0.0000	6,548.9221
2018	2.2375	10.0477	42.9078	0.0997	5.5758	0.1888	5.7645	1.6777	0.1771	1.7798	0.0000	8,554.2294	8,554.2294	1.9423	0.0000	8,595.0167
2019	2.0901	9.4122	41.1122	0.0996	5.5757	0.1820	5.7577	1.4896	0.1709	1.6605	0.0000	8,337.2274	8,337.2274	0.8101	0.0000	8,354.2394
2020	1.9759	8.5323	39.7180	0.0996	5.5755	0.1730	5.7485	1.4895	0.1626	1.6521	0.0000	8,093.1267	8,093.1267	0.7917	0.0000	8,109.7522
2021	1.8980	7.6723	38.6349	0.0997	5.5755	0.1648	5.7403	1.4895	0.1551	1.6446	0.0000	8,031.1243	8,031.1243	0.7775	0.0000	8,047.4515
2022	1.8295	7.2101	37.6969	0.0997	5.5755	0.1640	5.7394	1.4895	0.1543	1.6438	0.0000	7,970.0559	7,970.0559	0.7673	0.0000	7,986.1695

2023	1.7449	6.3807	36.7423	0.0996	5.5755	0.1630	5.7384	1.4895	0.1534	1.6429	0.0000	7,908.8326	7,908.8326	0.7567	0.0000	7,924.7224
2024	1.6923	6.3039	36.1159	0.0997	5.5755	0.1630	5.7385	1.4895	0.1535	1.6430	0.0000	7,867.7215	7,867.7215	0.7492	0.0000	7,883.4542
2025	1.6435	6.2334	35.5233	0.0997	5.5755	0.1638	5.7393	1.4895	0.1542	1.6437	0.0000	7,826.9739	7,826.9739	0.7417	0.0000	7,842.5500
2026	1.5955	6.1052	35.0048	0.0997	5.5756	0.1604	5.7359	1.4895	0.1510	1.6406	0.0000	7,791.2131	7,791.2131	0.7379	0.0000	7,806.7099
2027	1.5595	6.0467	34.6135	0.0997	5.5756	0.1608	5.7365	1.4896	0.1515	1.6410	0.0000	7,760.9229	7,760.9229	0.7349	0.0000	7,776.3551
2028	1.5244	5.9875	34.2552	0.0997	5.5756	0.1605	5.7362	1.4896	0.1512	1.6407	0.0000	7,735.0625	7,735.0625	0.7321	0.0000	7,750.4363
2029	1.4918	5.9438	33.9285	0.0997	5.5757	0.1608	5.7365	1.4896	0.1515	1.6410	0.0000	7,713.1356	7,713.1356	0.7295	0.0000	7,728.4551
2030	1.4612	5.9048	33.6531	0.1037	5.5757	0.1611	5.7368	1.4896	0.1517	1.6413	0.0000	8,033.5904	8,033.5904	0.2454	0.0000	8,038.7433
2031	37.7397	1.2200	17.2505	0.0293	1.0060	0.0377	1.0165	0.2668	0.0376	0.2768	0.0000	2,716.1797	2,716.1797	0.1258	0.0000	2,718.8213
Total	**61.8470**	**100.8911**	**557.3693**	**1.4348**	**90.1505**	**2.3705**	**92.4562**	**28.8633**	**2.2422**	**30.9653**	**0.0000**	**117,095.0341**	**117,095.0341**	**13.8199**	**0.0000**	**117,385.2517**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**31.50**	**75.78**	**2.59**	**0.00**	**20.46**	**87.63**	**29.74**	**30.89**	**87.44**	**47.34**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	26.4337	0.7694	66.0641	3.4500e-003		1.1802	1.1802		1.1716	1.1716	0.0000	13,094.5946	13,094.5946	0.3668	0.2379	13,176.0499
Energy	0.5621	4.8033	2.0439	0.0307		0.3884	0.3884		0.3884	0.3884		6,131.8294	6,131.8294	0.1175	0.1124	6,169.1467
Mobile	22.5250	76.0664	241.0559	0.6416	46.6606	1.0818	47.7423	12.4527	0.9956	13.4483		54,642.5919	54,642.5919	1.8057		54,680.5106
Total	**49.5209**	**81.6390**	**309.1639**	**0.6757**	**46.6606**	**2.6504**	**49.3109**	**12.4527**	**2.5556**	**15.0082**	**0.0000**	**73,869.0159**	**73,869.0159**	**2.2900**	**0.3503**	**74,025.7072**

Residential Alternative BAU

Riverside-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	240.00	Dwelling Unit	15.00	240,000.00	686
Condo/Townhouse	221.00	Dwelling Unit	13.81	221,000.00	632
Single Family Housing	331.00	Dwelling Unit	107.47	595,800.00	947

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2011
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Residential Alternative: 331 single-family homes, 240 apartments and 221 townhomes

Vehicle Trips - Trip rates from Urban Crossroads Trip Generation Evalutation

Woodstoves - Comply with Rule 445

Construction Off-road Equipment Mitigation - comply with rule 403, use Tier 4 engines

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblFireplaces	NumberGas	204.00	216.00
tblFireplaces	NumberGas	187.85	198.90
tblFireplaces	NumberGas	281.35	197.90
tblFireplaces	NumberWood	12.00	0.00
tblFireplaces	NumberWood	11.05	0.00

tblFireplaces	NumberWood	16.55	0.00
tblProjectCharacteristics	OperationalYear	2014	2011
tblVehicleTrips	ST_TR	7.16	7.22
tblVehicleTrips	ST_TR	7.16	6.31
tblVehicleTrips	ST_TR	10.08	10.02
tblVehicleTrips	SU_TR	6.07	6.12
tblVehicleTrips	SU_TR	6.07	5.35
tblVehicleTrips	SU_TR	8.77	8.72
tblVehicleTrips	WD_TR	6.59	6.65
tblVehicleTrips	WD_TR	6.59	5.81
tblVehicleTrips	WD_TR	9.57	9.52
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.5469	0.1029	8.5876	4.3000e-004		0.0538	0.0538		0.0537	0.0537	0.0000	160.4977	160.4977	0.0185	2.7000e-003	161.7218
Energy	0.1026	0.8766	0.3730	5.6000e-003		0.0709	0.0709		0.0709	0.0709	0.0000	2,331.0870	2,331.0870	0.0800	0.0311	2,342.4150
Mobile	6.4404	22.0182	73.2420	0.1083	7.7942	0.5537	8.3479	2.0824	0.5084	2.5908	0.0000	9,655.4868	9,655.4868	0.4827	0.0000	9,665.6224
Waste						0.0000	0.0000		0.0000	0.0000	121.8616	0.0000	121.8616	7.2018	0.0000	273.0996
Water						0.0000	0.0000		0.0000	0.0000	16.3709	295.7067	312.0776	1.6950	0.0425	360.8532
Total	**11.0898**	**22.9977**	**82.2025**	**0.1144**	**7.7942**	**0.6784**	**8.4726**	**2.0824**	**0.6330**	**2.7154**	**138.2325**	**12,442.7782**	**12,581.0107**	**9.4779**	**0.0763**	**12,803.7120**

Residential Alternative 2020

Riverside-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	240.00	Dwelling Unit	15.00	240,000.00	686
Condo/Townhouse	221.00	Dwelling Unit	13.81	221,000.00	632
Single Family Housing	331.00	Dwelling Unit	107.47	595,800.00	947

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	483.63	**CH4 Intensity (lb/MWhr)**	0.022	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Project Characteristics - apply renewable portfolio standards

Land Use - Residential Alternative: 331 single-family homes, 240 apartments and 221 townhomes

Vehicle Trips - Trip rates from Urban Crossroads Trip Generation Evalutation

Woodstoves - Comply with Rule 445

Construction Off-road Equipment Mitigation - comply with rule 403, use Tier 4 engines

Mobile Land Use Mitigation -

Water Mitigation -

Energy Mitigation - Exceed Title 24 by 25 percent for new residential development

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblFireplaces	NumberGas	204.00	216.00

tblFireplaces	NumberGas	187.85	198.90
tblFireplaces	NumberGas	281.35	197.90
tblFireplaces	NumberWood	12.00	0.00
tblFireplaces	NumberWood	11.05	0.00
tblFireplaces	NumberWood	16.55	0.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.022
tblProjectCharacteristics	CO2IntensityFactor	630.89	483.63
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblProjectCharacteristics	OperationalYear	2014	2020
tblVehicleTrips	ST_TR	7.16	7.22
tblVehicleTrips	ST_TR	7.16	6.31
tblVehicleTrips	ST_TR	10.08	10.02
tblVehicleTrips	SU_TR	6.07	6.12
tblVehicleTrips	SU_TR	6.07	5.35
tblVehicleTrips	SU_TR	8.77	8.72
tblVehicleTrips	WD_TR	6.59	6.65
tblVehicleTrips	WD_TR	6.59	5.81
tblVehicleTrips	WD_TR	9.57	9.52
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00
tblWoodstoves	WoodstoveWoodMass	999.60	0.00

2.0 Emissions Summary

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	160.4977	160.4977	0.0158	2.7000e-003	161.6665

Energy												0.0000	1,777.8399	1,777.8399	0.0597	0.0248	1,786.7850
Mobile												0.0000	7,584.6171	7,584.6171	0.2246	0.0000	7,589.3326
Waste												97.4893	0.0000	97.4893	5.7615	0.0000	218.4797
Water												16.3709	221.8475	238.2184	1.6913	0.0419	286.7384
Total												**113.8602**	**9,744.8022**	**9,858.6624**	**7.7528**	**0.0695**	**10,043.0021**

Reduced Intensity Industrial Alternative

Riverside-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	1,328.96	1000sqft	30.51	1,328,961.00	0
Other Asphalt Surfaces	2.91	Acre	2.91	0.00	0
Parking Lot	1,314.00	Space	11.83	525,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Redused Industrial Intensity Alternative: 2 buildings totaling 1,328,961 square feet, 655 auto parking, and 659 trailer parking

Vehicle Trips - Trip rates from Urban Crossroads Trip Generation Evalutation

Woodstoves -

Vechicle Emission Factors - based off traffic study

Vechicle Emission Factors - based off traffic study

Vechicle Emission Factors - based off traffic study

Construction Off-road Equipment Mitigation - comply with rule 403

Architectural Coating - use AQMD recommended low VOC arch coatings

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	10.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	10.00
tblLandUse	LandUseSquareFeet	1,328,960.00	1,328,961.00
tblLandUse	LandUseSquareFeet	126,759.60	0.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	LDA	0.46	0.56
tblVehicleEF	LDA	0.46	0.56
tblVehicleEF	LDA	0.46	0.56
tblVehicleEF	LDT1	0.07	0.08
tblVehicleEF	LDT1	0.07	0.08
tblVehicleEF	LDT1	0.07	0.08
tblVehicleEF	LDT2	0.18	0.25
tblVehicleEF	LDT2	0.18	0.25
tblVehicleEF	LDT2	0.18	0.25
tblVehicleEF	LHD1	0.05	0.00
tblVehicleEF	LHD1	0.05	0.00
tblVehicleEF	LHD1	0.05	0.00
tblVehicleEF	LHD2	7.3830e-003	0.00
tblVehicleEF	LHD2	7.3830e-003	0.00
tblVehicleEF	LHD2	7.3830e-003	0.00
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MDV	0.17	0.11
tblVehicleEF	MDV	0.17	0.11
tblVehicleEF	MDV	0.17	0.11

tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MHD	0.01	0.00
tblVehicleEF	MHD	0.01	0.00
tblVehicleEF	MHD	0.01	0.00
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleTrips	ST_TR	2.59	1.68
tblVehicleTrips	SU_TR	2.59	1.68
tblVehicleTrips	WD_TR	2.59	1.68

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	8.7553	74.9042	89.3975	0.1953	18.2675	3.5856	21.2074	9.9840	3.2988	12.6888	0.0000	17,735.8446	17,735.8446	1.9446	0.0000	17,776.6803
2017	7.9094	52.7064	82.7376	0.1951	10.6201	2.2779	12.8980	2.8556	2.1299	4.9855	0.0000	17,255.7329	17,255.7329	1.0319	0.0000	17,277.4032
2018	7.0535	47.2871	77.1511	0.1950	10.6196	1.9649	12.5845	2.8554	1.8380	4.6933	0.0000	16,801.0148	16,801.0148	0.9949	0.0000	16,821.9069

2019	23.3740	43.0740	72.7652	0.1949	10.6191	1.7321	12.3512	2.8552	1.6199	4.4751	0.0000	16,366.3462	16,366.3462	0.9622	0.0000	16,386.5527
Total	**47.0921**	**217.9717**	**322.0513**	**0.7803**	**50.1262**	**9.5605**	**59.0410**	**18.5502**	**8.8866**	**26.8427**	**0.0000**	**68,158.9386**	**68,158.9386**	**4.9336**	**0.0000**	**68,262.5432**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	45.2850	2.6100e-003	0.2752	2.0000e-005		9.9000e-004	9.9000e-004		9.9000e-004	9.9000e-004		0.5791	0.5791	1.6100e-003		0.6129
Energy	0.0840	0.7639	0.6417	4.5800e-003		0.0581	0.0581		0.0581	0.0581		916.6725	916.6725	0.0176	0.0168	922.2513
Mobile	6.1579	7.0976	84.7954	0.2511	19.9707	0.1082	20.0789	5.2940	0.0998	5.3938		20,163.9601	20,163.9601	0.7591		20,179.9009
Total	**51.5269**	**7.8641**	**85.7123**	**0.2557**	**19.9707**	**0.1672**	**20.1379**	**5.2940**	**0.1589**	**5.4529**		**21,081.2117**	**21,081.2117**	**0.7783**	**0.0168**	**21,102.7651**

Reduced Intensity Industrial Alternative

Riverside-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	1,328.96	1000sqft	30.51	1,328,961.00	0
Other Asphalt Surfaces	2.91	Acre	2.91	0.00	0
Parking Lot	1,314.00	Space	11.83	525,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Redused Industrial Intensity Alternative: 2 buildings totaling 1,328,961 square feet, 655 auto parking, and 659 trailer parking

Vehicle Trips - Trip rates from Urban Crossroads Trip Generation Evalutation

Woodstoves -

Vechicle Emission Factors - based off traffic study

Vechicle Emission Factors - based off traffic study

Vechicle Emission Factors - based off traffic study

Construction Off-road Equipment Mitigation - comply with rule 403

Architectural Coating - use AQMD recommended low VOC arch coatings

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	10.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	10.00
tblLandUse	LandUseSquareFeet	1,328,960.00	1,328,961.00
tblLandUse	LandUseSquareFeet	126,759.60	0.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	LDA	0.46	0.56
tblVehicleEF	LDA	0.46	0.56
tblVehicleEF	LDA	0.46	0.56
tblVehicleEF	LDT1	0.07	0.08
tblVehicleEF	LDT1	0.07	0.08
tblVehicleEF	LDT1	0.07	0.08
tblVehicleEF	LDT2	0.18	0.25
tblVehicleEF	LDT2	0.18	0.25
tblVehicleEF	LDT2	0.18	0.25
tblVehicleEF	LHD1	0.05	0.00
tblVehicleEF	LHD1	0.05	0.00
tblVehicleEF	LHD1	0.05	0.00
tblVehicleEF	LHD2	7.3830e-003	0.00
tblVehicleEF	LHD2	7.3830e-003	0.00
tblVehicleEF	LHD2	7.3830e-003	0.00
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MDV	0.17	0.11
tblVehicleEF	MDV	0.17	0.11
tblVehicleEF	MDV	0.17	0.11

tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MHD	0.01	0.00
tblVehicleEF	MHD	0.01	0.00
tblVehicleEF	MHD	0.01	0.00
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleTrips	ST_TR	2.59	1.68
tblVehicleTrips	SU_TR	2.59	1.68
tblVehicleTrips	WD_TR	2.59	1.68

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	8.7734	74.9101	86.9454	0.1857	18.2675	3.5856	21.2074	9.9840	3.2988	12.6888	0.0000	16,935.5753	16,935.5753	1.9446	0.0000	16,976.4110
2017	7.9172	53.4737	80.9045	0.1855	10.6201	2.2817	12.9017	2.8556	2.1334	4.9890	0.0000	16,484.8158	16,484.8158	1.0334	0.0000	16,506.5162
2018	7.0550	47.9698	75.8115	0.1854	10.6196	1.9683	12.5879	2.8554	1.8411	4.6965	0.0000	16,057.4784	16,057.4784	0.9963	0.0000	16,078.4014

2019	23.3510	43.6860	71.8178	0.1852	10.6191	1.7352	12.3543	2.8552	1.6227	4.4779	0.0000	15,648.4725	15,648.4725	0.9637	0.0000	15,668.7104
Total	**47.0965**	**220.0397**	**315.4792**	**0.7418**	**50.1262**	**9.5708**	**59.0513**	**18.5502**	**8.8960**	**26.8521**	**0.0000**	**65,126.3419**	**65,126.3419**	**4.9380**	**0.0000**	**65,230.0390**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	45.2850	2.6100e-003	0.2752	2.0000e-005		9.9000e-004	9.9000e-004		9.9000e-004	9.9000e-004		0.5791	0.5791	1.6100e-003		0.6129
Energy	0.0840	0.7639	0.6417	4.5800e-003		0.0581	0.0581		0.0581	0.0581		916.6725	916.6725	0.0176	0.0168	922.2513
Mobile	5.8617	7.5384	73.3201	0.2291	19.9707	0.1082	20.0789	5.2940	0.0998	5.3938		18,422.9377	18,422.9377	0.7591		18,438.8785
Total	**51.2307**	**8.3049**	**74.2370**	**0.2337**	**19.9707**	**0.1672**	**20.1379**	**5.2940**	**0.1589**	**5.4529**		**19,340.1893**	**19,340.1893**	**0.7783**	**0.0168**	**19,361.7427**

Reduced Intensity Industrial Alternative HDT

Riverside-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	1,328.96	1000sqft	30.51	1,328,961.00	0
Other Asphalt Surfaces	2.91	Acre	2.91	0.00	0
Parking Lot	1,314.00	Space	11.83	525,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Redused Industrial Intensity Alternative: 2 buildings totaling 1,328,961 square feet, 655 auto parking, and 659 trailer parking

Architectural Coating - use AQMD recommended low VOC arch coatings

Vehicle Trips - Trip rates from Urban Crossroads Trip Generation Evalutation

Vechicle Emission Factors - based off traffic study

Vechicle Emission Factors - based off traffic study

Vechicle Emission Factors - based off traffic study

Woodstoves -

Construction Off-road Equipment Mitigation - comply with rule 403

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	10.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	10.00
tblLandUse	LandUseSquareFeet	1,328,960.00	1,328,961.00
tblLandUse	LandUseSquareFeet	126,759.60	0.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleEF	HHD	0.04	0.60
tblVehicleEF	HHD	0.04	0.60
tblVehicleEF	HHD	0.04	0.60
tblVehicleEF	LDA	0.46	0.00
tblVehicleEF	LDA	0.46	0.00
tblVehicleEF	LDA	0.46	0.00
tblVehicleEF	LDT1	0.07	0.00
tblVehicleEF	LDT1	0.07	0.00
tblVehicleEF	LDT1	0.07	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LHD1	0.05	0.17
tblVehicleEF	LHD1	0.05	0.17
tblVehicleEF	LHD1	0.05	0.17
tblVehicleEF	LHD2	7.3830e-003	0.05
tblVehicleEF	LHD2	7.3830e-003	0.05
tblVehicleEF	LHD2	7.3830e-003	0.05
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MDV	0.17	0.00
tblVehicleEF	MDV	0.17	0.00
tblVehicleEF	MDV	0.17	0.00

tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MHD	0.01	0.18
tblVehicleEF	MHD	0.01	0.18
tblVehicleEF	MHD	0.01	0.18
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleTrips	CC_TL	8.40	40.00
tblVehicleTrips	CNW_TL	6.90	40.00
tblVehicleTrips	CW_TL	16.60	40.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	2.59	1.60
tblVehicleTrips	SU_TR	2.59	1.60
tblVehicleTrips	WD_TR	2.59	1.60

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Mobile	36.9237	761.7712	357.9056	2.3326	74.0184	14.5879	88.6063	20.5793	13.4202	33.9995		231,242.7552	231,242.7552	1.5295		231,274.8749

Reduced Intensity Industrial Alternative HDT

Riverside-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	1,328.96	1000sqft	30.51	1,328,961.00	0
Other Asphalt Surfaces	2.91	Acre	2.91	0.00	0
Parking Lot	1,314.00	Space	11.83	525,600.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Redused Industrial Intensity Alternative: 2 buildings totaling 1,328,961 square feet, 655 auto parking, and 659 trailer parking

Architectural Coating - use AQMD recommended low VOC arch coatings

Vehicle Trips - Trip rates from Urban Crossroads Trip Generation Evalutation

Vechicle Emission Factors - based off traffic study

Vechicle Emission Factors - based off traffic study

Vechicle Emission Factors - based off traffic study

Woodstoves -

Construction Off-road Equipment Mitigation - comply with rule 403

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	10.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	10.00
tblLandUse	LandUseSquareFeet	1,328,960.00	1,328,961.00
tblLandUse	LandUseSquareFeet	126,759.60	0.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleEF	HHD	0.04	0.60
tblVehicleEF	HHD	0.04	0.60
tblVehicleEF	HHD	0.04	0.60
tblVehicleEF	LDA	0.46	0.00
tblVehicleEF	LDA	0.46	0.00
tblVehicleEF	LDA	0.46	0.00
tblVehicleEF	LDT1	0.07	0.00
tblVehicleEF	LDT1	0.07	0.00
tblVehicleEF	LDT1	0.07	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LHD1	0.05	0.17
tblVehicleEF	LHD1	0.05	0.17
tblVehicleEF	LHD1	0.05	0.17
tblVehicleEF	LHD2	7.3830e-003	0.05
tblVehicleEF	LHD2	7.3830e-003	0.05
tblVehicleEF	LHD2	7.3830e-003	0.05
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MDV	0.17	0.00
tblVehicleEF	MDV	0.17	0.00
tblVehicleEF	MDV	0.17	0.00

tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MHD	0.01	0.18
tblVehicleEF	MHD	0.01	0.18
tblVehicleEF	MHD	0.01	0.18
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleTrips	CC_TL	8.40	40.00
tblVehicleTrips	CNW_TL	6.90	40.00
tblVehicleTrips	CW_TL	16.60	40.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	2.59	1.60
tblVehicleTrips	SU_TR	2.59	1.60
tblVehicleTrips	WD_TR	2.59	1.60

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Mobile	37.7734	792.8513	382.5437	2.3300	74.0184	14.6050	88.6234	20.5793	13.4360	34.0152		230,949.4521	230,949.4521	1.5396		230,981.7834

Mixed Use/Business Park Alternative - Business Park

Riverside-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Office Park	1,609.52	1000sqft	36.95	1,609,516.00	0
Other Asphalt Surfaces	2.88	Acre	2.88	0.00	0
Parking Lot	2,377.00	Space	21.39	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Mix Use/Business Park: 23 business park buildings totaling 1,609,516 square feet, and 2,377 total parking spaces

Architectural Coating - use AQMD recommended low VOC arch coatings

Vehicle Trips - Trip rates from Urban Crossroads Trip Generation Evalutation

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Woodstoves -

Construction Off-road Equipment Mitigation - comply with rule 403

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	10.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	10.00
tblLandUse	LandUseSquareFeet	1,609,520.00	1,609,516.00
tblLandUse	LandUseSquareFeet	125,452.80	0.00
tblLandUse	LandUseSquareFeet	950,800.00	0.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleTrips	ST_TR	1.64	1.78
tblVehicleTrips	SU_TR	0.76	1.82
tblVehicleTrips	WD_TR	11.42	12.44

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	7.4326	74.9042	70.9110	0.1515	18.2675	3.5856	21.2074	9.9840	3.2988	12.6888	0.0000	13,961.4284	13,961.4284	1.9446	0.0000	14,002.2642
2017	6.7225	48.5902	66.0112	0.1513	7.4175	2.2016	9.6191	2.0011	2.0597	4.0608	0.0000	13,611.5497	13,611.5497	0.9107	0.0000	13,630.6751
2018	5.9769	43.5330	61.8663	0.1512	7.4171	1.8921	9.3092	2.0009	1.7710	3.7719	0.0000	13,278.0338	13,278.0338	0.8825	0.0000	13,296.5652
2019	5.4217	39.6236	58.6287	0.1511	7.4167	1.6625	9.0791	2.0007	1.5557	3.5565	0.0000	12,958.4020	12,958.4020	0.8571	0.0000	12,976.4006
2020	4.9892	35.3293	56.1259	0.1510	7.4163	1.4623	8.8786	2.0006	1.3682	3.3688	0.0000	12,589.7232	12,589.7232	0.8367	0.0000	12,607.2946
2021	20.3697	31.1620	54.2629	0.1511	7.4162	1.2789	8.6951	2.0006	1.1962	3.1968	0.0000	12,506.4482	12,506.4482	0.8215	0.0000	12,523.7003
Total	**50.9126**	**273.1423**	**367.8059**	**0.9072**	**55.3512**	**12.0830**	**66.7885**	**19.9879**	**11.2496**	**30.6435**	**0.0000**	**78,905.5853**	**78,905.5853**	**6.2531**	**0.0000**	**79,036.8999**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	42.1278	3.9300e-003	0.4150	3.0000e-005		1.5000e-003	1.5000e-003		1.5000e-003	1.5000e-003		0.8731	0.8731	2.4300e-003		0.9241
Energy	0.1460	1.3272	1.1149	7.9600e-003		0.1009	0.1009		0.1009	0.1009		1,592.6556	1,592.6556	0.0305	0.0292	1,602.3483
Mobile	71.5090	224.5465	795.9400	2.1141	143.3491	3.3131	146.6621	38.2567	3.0492	41.3059		179,365.1912	179,365.1912	5.5462		179,481.6607
Total	**113.7828**	**225.8776**	**797.4699**	**2.1221**	**143.3491**	**3.4154**	**146.7645**	**38.2567**	**3.1516**	**41.4083**		**180,958.7199**	**180,958.7199**	**5.5791**	**0.0292**	**181,084.9332**

Mixed Use/Business Park Alternative - Business Park

Riverside-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Office Park	1,609.52	1000sqft	36.95	1,609,516.00	0
Other Asphalt Surfaces	2.88	Acre	2.88	0.00	0
Parking Lot	2,377.00	Space	21.39	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Mix Use/Business Park: 23 business park buildings totaling 1,609,516 square feet, and 2,377 total parking spaces

Architectural Coating - use AQMD recommended low VOC arch coatings

Vehicle Trips - Trip rates from Urban Crossroads Trip Generation Evalutation

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Woodstoves -

Construction Off-road Equipment Mitigation - comply with rule 403

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	10.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	10.00
tblLandUse	LandUseSquareFeet	1,609,520.00	1,609,516.00
tblLandUse	LandUseSquareFeet	125,452.80	0.00
tblLandUse	LandUseSquareFeet	950,800.00	0.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleTrips	ST_TR	1.64	1.78
tblVehicleTrips	SU_TR	0.76	1.82
tblVehicleTrips	WD_TR	11.42	12.44

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	42.1278	3.9300e-003	0.4150	3.0000e-005		1.5000e-003	1.5000e-003		1.5000e-003	1.5000e-003		0.8731	0.8731	2.4300e-003		0.9241
Energy	0.1460	1.3272	1.1149	7.9600e-003		0.1009	0.1009		0.1009	0.1009		1,592.6556	1,592.6556	0.0305	0.0292	1,602.3483
Mobile	69.7448	234.0279	743.0490	1.9717	143.3491	3.3253	146.6743	38.2567	3.0605	41.3171		167,922.2332	167,922.2332	5.5532		168,038.8496
Total	**112.0186**	**235.3591**	**744.5789**	**1.9797**	**143.3491**	**3.4276**	**146.7767**	**38.2567**	**3.1628**	**41.4195**		**169,515.7620**	**169,515.7620**	**5.5861**	**0.0292**	**169,642.1221**

Mix Use/Business Park - Warehouse Passenger Vehicles

Riverside-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	1,012.76	1000sqft	23.25	1,012,760.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Mix Use/Business Park: 1,012,760 square foot warehouse

Architectural Coating - use AQMD recommended low VOC arch coatings

Vehicle Trips - Trip rates from Urban Crossroads Trip Generation Evalutation

Vechicle Emission Factors - based off traffic study

Vechicle Emission Factors - based off traffic study

Vechicle Emission Factors - based off traffic study

Woodstoves -

Construction Off-road Equipment Mitigation - comply with rule 403

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	10.00

tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	10.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	LDA	0.46	0.56
tblVehicleEF	LDA	0.46	0.56
tblVehicleEF	LDA	0.46	0.56
tblVehicleEF	LDT1	0.07	0.08
tblVehicleEF	LDT1	0.07	0.08
tblVehicleEF	LDT1	0.07	0.08
tblVehicleEF	LDT2	0.18	0.25
tblVehicleEF	LDT2	0.18	0.25
tblVehicleEF	LDT2	0.18	0.25
tblVehicleEF	LHD1	0.05	0.00
tblVehicleEF	LHD1	0.05	0.00
tblVehicleEF	LHD1	0.05	0.00
tblVehicleEF	LHD2	7.3830e-003	0.00
tblVehicleEF	LHD2	7.3830e-003	0.00
tblVehicleEF	LHD2	7.3830e-003	0.00
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MDV	0.17	0.11
tblVehicleEF	MDV	0.17	0.11
tblVehicleEF	MDV	0.17	0.11
tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MHD	0.01	0.00

tblVehicleEF	MHD	0.01	0.00
tblVehicleEF	MHD	0.01	0.00
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleTrips	ST_TR	2.59	1.04
tblVehicleTrips	SU_TR	2.59	1.04
tblVehicleTrips	WD_TR	2.59	1.04

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	6.5561	74.9042	57.1955	0.1188	18.2675	3.5856	21.2074	9.9840	3.2988	12.6888	0.0000	10,892.2592	10,892.2592	1.9446	0.0000	10,933.0949
2017	47.5655	40.7657	53.3897	0.1187	5.7949	2.0524	7.8473	1.5582	1.9225	3.4807	0.0000	10,616.8748	10,616.8748	0.8583	0.0000	10,634.8980
Total	**54.1216**	**115.6700**	**110.5852**	**0.2374**	**24.0624**	**5.6380**	**29.0547**	**11.5422**	**5.2213**	**16.1694**	**0.0000**	**21,509.1341**	**21,509.1341**	**2.8028**	**0.0000**	**21,567.9930**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Area	26.4932	1.0000e-003	0.1054	1.0000e-005		3.8000e-004	3.8000e-004		3.8000e-004	3.8000e-004		0.2217	0.2217	6.2000e-004		0.2346
Energy	0.0640	0.5821	0.4890	3.4900e-003		0.0442	0.0442		0.0442	0.0442		698.5677	698.5677	0.0134	0.0128	702.8191
Mobile	2.9050	3.3483	40.0029	0.1184	9.4213	0.0510	9.4724	2.4975	0.0471	2.5446		9,512.4967	9,512.4967	0.3581		9,520.0169
Total	**29.4622**	**3.9315**	**40.5972**	**0.1219**	**9.4213**	**0.0957**	**9.5170**	**2.4975**	**0.0917**	**2.5892**		**10,211.2861**	**10,211.2861**	**0.3721**	**0.0128**	**10,223.0706**

Mix Use/Business Park - Warehouse Passenger Vehicles

Riverside-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	1,012.76	1000sqft	23.25	1,012,760.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Mix Use/Business Park: 1,012,760 square foot warehouse

Architectural Coating - use AQMD recommended low VOC arch coatings

Vehicle Trips - Trip rates from Urban Crossroads Trip Generation Evalutation

Vechicle Emission Factors - based off traffic study

Vechicle Emission Factors - based off traffic study

Vechicle Emission Factors - based off traffic study

Woodstoves -

Construction Off-road Equipment Mitigation - comply with rule 403

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	10.00

tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	10.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	HHD	0.04	0.00
tblVehicleEF	LDA	0.46	0.56
tblVehicleEF	LDA	0.46	0.56
tblVehicleEF	LDA	0.46	0.56
tblVehicleEF	LDT1	0.07	0.08
tblVehicleEF	LDT1	0.07	0.08
tblVehicleEF	LDT1	0.07	0.08
tblVehicleEF	LDT2	0.18	0.25
tblVehicleEF	LDT2	0.18	0.25
tblVehicleEF	LDT2	0.18	0.25
tblVehicleEF	LHD1	0.05	0.00
tblVehicleEF	LHD1	0.05	0.00
tblVehicleEF	LHD1	0.05	0.00
tblVehicleEF	LHD2	7.3830e-003	0.00
tblVehicleEF	LHD2	7.3830e-003	0.00
tblVehicleEF	LHD2	7.3830e-003	0.00
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MDV	0.17	0.11
tblVehicleEF	MDV	0.17	0.11
tblVehicleEF	MDV	0.17	0.11
tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MHD	0.01	0.00

tblVehicleEF	MHD	0.01	0.00
tblVehicleEF	MHD	0.01	0.00
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleTrips	ST_TR	2.59	1.04
tblVehicleTrips	SU_TR	2.59	1.04
tblVehicleTrips	WD_TR	2.59	1.04

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	26.4932	1.0000e-003	0.1054	1.0000e-005		3.8000e-004	3.8000e-004		3.8000e-004	3.8000e-004		0.2217	0.2217	6.2000e-004		0.2346
Energy	0.0640	0.5821	0.4890	3.4900e-003		0.0442	0.0442		0.0442	0.0442		698.5677	698.5677	0.0134	0.0128	702.8191
Mobile	2.7653	3.5563	34.5893	0.1081	9.4213	0.0510	9.4724	2.4975	0.0471	2.5446		8,691.1565	8,691.1565	0.3581		8,698.6767
Total	**29.3225**	**4.1394**	**35.1837**	**0.1116**	**9.4213**	**0.0957**	**9.5170**	**2.4975**	**0.0917**	**2.5892**		**9,389.9459**	**9,389.9459**	**0.3721**	**0.0128**	**9,401.7304**

Mix Use/Business Park - Warehouse Passenger HDT

Riverside-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	1,012.76	1000sqft	23.25	1,012,760.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Mix Use/Business Park: 1,012,760 square foot warehouse

Architectural Coating - use AQMD recommended low VOC arch coatings

Vehicle Trips - Trip rates from Urban Crossroads Trip Generation Evalutation

Vechicle Emission Factors - based off traffic study

Vechicle Emission Factors - based off traffic study

Vechicle Emission Factors - based off traffic study

Woodstoves -

Construction Off-road Equipment Mitigation - comply with rule 403

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	10.00

tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	10.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleEF	HHD	0.04	0.60
tblVehicleEF	HHD	0.04	0.60
tblVehicleEF	HHD	0.04	0.60
tblVehicleEF	LDA	0.46	0.00
tblVehicleEF	LDA	0.46	0.00
tblVehicleEF	LDA	0.46	0.00
tblVehicleEF	LDT1	0.07	0.00
tblVehicleEF	LDT1	0.07	0.00
tblVehicleEF	LDT1	0.07	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LHD1	0.05	0.17
tblVehicleEF	LHD1	0.05	0.17
tblVehicleEF	LHD1	0.05	0.17
tblVehicleEF	LHD2	7.3830e-003	0.05
tblVehicleEF	LHD2	7.3830e-003	0.05
tblVehicleEF	LHD2	7.3830e-003	0.05
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MDV	0.17	0.00
tblVehicleEF	MDV	0.17	0.00
tblVehicleEF	MDV	0.17	0.00
tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MHD	0.01	0.18

tblVehicleEF	MHD	0.01	0.18
tblVehicleEF	MHD	0.01	0.18
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleTrips	CC_TL	8.40	40.00
tblVehicleTrips	CNW_TL	6.90	40.00
tblVehicleTrips	CW_TL	16.60	40.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	2.59	1.60
tblVehicleTrips	SU_TR	2.59	1.60
tblVehicleTrips	WD_TR	2.59	1.60

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	6.5561	74.9042	57.1955	0.1188	18.2675	3.5856	21.2074	9.9840	3.2988	12.6888	0.0000	10,892.2592	10,892.2592	1.9446	0.0000	10,933.0949

2017	47.5655	40.7657	53.3897	0.1187	5.7949	2.0524	7.8473	1.5582	1.9225	3.4807	0.0000	10,616.8748	10,616.8748	0.8583	0.0000	10,634.8980
Total	**54.1216**	**115.6700**	**110.5852**	**0.2374**	**24.0624**	**5.6380**	**29.0547**	**11.5422**	**5.2213**	**16.1694**	**0.0000**	**21,509.1341**	**21,509.1341**	**2.8028**	**0.0000**	**21,567.9930**

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mobile	28.1384	580.5227	272.7490	1.7776	56.4072	11.1170	67.5241	15.6828	10.2271	25.9100		176,223.0713	176,223.0713	1.1656		176,247.5487

Mix Use/Business Park - Warehouse Passenger HDT

Riverside-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Unrefrigerated Warehouse-No Rail	1,012.76	1000sqft	23.25	1,012,760.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2017
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Mix Use/Business Park: 1,012,760 square foot warehouse

Architectural Coating - use AQMD recommended low VOC arch coatings

Vehicle Trips - Trip rates from Urban Crossroads Trip Generation Evalutation

Vechicle Emission Factors - based off traffic study

Vechicle Emission Factors - based off traffic study

Vechicle Emission Factors - based off traffic study

Woodstoves -

Construction Off-road Equipment Mitigation - comply with rule 403

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	10.00

tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	10.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleEF	HHD	0.04	0.60
tblVehicleEF	HHD	0.04	0.60
tblVehicleEF	HHD	0.04	0.60
tblVehicleEF	LDA	0.46	0.00
tblVehicleEF	LDA	0.46	0.00
tblVehicleEF	LDA	0.46	0.00
tblVehicleEF	LDT1	0.07	0.00
tblVehicleEF	LDT1	0.07	0.00
tblVehicleEF	LDT1	0.07	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LDT2	0.18	0.00
tblVehicleEF	LHD1	0.05	0.17
tblVehicleEF	LHD1	0.05	0.17
tblVehicleEF	LHD1	0.05	0.17
tblVehicleEF	LHD2	7.3830e-003	0.05
tblVehicleEF	LHD2	7.3830e-003	0.05
tblVehicleEF	LHD2	7.3830e-003	0.05
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MCY	6.4540e-003	0.00
tblVehicleEF	MDV	0.17	0.00
tblVehicleEF	MDV	0.17	0.00
tblVehicleEF	MDV	0.17	0.00
tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MH	3.2420e-003	0.00
tblVehicleEF	MHD	0.01	0.18

tblVehicleEF	MHD	0.01	0.18
tblVehicleEF	MHD	0.01	0.18
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	OBUS	9.5400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	SBUS	8.8400e-004	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleEF	UBUS	1.0560e-003	0.00
tblVehicleTrips	CC_TL	8.40	40.00
tblVehicleTrips	CNW_TL	6.90	40.00
tblVehicleTrips	CW_TL	16.60	40.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	2.59	1.60
tblVehicleTrips	SU_TR	2.59	1.60
tblVehicleTrips	WD_TR	2.59	1.60

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mobile	28.7859	604.2078	291.5249	1.7756	56.4072	11.1300	67.5372	15.6828	10.2391	25.9220		175,999.5539	175,999.5539	1.1733		176,024.1926

Appendix C:
Biological Resources

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C.1 - Biological Technical Report

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HELIX
Environmental Planning

San Gorgonio Crossings

Biological Technical Report

June 4, 2015

Barry L. Jones
Senior Consulting Biologist

Prepared for:
TSG Cherry Valley, LP
2 Park Plaza, Suite 700
Irvine, CA 92614

Prepared by:
HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942

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San Gorgonio Crossings Project
Biological Technical Report

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EXECUTIVE SUMMARY

The approximately 229-acre San Gorgonio Crossings property is located east of Interstate 10 (I-10) on the north side of Cherry Valley Boulevard in the northwestern portion of Riverside County, California. The property is situated on the U.S. Geological Survey (USGS) 7.5-minute El Casco quadrangle in the northern portion of Section 30, Township 2 South, Range 1 West.

The project site supports 8 vegetation communities/habitats: mule fat scrub, Riversidean sage scrub, Riversidean-Diegan coastal sage scrub (including disturbed), coastal sage-chaparral scrub (including disturbed), scrub oak chaparral (including disturbed), exotic habitat (eucalyptus woodland), non-native grassland, and disturbed habitat. Developed areas along Cherry Valley Boulevard occur within off-site impact areas.

The San Gorgonio Crossings site is within the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Narrow Endemic Plant Species Survey Area (NEPSSA) for 2 plant species: Yucaipa (Marvin's) onion (*Allium marvinii*) and many-stemmed dudleya (*Dudleya multicaulis*). Rare plant surveys were performed for these species. Yucaipa onion was observed in the northeast corner of the property. The population is being 100 percent avoided.

No threatened or endangered animal species were observed on the San Gorgonio Crossings site. No burrowing owls (*Athene cunicularia*) or burrowing owl sign were observed during the required focused survey. Three MSHCP covered species were observed/detected on the San Gorgonio Crossings property: orange-throated whiptail (*Cnemidophorus hyperythrus beldingi*), northern harrier (*Circus cyaneus*), and Bell's sage sparrow (*Amphispiza belli belli*).

Significant impacts to sensitive vegetation communities—including mule fat scrub, Riversidean sage scrub, Riversidean-Diegan coastal sage scrub (including disturbed), coastal sage-chaparral scrub (including disturbed), scrub oak chaparral (including disturbed), and non-native grassland—would occur.

Impacts to U.S. Army Corps of Engineers (USACE) and California Department of Fish and Wildlife (CDFW) jurisdictional areas would be considered significant under the California Environmental Quality Act (CEQA). A total of 0.40 acre of USACE and 1.11 acres of CDFW jurisdictional areas would be impacted on the San Gorgonio Crossings project site. These impacts would require a 404 Permit from the USACE, Certification from the Regional Water Quality Control Board (RWQCB) under Section 401 of the Clean Water Act, and a CDFW Streambed Alteration Agreement.

Implementation of the proposed project would directly impact raptor foraging habitat. There is also the potential to directly or indirectly impact raptor nests during construction. Direct impacts to an active raptor nest are not allowed under the federal Migratory Bird Treaty Act (MBTA).

Indirect impacts consist of secondary effects of the project, including noise, decreased water quality (e.g., through sedimentation, urban contaminants, or fuel release), fugitive dust, colonization of non-native plant species, animal behavioral changes, and night lighting.

The project would be consistent with the MSHCP based on the following:

- The project lies outside of any MSHCP Criteria Cells, and as a result. no on-site conservation is required.

- The project is consistent with MSHCP Section 6.1.2 because no vernal pools occur within the proposed project footprint, and the impacts to Riparian/Riverine resources would be adequately mitigated.

- The project is consistent with MSHCP Section 6.1.3 because NEPSSA species are not expected to occur on site and were not observed during focused surveys.

- The project is consistent with MSHCP Section 6.1.4 because the project is not located adjacent to the MSHCP preserve and, therefore, no adjacency guidelines are required.

- The project is consistent with MSHCP Section 6.3.2 because no burrowing owls or active burrow locations were observed on the property during the focused surveys.

Impacts to upland habitats and associated species will be addressed through participation in the MSHCP, and payment of the MSHCP Local Development Mitigation fee of $6,597 per acre.

Impacts to vegetation communities, sensitive animal species, and potentially to sensitive plant species will be mitigated to below a level of significance through payment of the MSHCP fee. Impacts to USACE and CDFW jurisdictional habitats along with impacts to MSHCP Riverine areas shall be mitigated to below a level of significance by on-site creation or restoration at a 2:1 ratio. Indirect impacts associated with water quality shall be mitigated to below a level of significance through compliance with National Pollutant Discharge Elimination System (NPDES) requirements.

1.0 INTRODUCTION

This report provides the County of Riverside (County; California Environmental Quality Act [CEQA] lead agency), resource agencies, and the public with current biological data to satisfy the review of the proposed San Gorgonio Crossings project under CEQA and other federal, state, and local regulations. The report describes sensitive biological resources (including vegetation communities, plants, and animals detected on the project site) and potential direct and indirect project impacts, as well as proposes mitigation measures to offset those impacts. Consistency with the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP; Dudek and Associates [Dudek] 2003) will be addressed.

1.1 PROJECT LOCATION AND DESCRIPTION

The approximately 229-acre San Gorgonio Crossings property is located east of Interstate 10 (I-10) on the north side of Cherry Valley Boulevard in the northwestern portion of Riverside County, California (Figures 1 and 2). The property is situated on the U.S. Geological Survey (USGS) 7.5-minute El Casco quadrangle in the northern portion of Section 30, Township 2 South, Range 1 West (Figure 3).

The project proposes the construction of 2 large industrial buildings and associated infrastructure on approximately 145.6 acres of the 229.9-acre property. The project includes detention basins, parking, landscaping, and other associated infrastructure. The 2 industrial buildings will be designed to be eligible for Leadership in Energy and Environmental Design (LEED) Silver Certification. Building 1 will comprise approximately 811,000 square feet and Building 2 approximately 1,012,760 square feet, for a total of approximately 1,823,760 square feet of floor area. Additionally, the project includes the use of solar panels on roofs, with 23 percent of the project's power needs being provided by the on-site solar panels.

Existing drainage flows from off-site areas to the north would be conveyed through the site and would ultimately be conveyed off site to the west side of the project site. As included in the Hydrology analysis for Tentative Parcel Map 36564, there are 2 drainage areas that exist on site – Drainage area "A" and "B." The project includes a number of drainage facilities designed to safely convey the off-site 100-year storm runoffs through the project site; limit the storm flow resulting from project activities including the use of bio-treatment best management practices (BMPs) such as extended detention basins and trenches sized to accommodate the first flush flows generated in the proposed development area; storm drain facilities that will collect and route on-site runoff through a detention basin that is sized to limit 10-year storm discharge from the site to be equal or less than flows under the existing condition; and a detention basin that will incorporate hydromodification requirements by limiting the increase in the 2-year storm flow caused by the proposed development to less than 10 percent more than existing conditions.

1.2 PHYSICAL DESCRIPTION AND LAND USE

The southern and central portions of the property consist of a broad, sloping grassland with steep ridges and canyons occurring on the northern half of the site. Grazing and past active agriculture have disturbed much of the site, which is currently grazed by sheep and goats. Several dirt roads

and trails traverse the site and extend off site to the north and east. A small horse ranch and I-10 occur to the southwest of the property, while the remains of a chicken ranch occur to the southeast. The remainder of the property is bordered by undeveloped land, with the exception of a few rural residences to the north. The northern and western portions of the property were affected by fire between 2007 and 2008. The larger scrub and trees were affected by the fire, although most remain and are recovering.

Elevations on site range from approximately 2,400 to 2,690 feet above mean sea level. Overall, site drainage is to the west and southwest. Soils on site are primarily Hanford coarse sandy loam and terrace escarpments with Gorgonio gravelly loamy fine sand, Greenfield sandy loam, Hanford cobbly coarse sandy loam, and Ramona sandy loam (Knecht 1971).

2.0 METHODS

2.1 LITERATURE REVIEW

In addition to conducting biological field surveys, HELIX Environmental Planning, Inc. (HELIX) performed a review of existing literature, and searches of the California Department of Fish and Game's (CDFW's) California Natural Diversity Data Base (CNDDB; CDFW 2012a, b, and c) and California Native Plant Society's (CNPS's) online database (2012) for information regarding sensitive species known to occur in the project vicinity.

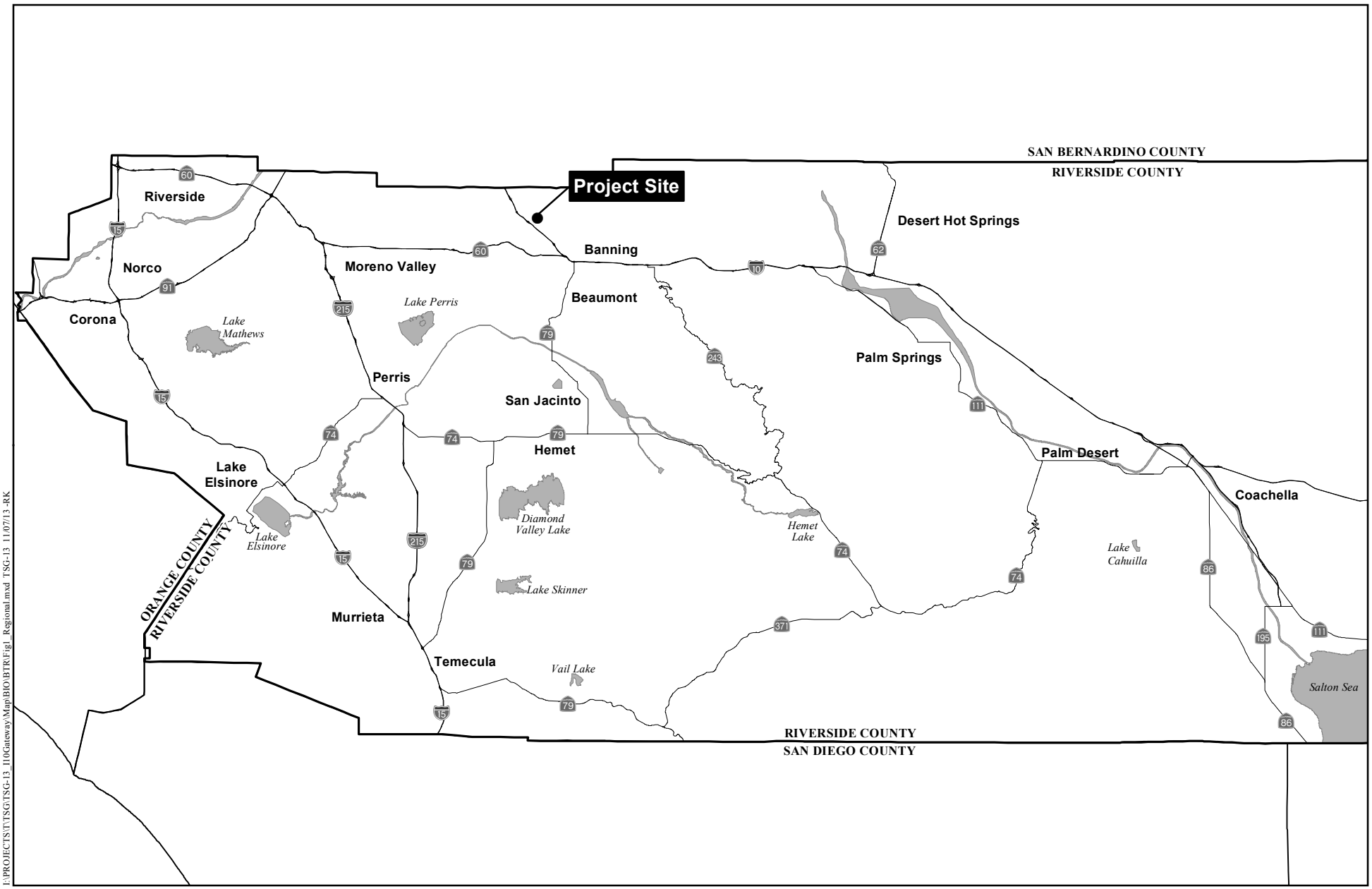
A review of the MSHCP was made to determine the location of the proposed project site in relation to MSHCP Criteria Cells and survey criteria, as well as to determine listed or sensitive species that have potential to occur within the site.

2.2 GENERAL BIOLOGICAL SURVEY

Vegetation communities were mapped on a 1"=400' scale aerial photograph. Vegetation was classified and mapped according to the County's biological resource mapping requirements. In addition, aerial photographs were used in the field, as were Global Positioning System (GPS) units to map jurisdictional areas.

2.3 FOCUSED SURVEYS

The following focused surveys were conducted by HELIX on the San Gorgonio Crossings parcel in 2005, 2007, 2008, and 2012: sensitive plants, burrowing owl (*Athene cunicularia*), Riparian/Riverine and vernal pool assessment, and jurisdictional delineation (Table 1). Plants were identified in the field or collected for later identification by comparison to photographs or keys. The investigation for amphibians and reptiles included lifting, overturning, and carefully replacing rocks and debris in locations with a high likelihood of supporting these species. Birds were identified by auditory or visual recognition with the aid of binoculars. Mammals were identified by diagnostic sign, including scat, footprints, scratch-outs, dust bowls, burrows, and trails. All plant and animal species detected during the surveys were identified and recorded.



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Regional Location Map

SAN GORGONIO CROSSINGS

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N 0 10 Miles

Figure 1

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Aerial Location Map

SAN GORGONIO CROSSINGS

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N 0 2,000 Feet

Figure 2

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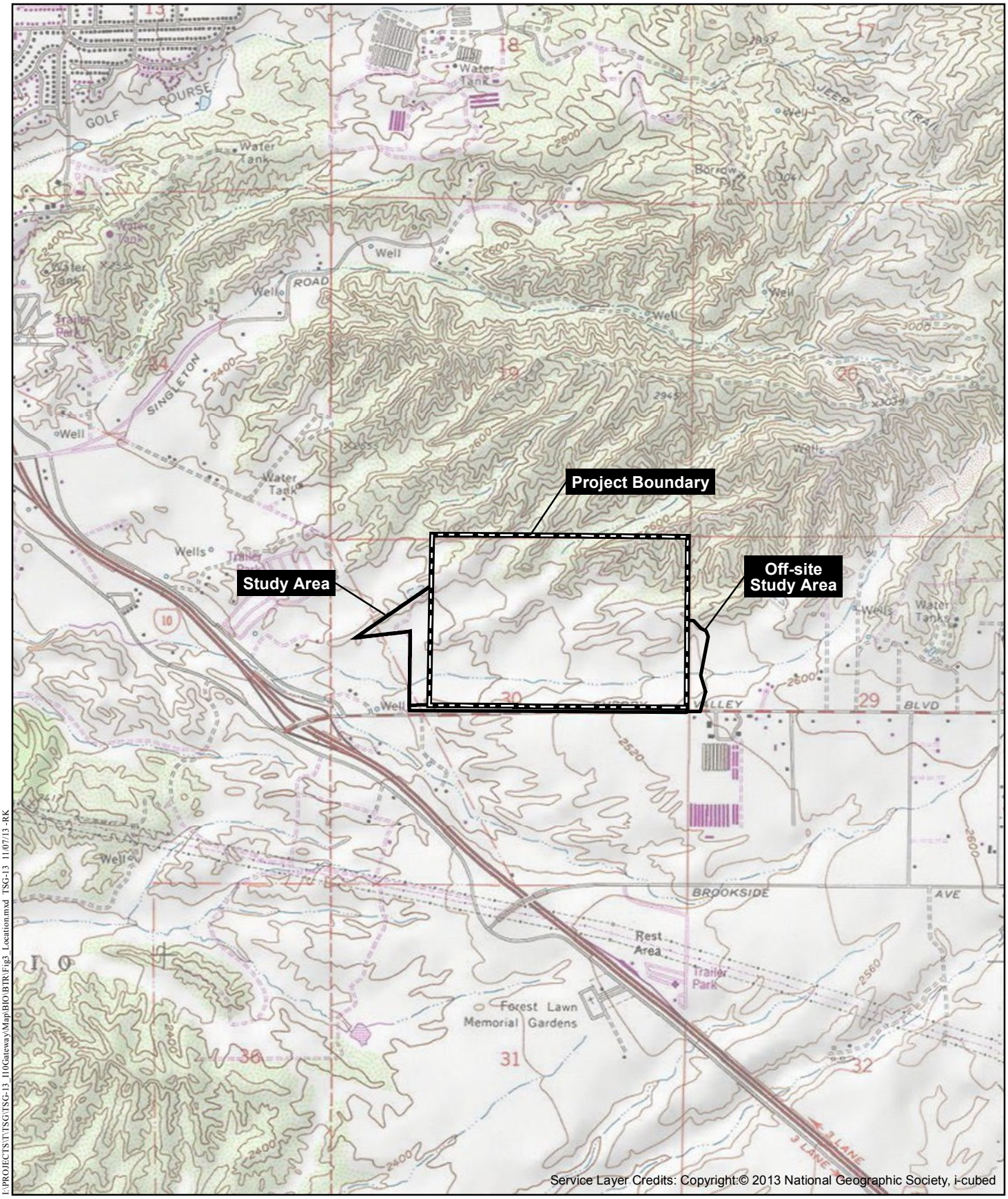

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Project Location Map

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

N 0 2,000 Feet

Figure 3

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Table 1 SURVEY INFORMATION		
DATE	**PERSONNEL**	**SURVEY TYPE**
01/27/05	Larry Sward, Stacy Nigro	Vegetation mapping, Jurisdictional delineation
01/28/05	Rob Hogenauer, Zack West	Winter burrowing owl survey
01/31/05	Rob Hogenauer, Scott Taylor	Winter burrowing owl survey
02/8/05	Larry Sward, Stacy Nigro	Vegetation mapping, Jurisdictional delineation
5/27/05	Larry Sward	Rare plant survey
6/15/05	Rob Hogenauer Zack West	Breeding season burrowing owl survey
6/16/05	Rob Hogenauer Zack West	Breeding season burrowing owl survey
8/9/05	Rob Hogenauer Zack West	Breeding season burrowing owl survey
8/11/05	Rob Hogenauer Zack West	Breeding season burrowing owl survey
8/18/05	Rob Hogenauer Zack West	Breeding season burrowing owl survey
4/18/07	Rob Hogenauer, Zsolt Kahancza	Breeding season burrowing owl survey
4/20/07	Rob Hogenauer	Breeding season burrowing owl survey
4/23/07	Rob Hogenauer	Breeding season burrowing owl survey
4/30/07	Rob Hogenauer	Breeding season burrowing owl survey
5/2/07	Rob Hogenauer	Breeding season burrowing owl survey
5/4/07	Rob Hogenauer	Breeding season burrowing owl survey
5/7/07	Rob Hogenauer	Breeding season burrowing owl survey
5/15/07	Rob Hogenauer	Breeding season burrowing owl survey
5/21/07	Rob Hogenauer	Breeding season burrowing owl survey
5/23/07	Rob Hogenauer	Breeding season burrowing owl survey
8/27/08	Rob Hogenauer, Zsolt Kahancza	Breeding season burrowing owl survey
8/28/08	Rob Hogenauer, Zsolt Kahancza	Breeding season burrowing owl survey
8/29/08	Rob Hogenauer, Zsolt Kahancza	Breeding season burrowing owl survey
8/30/08	Rob Hogenauer, Brian Parker	Breeding season burrowing owl survey
9/17/12	Larry Sward	Jurisdictional delineation

2.3.1 Sensitive Plants

The MSHCP has designated certain areas as requiring surveys for sensitive plant(s). The property occurs within Narrow Endemic Plant Species Survey Area (NEPSSA) 8. MSHCP Section 6.1.3 acknowledges that locations of these plant species that have been highly disturbed within the past few years are considered to be of lower quality (i.e., lower potential for Narrow Endemic Species occurrence). Nonetheless, if other conditions are appropriate, these areas may have potential to support sensitive species if allowed to remain undisturbed. As a result, surveys are required where appropriate soils and habitat are present.

HELIX conducted focused surveys for NEPSSA Area 8 plants – Yucaipa (Marvin's) onion (*Allium marvinii*) and many-stemmed dudleya (*Dudleya multicaulis*) – in accordance with the requirements of the MSHCP. Surveys for Yucaipa onion and many-stemmed dudleya were conducted by HELIX biologists on May 27, 2005, which was during the flowering period of sensitive plants with potential to occur. The soil survey for the western Riverside area

(Knecht 1971) was reviewed to determine whether clay soils were mapped on site as the target plant species prefer clay soil habitats. Surveys were focused on areas of potential habitat within the site: clay soil openings in chaparral (for Yucaipa onion) and clay/cobbly soil openings within chaparral, coastal sage scrub, and grassland. Surveys were performed by systematically walking transects of the entire site.

2.3.2 Burrowing Owl

The site is within the MSHCP Burrowing Owl Survey Area. Winter season burrowing owl surveys were conducted in early 2005, and breeding season burrowing owl surveys were conducted in June 2005 (HELIX 2005), April-May 2007 (HELIX 2007), and in August 2008 (HELIX 2008; Appendix A). The 2005 surveys were conducted in accordance with CDFW field protocol (CDFW 1995); 2007 and 2008 surveys were conducted according to MSHCP Burrowing Owl Survey Guidelines (County 2006). The survey area consisted of the entire project site where potential habitat for owls existed. The biologists walked slowly and methodically along transects no farther than 30 meters apart on all potential burrowing habitat that occurs on site and closely checked areas that met basic owl habitat requirements. All burrows were inspected for indications of recent owl occupation. A 500-foot-wide buffer zone was surveyed visually where potential burrowing owl habitat bordered the property. Detailed information on the 2008 survey times, dates, and conditions are included in Appendix A.

2.3.3 Riparian/Riverine and Vernal Pool Assessment

In January and February 2005, HELIX biologists W. Larry Sward and Stacy Nigro conducted a thorough search on the San Gorgonio Crossings property for Riparian/Riverine and vernal pool habitats in accordance with MSHCP Section 6.1.2. An updated assessment was conducted by Mr. Sward on September 17, 2012. Areas were assessed to determine whether Riparian/Riverine or vernal pool habitats are present on site, consistent with Section 6.1.2 of the MSHCP. The Riparian/Riverine and vernal pool assessment was conducted according to the following MSHCP definitions:

- Riparian/Riverine areas are lands that contain habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens, which occur close to or depend upon soil moisture from a nearby freshwater source; or areas with freshwater flow during all or a portion of the year; and

- Vernal pools are seasonal wetlands that occur in depression areas that have wetland indicators of all 3 parameters (soils, vegetation, and hydrology) during the wetter portion of the growing season but normally lack wetland indicators of hydrology and/or vegetation during the drier portion of the growing season. Obligate hydrophytes and facultative wetlands plant species are normally dominant during the wetter portion of the growing season, while upland species (annuals) may be dominant during the drier portion of the growing season. The determination that an area exhibits vernal pool characteristics and the definition of the watershed supporting vernal pool hydrology must be made on a case-by-case basis. Such determinations should consider the length of time the area exhibits upland and wetland characteristics and the manner in which the area fits into the

overall ecological system as a wetland. Evidence concerning the persistence of an area's wetness can be obtained from its history, vegetation, soils, drainage characteristics, uses to which it has been subjected, and weather and hydrologic records.

2.3.4 Jurisdictional Delineation

Prior to beginning fieldwork, recent aerial photographs (1"=300' scale), topographic maps (1"=300' scale), and USGS topographical maps were reviewed to determine the location of potential jurisdictional areas that may be affected by the project. Data were collected in areas that were suspected to be jurisdictional habitats on January 27 and February 8, 2005 by Mr. Sward and Ms. Nigro (HELIX 2009a). This delineation was updated in 2009 based on a 2008 site visit with U.S. Army Corps of Engineers (USACE) and Regional Water Quality Control Board (RWQCB) personnel and subsequent field work in November 2008 (HELIX 2009a). An updated assessment was conducted by Mr. Sward on September 17, 2012.

USACE wetland boundaries were determined using the 3 criteria (vegetation, hydrology, and soils) established for wetland delineations as described within the Wetlands Delineation Manual (Environmental Laboratory 1987) and Arid West Regional Supplement (USACE 2006).

The jurisdictional results are also consistent with recent court decisions (i.e., Rapanos v. United States, *Carabell v. United States*, and *Solid Waste Agency of Northern Cook County [SWANCC] v. USACE*) as outlined and applied by the USACE (2007; Fabricant and Morello 2003; Grumbles and Woodley 2007), USACE and U.S. Environmental Protection Agency (EPA; 2007), and EPA and USACE (2007). These publications explain that the EPA and USACE will assert jurisdiction over traditional navigable waters (TNWs) and tributaries to TNWs that are a relatively permanent water body (RPW). An RPW has year-round or continuous seasonal flow. For water bodies that are not RPWs, a significant nexus evaluation must be conducted to determine whether the non-RPW is jurisdictional. An overview of USACE wetlands and jurisdictional Waters of the U.S. (WUS) definitions is presented in Appendix B.

Plants were identified according to The Jepson Manual: Higher Plants of California (Hickman, ed. 1993). Wetland affiliations of plant species follow the U.S. Fish and Wildlife Service's (USFWS's) National List of Plant Species that Occur in Wetlands: California (Reed 1988). Soils information was taken from the Soil Survey of the Western Riverside Area, California (Knecht 1971) and Hydric Soil Lists (U.S. Department of Agriculture [USDA] 1992). Soil chromas were identified according to Munsell's Soil Color Charts (Kollmorgen 1994).

All areas with depressions, drainage channels, or wetland vegetation were evaluated for the presence of WUS, including jurisdictional wetlands. Areas were mapped as wetlands, non-wetland WUS, or uplands according to USACE policies and procedures. Areas were determined to be non-wetland WUS if there was evidence of regular surface flow (e.g., bed and bank) but vegetation or soils criterion was not met. Jurisdictional limits for these areas were defined by the ordinary high water mark (OHWM), mapped, and the surrounding vegetation noted.

CDFW jurisdictional boundaries were determined based on the presence of riparian vegetation or regular surface flow. Streambeds within CDFW jurisdiction were delineated based on the definition of streambed as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports riparian vegetation" (Title 14, Section 1.72). Riparian habitat is not defined in Title 14, but the quoted section refers to vegetation and habitat associated with a stream. The CDFW jurisdictional habitat includes all riparian shrub or tree canopy that may extend beyond the banks of a stream.

2.4 NOMENCLATURE

Nomenclature used in this report follows the conventions used in the MSHCP. Vegetation community classifications follow the vegetation communities shown in Section 2.1.3 of the MSHCP (Dudek 2003) and Holland (1986). Latin names of plants follow Hickman, ed. (1993), while common names follow Hickman or the CNPS (2009). Sensitive plant status follows the CNDDB (CDFW 2011 and 2012). Animal nomenclature used in this report is taken from Collins and Taggert (2009) for amphibians and reptiles, the American Ornithologists' Union (2008) for birds, and Baker *et al*. (2003) for mammals. Sensitive animal status follows the CNDDB (CDFW 2009a).

2.5 SURVEY LIMITATIONS

All field surveys were conducted during the daytime, which significantly reduces the likelihood of detecting nocturnal mammals such as rodents and bobcats, and some nocturnal reptiles. No small mammal trapping or focused reptile surveys were conducted and these species tend to be under sampled.

3.0 RESULTS

3.1 VEGETATION COMMUNITIES

Eight vegetation communities are mapped on the San Gorgonio Crossings: mule fat scrub, Riversidean sage scrub, Riversidean-Diegan coastal sage scrub (including disturbed), coastal sage-chaparral scrub (including disturbed), scrub oak chaparral (including disturbed), exotic habitat (eucalyptus woodland), non-native grassland, and disturbed habitat (Figure 4; Table 2). Developed areas along Cherry Valley Boulevard occur within off-site impact areas.

Project Boundary
Study Area
Off-site Study Area

Sensitive Species

Am Yucaipa Onion (*Allium marvinii*)

Vegetation

- Riversidian Sage Scrub
- Riversidian - Diegan Coastal Sage Scrub
- Riversidian - Diegan Coastal Sage Scrub - Dist
- Coastal Sage - Chaparral Scrub
- Coastal Sage - Chaparral Scrub - Disturbed
- Scrub Oak Chaparral
- Scrub Oak Chaparral - Disturbed
- Mule Fat Scrub
- Non-native Grassland
- Eucalyptus Woodland
- Disturbed Habitat
- Pasture
- Developed

Am

Cherry Valley Boulevard

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Vegetation Map

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

0 400 Feet

Figure 4

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Table 2 EXISTING VEGETATION COMMUNITIES		
VEGETATION COMMUNITIES	**ACRE(S)***	
	On site	**Off site+**
Mule fat scrub	0.06	0
Riversidean sage scrub	7.7	0.1
Riversidean-Diegan coastal sage scrub (including disturbed)	27.9	0.2
Coastal sage-chaparral scrub (including disturbed)	0.5	0
Scrub oak chaparral (including disturbed)	12.7	0
Non-native grassland	174.1	9.6
Eucalyptus woodland	0.6	0
Disturbed habitat	6.3	1.4
Pasture	0	1.3
Developed	0	0.9
TOTAL	**229.87**	**13.6**

*Acre(s) are rounded to the nearest 0.1, except for acre(s) under 0.1, which are rounded to the nearest 0.01; thus, totals reflect rounding. Acreages include off-site improvement areas.

+Includes impact acreages only

3.1.1 Mule Fat Scrub

Mule fat scrub is a depauperate, shrubby riparian scrub community dominated by mule fat (*Baccharis salicifolia*) and interspersed with shrubby willows (*Salix* spp.). This habitat generally occurs along intermittent stream channels with a fairly coarse substrate and moderate depth to the water table (Holland 1986). It consists of a small (0.06 acre), isolated stand in the southeastern corner of the site.

3.1.2 Riversidean Sage Scrub

Riversidean sage scrub occupies xeric sites such as steep slopes, severely drained soils, or clays that slowly release stored soil moisture. It is dominated by sub-shrubs with leaves that are deciduous during drought, an adaptation that allows the habitat to withstand the prolonged drought period in the summer and fall. Sage scrub species have relatively shallow root systems and open canopies that allow for the occurrence of a substantial herbaceous (annual plant) component. Typical stands are fairly open and dominated by species such as coastal sagebrush (*Artemisia californica*), brittlebush (*Encelia farinosa*), and flat-topped buckwheat (*Eriogonum fasciculatum*; Holland 1986). This habitat type occurs mainly in the eastern portions of the site and is dominated by brittlebush, rosemary flat-topped buckwheat (*Eriogonum fasciculatum* ssp. *polifolium*), and coastal sagebrush. Other species present include deerweed (*Lotus scoparius*), filarees (*Erodium* spp.), black and white sage (*Salvia mellifera* and *S. apiana*), California buckwheat (*Eriogonum fasciculatum* ssp. *fasciculatum*), and non-native grasses. A total of 7.7 acres of this habitat occurs on the site, and an additional 0.1 acre occurs in the offsite impact area.

3.1.3 Riversidean-Diegan Coastal Sage Scrub (including disturbed)

This habitat type is a mix of both Riversidean and Diegan coastal sage scrubs, both of which occupy low-moisture sites and are dominated by drought-deciduous sub-shrubs (Holland 1986). This habitat type is found mainly in the central portions of the site and totals approximately 27.9 acres. It is generally taller and comprised of greater percentages of coastal sagebrush and flat-topped buckwheat than the pure Riversidean sage scrub habitat. Other species present include California encelia (*Encelia californica*), black sage, deerweed, and non-native grasses. Disturbed portions totaling approximately 10.2 acres consist of sparse shrub cover and a high percentage of non-native grasses and forbs. An additional 0.2 acre of Riversidean-Diegan coastal sage scrub occurs within the off-site impact area.

3.1.4 Coastal Sage-Chaparral Scrub (including disturbed)

Areas of shrub habitat occur on site that contain a mix of sage scrub and chaparral species. Three small pockets of this habitat type totaling 0.3 acre occur in the northern portion of the site and consist of chamise (*Adenostoma fasciculatum*), coastal sagebrush, black sage, and various grasses. A 0.2-acre patch of disturbed coastal sage-chaparral scrub occurs in the north-central portion of the property.

3.1.5 Scrub Oak Chaparral (including disturbed)

Scrub oak chaparral is a dense evergreen chaparral that can grow to 20 feet tall. It is dominated by scrub oak (*Quercus berberidifolia*) at this location. Most of the scrub oak chaparral on site is fairly open, and numerous trees exhibit stress, possibly from past drought conditions; these areas of sparse shrubs were identified as disturbed. This habitat is found on the slope adjacent to Cherry Valley Boulevard and other slopes throughout the site. Approximately 2.9 acres of scrub oak chaparral and 9.8 acres of disturbed scrub oak chaparral occur on the site. Species occurring include scrub oak, spiny redberry (*Rhamnus crocea*), sugar bush (*Rhus ovata*), miner's lettuce (*Claytonia perfoliata*), fiesta flower (*Pholistoma racemosum*), black sage, American bowlesia (*Bowlesia incana*), and wild cucumber (*Marah macrocarpa*).

3.1.6 Non-native Grassland

Non-native grassland contains annual grasses of varying cover and is often associated with showy-flowered, native annual forbs. This association occurs on gradual slopes with deep, fine-textured, usually clay soils (Holland 1986). This is the dominant habitat type on site and in the off-site grading areas, totaling 174.1 acres. Species present include ripgut grass (*Bromus diandrus*), foxtail chess (*B. madritensis* ssp. *rubens*), Mediterranean grass (*Schismus barbatus*), rancher's fiddleneck (*Amsinckia intermedia*), horehound (*Marrubium vulgare*), and filaree. An additional 9.6 acres of non-native grassland occurs within the off-site impact area.

3.1.7 Exotic Habitat (Eucalyptus Woodland)

Eucalyptus woodlands were first established in California in the late 1800s and have since been planted extensively for wind blocks, ornamentals, and hardwood production. Most groves are

monotypic, with the most common species being either blue gum (*Eucalyptus globulus*) or red gum (*E. globulus*) eucalyptus. The understory within well-established groves is usually very sparse due to the closed canopy and allelopathic nature of the leaf litter. As a wildlife habitat, these woodlands provide excellent nesting sites for a variety of raptors, including golden eagles. During winter migrations, a large variety of warblers may be found feeding on the insects attracted to eucalyptus flowers. The sparse understory offers only limited wildlife habitats. This habitat occurs on site as 2 stands in the northwestern portion of the property and totals approximately 0.6 acre.

3.1.8 Disturbed Habitat

Disturbed habitat includes unvegetated or sparsely vegetated areas, particularly where the soil has been heavily compacted by either vehicles (roads) or prior development, or where agricultural lands have been abandoned. Disturbed habitat is generally dominated by non-native weedy species that adapt to frequent disturbance or consists of dirt trails and roads, as is the case on site. Disturbed habitat on site totals approximately 6.3 acres. An additional 1.4 acre of disturbed habitat occurs within the off-site impact area.

3.1.9 Pasture

Pasture land is land that is actively maintained for raising of livestock. It generally supports non-native grasses and forms suitable for livestock grazing. Pasture occurs offsite to the east, and totals 1.3 acres within the offsite impact area.

3.1.10 Developed Land

Approximately 0.9 acre of developed land consisting of the existing Cherry Valley Road occurs within the off-site impact area.

3.2 JURISDICTIONAL AREAS

3.2.1 USACE Jurisdictional Areas

Areas under USACE jurisdiction occur as several segments of non-wetland WUS, including 2 major drainages that traverse the site from east to west (Drainages A and B; Figure 5). The other drainages on site are tributaries to these main drainages. All USACE drainages are ephemeral. A total of 0.46 acre of USACE jurisdictional WUS occurs on site.

3.2.2 CDFW Jurisdictional Areas

Areas under CDFW jurisdiction exist in the same areas as those that are USACE jurisdictional (Figure 6), but are slightly wider. Approximately 1.37 acres of the CDFW drainages are ephemeral, while an additional 0.04 acre is considered disturbed wetland.

3.2.3 Riparian/Riverine Areas

All of the CDFW jurisdictional streambeds are also considered Riverine under the MSHCP. Two small areas of disturbed wetland are considered Riparian under Section 6.1.2 of the MSHCP.

3.3 PLANT SPECIES

A total of 60 plant species were observed during the surveys conducted by HELIX. A list of plant species observed is included in Appendix C.

3.4 ANIMAL SPECIES

A total of 74 animal species were observed during the surveys conducted by HELIX. A list of animals observed or detected is included in Appendix D. All of the animal species were identified by direct observation or vocalizations, the presence of scat and/or tracks, or other signs.

3.5 SENSITIVE RESOURCES

Sensitive resources are those defined as (1) habitat areas or vegetation communities that are unique, of relatively limited distribution, or of particular value to wildlife; and (2) species that have been given special recognition by federal, state, or local government agencies and organizations as a result of limited, declining, or threatened populations.

3.5.1 Sensitive Vegetation Communities

Sensitive vegetation communities on the San Gorgonio Crossings project site include mule fat scrub, Riversidean sage scrub, Riversidean-Diegan coastal sage scrub (including disturbed), coastal sage-chaparral scrub (including disturbed), scrub oak chaparral (including disturbed), and non-native grassland.

3.5.2 Sensitive Plant Species

One sensitive plant species, Yucaipa onion was observed on site

Yucaipa onion (*Allium marvinii*)
Status: --/-- CNPS List 1B, MSHCP covered.
Distribution: Previously only know from 2 other locations in California. Recently additional populations have been discovered within the MSHCP conservation area.
Habitat: clay soils in chaparral or sage scrub habitat.
Status on site: A total of 20 bulb clusters with 91 flowering heads were observed on site. The entire population of Yucaipa onion observed on the property is within an approximately 200 square foot area in the northeast corner of the property outside of the proposed impact area.

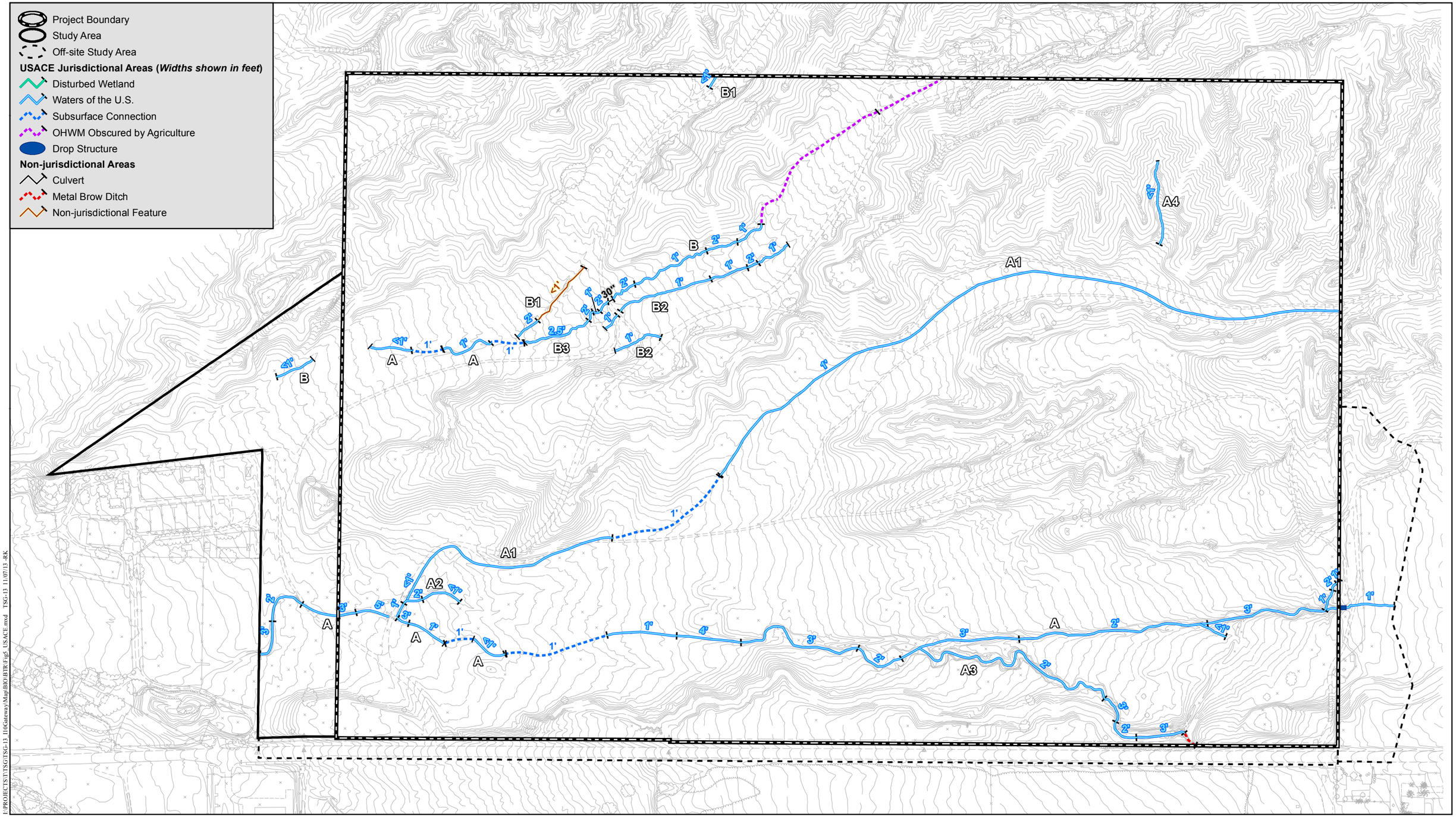
Project Boundary
Study Area
Off-site Study Area

USACE Jurisdictional Areas (*Widths shown in feet*)

Disturbed Wetland
Waters of the U.S.
Subsurface Connection
OHWM Obscured by Agriculture
Drop Structure

Non-jurisdictional Areas

Culvert
Metal Brow Ditch
Non-jurisdictional Feature



USACE Jurisdictional Areas

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

0 350 Feet

Figure 5

CVAR_09413

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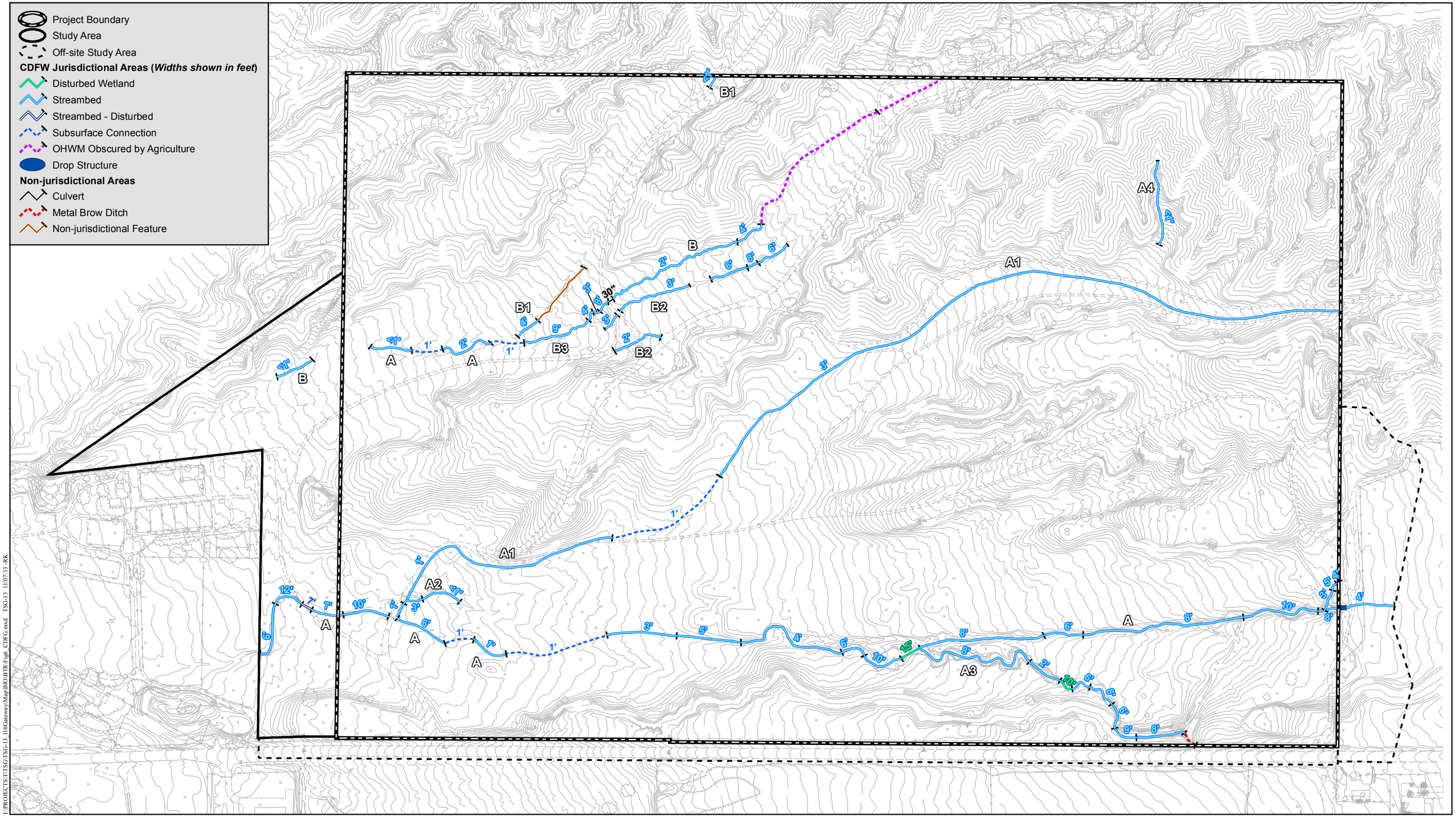

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CDFW Jurisdictional Areas

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

0 350 Feet

Figure 6

CVAR_09414

Sensitive Plant Species with Potential to Occur

Listed or sensitive plant species not observed during project-related site visits but are known to occur in the vicinity or may have potential to occur on site are described in Table 3. The list below also includes the MSHCP NEPSSA Area 8 plant species. Many of these species have specific habitat requirements that do not occur on the property. Species are listed by status and alphabetized (by scientific name) where status is the same. A key of the status codes presented can be found in Appendix E.

Table 3
LISTED OR SENSITIVE PLANT SPECIES WITH POTENTIAL TO OCCUR

SPECIES NAME	STATUS*	POTENTIAL TO OCCUR
Slender-horned spineflower (*Dodecahema leptoceras*)	FE/SE CNPS List 1B.1 MSHCP Covered	Not expected to low. Habitat of chaparral, woodland, and sage scrub with sandy soil does occur on site. Not observed on site during sensitive plant or other surveys conducted on site. This is an MSHCP covered species. Property not in MSHCP plant survey area for this species.
San Jacinto Valley crownscale (*Atriplex coronata* var. *notatior*)	FE/-- CNPS List 1B.1 MSHCP Covered	Not expected. Occurs in association with vernal pools, alkali scrub, and playas that are not present on site. Not observed during rare plant survey.
Yucaipa onion (*Allium marvinii*)	--/-- CNPS List 1B.1 MSHCP Covered	Present. A small population was observed in the northeast corner of the property, outside the impact area.
many-stemmed dudleya (*Dudleya multicaulis*)	--/-- CNPS List 1B MSHCP Covered	Not expected. Clay soils in barren, rocky areas with limited vegetation. Not observed during focused rare plant survey. Property does contain suitable habitat.
Smooth tarplant (*Centromadia pungens* ssp.*laevis*)	--/-- CNPS List 1B.1 MSHCP Covered	Not expected. Occurs in alkali soil habitats that are not present on the property. Not observed during rare plant or other survey of property; species is conspicuous and would have been seen if present.
Parry's spineflower (*Chorizanthe parryi* var. *parryi*)	--/-- CNPS List 1B.1 MSHCP Covered	Low. Prefers alluvial habitats of sage scrub and chaparral that are limited on site. Was not observed during the rare plant survey.

Table 3 (cont.) **LISTED OR SENSITIVE PLANT SPECIES WITH POTENTIAL TO OCCUR**		
SPECIES NAME	**STATUS***	**POTENTIAL TO OCCUR**
San Bernardino aster (*Symphyotrichum defoliatum*)	--/-- CNPS List 1B.2	Not expected. Primary habitat is vernal pools and ditches in areas that once supported vernal pools that are not present on site. Not observed during rare plant survey.
Plummer's mariposa-lily (*Calochortus plummerae*)	--/-- CNPS List 4.2 MSHCP Covered	Low. Chaparral, sage scrub, and grassland habitat present, along with rocky and granitic soils. Species not observed during rare plant survey.

*Refer to Appendix E for a listing and explanation of status and sensitivity codes.

3.5.3 Sensitive Animal Species

No threatened or endangered animal species were observed on the San Gorgonio Crossings property.

Three MSHCP covered species were observed/detected on the San Gorgonio Crossings property: orange-throated whiptail (*Cnemidophorus hyperythrus beldingi*), northern harrier (*Circus cyaneus*), and Bell's sage sparrow (*Amphispiza belli belli*). Belding's orange-throated whiptail and Northern harrier are state species of concern and Bell's sage sparrow is a USFWS bird of conservation concern and a CDFW watch list species. None of the 3 species are state or federally listed.

Belding's orange-throated whiptail (*Cnemidophorus hyperythrus beldingi*)
Status: --/SSC, MSHCP Covered
Distribution: Southern Orange County and southern San Bernardino County, south through Baja California
Habitat: Coastal sage scrub, chaparral, edges of riparian woodlands, and washes. Also found in weedy, disturbed areas adjacent to these habitats. Important habitat requirements include open, sunny areas, shaded areas, and abundant insect prey base, particularly termites (*Reticulitermes* sp.).
Status on site: Observed along disturbed sage scrub in northeastern portion of property.

Northern harrier (*Circus cyaneus*)
Listing: Nesting; --/SSC; Fully Protected; MSHCP Covered
Distribution: Widespread throughout temperate regions of North America and Eurasia. Winters and migrates throughout California from below sea level in Death Valley to an elevation of 9,800 feet.
Habitat: Coastal, salt, and freshwater marshlands; grasslands and prairies
Status on site: Observed flying over field on western portion of property.

Bell's sage sparrow (*Amphispiza belli belli*)
Status: USFWS BCC, CDFW WL:MSHCP Covered
Distribution: Patchy distribution throughout Southern California, which often shifts to include partially recovered burned areas. Populations are often clumped, but species no longer observed in most coastal areas.
Habitat(s): Chaparral and sage scrub with modest leaf-litter on the ground (e.g., after a fire or in gabbro-based soil areas)
Status on site: Observed in sage scrub on north and eastern portions of property.

Sensitive Animals with Potential to Occur

A list of sensitive animal species not observed on the San Gorgonio Crossings project impact area but that are known to occur in the vicinity is provided in Table 4. Species requiring habitat assessments and/or surveys under the MSHCP are also included in Table 4. Species are grouped into invertebrates and vertebrates (amphibians, reptiles, birds and mammals), listed by status, and alphabetized (by scientific name) where status is the same.

Table 4
LISTED OR SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR

SPECIES NAME	STATUS*	POTENTIAL TO OCCUR
INVERTEBRATES		
Vernal pool fairy shrimp (*Branchinecta lynchi*)	FT/-- MSHCP Covered	Not expected. No vernal pool or seasonal pond habitat present on site.
Santa Rosa Plateau fairy shrimp (*Linderiella santarosae*)	--/-- MSHCP Covered	Not expected. No vernal pool or seasonal pond habitat present on site.
Riverside fairy shrimp (*Streptocephalus woottoni*)	FE/-- MSHCP Covered	Not expected. No vernal pool or seasonal pond habitat present on site.

Table 4 (cont.) **LISTED OR SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR**		
SPECIES NAME	**STATUS***	**POTENTIAL TO OCCUR**
VERTEBRATES		
Amphibian		
Western spadefoot (*Spea hammondii*)	--/SSC MSHCP Covered	Low. Habitat of sandy and gravelly soils is present, but breeding pool habitat is not present on site.
Reptiles		
Red-diamond rattlesnake (*Crotalus ruber*)	--/SSC MSHCP Covered	Low to moderate. Prefers chaparral and coastal sage scrub along creek banks, particularly among rock outcrops, cacti, or debris piles with a supply of burrowing rodents for prey. Habitat occurs on site; rock outcrops and cacti limited on site.
coast horned lizard (*Phrynosoma blainvillii*)	--/SSC MSHCP Covered	Moderate. Preferred prey species (harvester ants) and preferred habitat (open sage scrub) both occur on site. Potential impacts to species are covered under the MSHCP.
Birds		
Least Bell's vireo (*Vireo bellii pusillus*)	FE/SE MSHCP Covered	Not expected. Suitable riparian habitat with developed canopy and understory not present on site.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	FE/SE MSHCP Covered	Not expected. Occurs in mature riparian woodland habitat, which is not present on site.
Coastal California gnatcatcher (*Polioptila californica californica*)	FT/SSC MSHCP Covered	Low. Habitat (coastal sage scrub) occurs on site but species not heard or observed during the multiple surveys that occurred during the species' breeding season.
Burrowing owl (*Athene cunicularia*)	--/SSC MSHCP Covered	Low. Grassland and sparse sage scrub habitat present. Surveys over multiple years, all negative.
Cooper's hawk (*Accipiter cooperii*)	--/SSC MSHCP Covered	Low. Woodland habitat required for breeding not present on site. Foraging habitat is present.
Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	--/SSC MSHCP Covered	Moderate. Coastal sage scrub habitat is present. Much of habitat disturbed and/or affected by recent fires.

Table 4 (cont.) **LISTED OR SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR**		
SPECIES NAME	**STATUS***	**POTENTIAL TO OCCUR**
VERTEBRATES (cont.)		
Birds (cont.)		
California horned lark (*Eremophila alpestris actia*)	--/-- MSHCP Covered	Not Expected. Prefers open plains with sparse vegetation and plowed fields of bare dirt, which are limited on site.
Tri-colored blackbird (*Agelaius tricolor*)	--/SSC MSHCP Covered	Not expected. Preferred habitat of reeds for breeding does not occur on site.
White-faced ibis (*Plegadis chihi*)	--/SSC MSHCP Covered	Not expected. Species prefers wetlands and ponds that are not present on site.
Mammals		
Stephens' kangaroo rat (*Dipodomys stephensi*)	FE/ST MSHCP Covered	Low. Habitat (open Riversidean sage scrub) occurs on site although at limits of this species' range.
Northwestern San Diego pocket mouse (*Chaetopdipus fallax fallax*)	--/SSC MSHCP Covered	Moderate. Habitat (coastal sage scrub and grassland) occurs on site. Potential impacts to species covered under MSHCP.
Los Angeles pocket mouse (*Perognathus longimembris brevinasus*)	--/SSC MSHCP Covered	Not expected. Habitat of open ground with loose sandy soils on site. Potential impacts to species covered under MSHCP.
San Diego Black-tailed jackrabbit (*Lepus californicus bennettii*)	--/-- MSHCP Covered	Low. Prefers brushy habitat in mountains and canyons that is present on the northeastern portion of the property. Species not observed during the multiple survey conducted on site.
Southern grasshopper mouse (*Onychomys torridus Ramona*)	--/SSC	Low. Prefers low lying arid sage scrub habitat that is limited on site, site is not within current known range.

*Refer to Appendix E for a listing and explanation of status and sensitivity codes.

4.0 REGIONAL AND REGULATORY CONTEXT

4.1 MULTIPLE SPECIES HABITAT CONSERVATION PLAN

The proposed project area is included in the MSHCP, which is a comprehensive multi-jurisdictional effort that includes Riverside County and multiple cities, including the unincorporated community of Cherry Valley. Rather than addressing sensitive species on an individual basis, the MSHCP focuses on conservation of 146 species, including those listed at federal and state levels and those that could become listed in the future. The MSHCP proposes a Reserve system of approximately 500,000 acres, of which 347,000 acres are currently within public ownership and 153,000 acres will need to be assembled from lands currently in private ownership. The MSHCP allows the County and other permittees to issue take permits for listed species so that applicants need not seek endangered species incidental take authorization from the USFWS and CDFW.

On June 17, 2003, the County Board of Supervisors adopted the MSHCP, certified its Environmental Impact Report/Environmental Impact Statement (EIR/EIS), and authorized the board chairman to sign the Implementing Agreement. The Incidental Take Permit was issued by the wildlife agencies on June 22, 2004. The County is a Permittee under the MSHCP.

4.1.1 Reserve Configuration Objectives

Regions of the MSHCP have been organized into Area Plans that mostly coincide with logical political boundaries, including city limits or long-standing unincorporated communities. The project is within the Pass Area Plan but lies entirely outside of any Criteria Cells, Public Quasi Public (PQP), or other MSHCP-targeted Conservation Area. MSHCP Criteria Cells occur approximately 0.5 mile north of the property and 1.5 miles to the south. The Pass Area Plan has a target conservation acreage of 22,510 to 27,895 acres, of which 13,970 is existing PQP land and the remainder is anticipated to be conserved within the city limits of Banning, Calimesa, and Beaumont. The San Gorgonio Crossings project site does not occur within existing or proposed Cores and Linkages of the Pass Area Plan. The MSHCP Reserve configuration does not include conservation of lands that occur on the project site, and, therefore, the project consistent with reserve configuration objectives of the MSHCP.

4.1.2 Covered Species Survey and Conservation Requirements

For certain MSHCP-covered species, adequate information was not available at the time the plan was prepared to ensure that appropriate conservation would occur. As a result, surveys are required for these plant and animal species under MSHCP Sections 6.1.2, 6.1.3, and 6.3.2. For applicable species, site-specific focused surveys are required to be conducted on projects within designated survey areas where appropriate habitat is present. Where survey results are positive, projects with potential to affect species are subject to avoidance, minimization, and mitigation strategies.

As noted earlier, the proposed project site is within a NEPSSA area for 2 plant species: many-stemmed dudleya and Yucaipa onion. Because some habitat for these species does exist

on site, a rare plant survey was conducted. A total of 20 bulb clusters of Yucaipa onion with 91 flowering heads were observed on site. The entire population of Yucaipa onion observed on the property is within an approximately 200 square foot area in the northeast corner of the property outside of the proposed impact area. No other NEPSSA, federal or state-listed, or sensitive plant species were observed during the rare plant survey or during other surveys conducted on the property.

The San Gorgonio Crossings parcel is not within any designated survey area for any mammal or amphibian species. The project is not within a Criteria Area Species Survey Area (CASSA) survey area. The project is within the survey area for burrowing owl. Because habitat for this species does exist on site, focused surveys were conducted but no burrowing owls were observed.

Presence/absence surveys are required within 30 days prior to disturbance where suitable habitat is present. Take of active nests must be avoided; passive relocation must be conducted when owls are present outside the nesting season.

For species that primarily inhabit Riparian/Riverine habitats, conservation is dependent on ensuring that habitat function and value are maintained. If mapping identifies suitable habitat for Riparian/Riverine covered species (i.e., least Bell's vireo [*Vireo bellii pusillus*], southwestern willow flycatcher [*Empidonax traillii extimus*], western yellow-billed cuckoo [*Coccyzus americanus occidentalis*], Riverside fairy shrimp [*Streptocephalus woottoni*], Santa Rosa Plateau fairy shrimp [*Linderiella santarosae*], and vernal pool fairy shrimp [*Branchinecta lynchi*]) and these habitats will be affected, then focused surveys for these species are required. Three ephemeral drainages cross the project site. The drainages do not comprise habitat with potential to support the above species; therefore, focused surveys for the above species are not required. The drainages are categorized as Riparian/Riverine under the MSHCP due to the potential to support downstream sensitive resources.

Because the proposed project would result in impacts to Riparian/Riverine resources, a Determination of Biologically Equivalent or Superior Preservation (DBESP) analysis must be prepared to be consistent with Section 6.1.2. The DBESP, which is being prepared concurrently with this report, will describe mitigation that will be equal or superior with respect to the functions and values of the drainages proposed to be impacted.

4.2 FEDERAL GOVERNMENT

Administered by the USFWS, the federal Endangered Species Act (ESA) provides the legal framework for the listing and protection of species (and their habitats) identified as being threatened with extinction or endangered. Section 10(a) of ESA regulates actions that could jeopardize threatened or endangered species and allows issuance of permits for "incidental" take of such species. The term "incidental" applies if the taking of a listed species is incidental to and not the purpose of an otherwise lawful activity. The MSHCP has been issued under this section and provides incidental take for all covered species.

Nesting raptors (such as northern harriers, red-tailed hawks, and burrowing owls) and other migratory birds are protected under the federal Migratory Bird Treaty Act (MBTA). This law is generally protective of migratory birds but does not actually stipulate the type of protection required. In common practice, the USFWS places restrictions on disturbances allowed near active migratory bird nests.

Federal wetland regulation (non-marine issues) is guided by the Rivers and Harbors Act of 1899 and Clean Water Act. The Rivers and Harbors Act deals primarily with discharges into navigable waters, while the purpose of the Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of all WUS. Impacts to wetland WUS (including disturbed wetlands and vernal pools) are regulated by the USACE under Section 404 of the Clean Water Act (33 United States Code [U.S.C.] 401 et seq.; 33 U.S.C. 1344; U.S.C. 1413; and Department of Defense, Department of the Army, Corps of Engineers 33 Code of Federal Regulations [CFR] Part 323). A federal Clean Water Act Section 404 Permit would be required for the project to place fill in wetland WUS. Impacts to less than 0.50 acre of wetland WUS would be processed with a Nationwide Permit, while impacts equal to or greater than 0.50 acre would require an Individual Permit. A Clean Water Act Section 401 Water Quality Certification, which is administered by the State Water Resources Control Board, must be issued prior to any 404 Permit. Because there are USACE jurisdictional features on site, a 404 Permit will be required.

4.3 STATE OF CALIFORNIA

The California ESA is similar to the federal ESA in that it contains a process for listing of species and regulating potential impacts to listed species. Section 2081 of the California ESA authorizes the CDFW to enter into a memorandum of agreement for take of listed species for scientific, educational, or management purposes. The MSHCP has been issued under this section.

The Native Plant Protection Act (NPPA) enacted a process by which plants are listed as rare or endangered. The NPPA regulates collection, transport, and commerce in plants that are listed. The California ESA follows the NPPA and covers both plants and animals determined to be threatened with extinction or endangered. Plants listed as rare under the NPPA are designated as threatened under the California ESA. No plants listed under the California ESA occur on the San Gorgonio Crossings project site.

The California Fish and Game Code (Sections 1600 et seq.) requires an agreement between the project applicant and CDFW for projects affecting riparian and wetland habitats through issuance of a Streambed Alteration Agreement (SAA). It is assumed that the project will require a 1602 SAA from the CDFW.

4.4 ADDITIONAL REGULATORY CONSIDERATIONS

The San Gorgonio Crossings project site does not fall within the Stephens' kangaroo rat (*Dipodomys stephensi*; SKR) fee area outlined in the Riverside County SKR Habitat Conservation Plan (HCP; County 1996). The proposed project is not subject to the SKR fee.

5.0 IMPACTS

This section describes potential direct and indirect impacts associated with the proposed project. Direct impacts immediately alter the affected biological resources such that those resources are eliminated temporarily or permanently. Indirect impacts consist of secondary effects of a project, including noise, decreased water quality (e.g., through sedimentation, urban contaminants, or fuel release), fugitive dust, colonization of non-native plant species, animal behavioral changes, and night lighting. The magnitude of an indirect impact can be the same as a direct impact; however, the effect usually takes a longer time to become apparent.

5.1 DIRECT IMPACTS

5.1.1 Vegetation Communities/Habitats

The proposed project would impact 145.6 acres on the San Gorgonio Crossings property on site, and an additional 13.5 acres off site (Figure 7). Impacts to mule fat scrub, Riversidean sage scrub, Riversidean-Diegan coastal sage scrub (including disturbed), coastal sage-chaparral scrub (including disturbed), scrub oak chaparral (including disturbed), and non-native grassland are considered significant. Refer to Table 5 for a summary of vegetation community impacts.

Table 5
VEGETATION COMMUNITY IMPACTS*

VEGETATION COMMUNITY	ACRE(S)*+	IMPACTS+	OPEN SPACE/ NOT IMPACTED
Mule fat scrub	0.06	0.06	0.0
Riversidean sage scrub	7.8	2.4	5.4
Riversidean-Diegan coastal sage scrub (including disturbed)	28.1	19.5	8.6
Coastal sage-chaparral scrub (including disturbed)	0.5	0	0.5
Scrub oak chaparral (including disturbed)	12.7	5.6	7.1
Non-native grassland	183.7	123.8	59.9
Eucalyptus woodland	0.6	0.2	0.4
Disturbed habitat	7.7	5.3	2.4
Pasture	1.3	1.3	0
Developed	0.9	0.9	0
TOTAL	**243.4**	**159.1**	**84.3**

*Acre(s) are rounded to the nearest 0.1, except for acre(s) under 0.1, which are rounded to the nearest 0.01; thus, totals reflect rounding.

+Includes off-site impact areas

5.1.2 Jurisdictional Areas

USACE Jurisdictional Areas

Direct impacts to USACE jurisdictional areas would result from development of the project. Impacts to USACE jurisdictional areas total 0.40 acre, all comprised of ephemeral drainage (Figure 8; Table 6). No impacts to USACE jurisdictional wetlands will occur. The impacts to the non-wetland ephemeral drainage are considered significant.

CDFW Jurisdictional Areas

Direct impacts to CDFW jurisdictional areas would result from development of the project. Impacts to CDFW jurisdictional areas resulting from proposed project implementation total 1.11 acres, comprised of 1.07 acres of streambed and 0.04 acre of disturbed wetland (Figure 9; Table 6). These impacts are considered significant.

Table 6
USACE AND CDFW JURISDICTIONAL AREA IMPACTS (acre)

JURISDICTIONAL AREA	USACE	CDFW
Ephemeral drainage/streambed	0.40	1.11
TOTAL	**0.40**	**1.11**

5.1.3 Sensitive Plant Species

The San Gorgonio Crossings project would not result in impacts to NEPSSA, listed, or sensitive plant species.

5.1.4 Sensitive Animal Species

No impacts to federal or state listed animal species will result from project implementation. Three MSHCP covered sensitive animal species (orange-throated whiptail, northern harrier, and Bell's sage sparrow) were observed or detected on site and would be directly impacted by the proposed project because their habitats would be adversely affected. Impacts to these species are not considered significant, as they are covered under the MSHCP.

Implementation of the proposed project would directly impact raptor foraging habitat. In addition, the eucalyptus trees on site have potential to support nesting raptor species such as the red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*B. lineatus*), or great-horned owl (*Bubo virginicus*), and there is potential to directly or indirectly impact raptor nests during construction. These impacts are considered adverse but not significant. Direct impacts to an active raptor nest are not allowed under the federal MBTA and direct take of active raptor nests would be considered significant.

Project Boundary
Study Area
Impact Area
Off-site Study Area

Sensitive Species

Am Yucaipa Onion (*Allium marvinii*)

Vegetation

- Riversidian Sage Scrub
- Riversidian - Diegan Coastal Sage Scrub
- Riversidian - Diegan Coastal Sage Scrub - Dist
- Coastal Sage - Chaparral Scrub
- Coastal Sage - Chaparral Scrub - Disturbed
- Scrub Oak Chaparral
- Scrub Oak Chaparral - Disturbed
- Mule Fat Scrub
- Non-native Grassland
- Eucalyptus Woodland
- Disturbed Habitat
- Pasture
- Developed

Am

Cherry Valley Boulevard

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Vegetation/Impacts

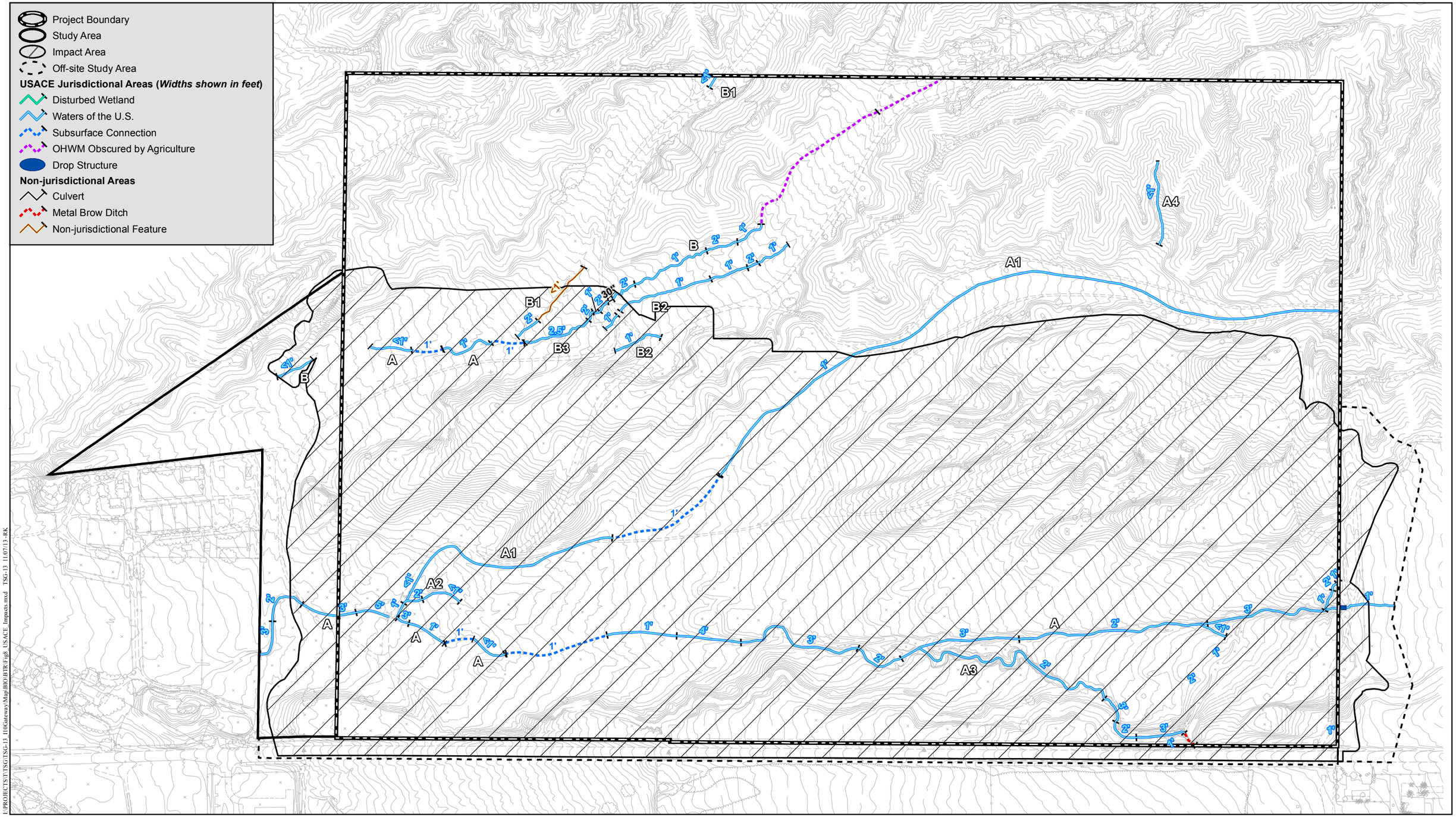
SAN GORGONIO CROSSINGS

Figure 7

HELIX Environmental Planning

N 0 350 Feet

CVAR_09425



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USACE Jurisdictional Areas/Impacts

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

0 350 Feet

Figure 8

CVAR_09426

Project Boundary
Study Area
Impact Area
Off-site Study Area

CDFW Jurisdictional Areas (*Widths shown in feet*)

Disturbed Wetland
Streambed
Streambed - Disturbed
Subsurface Connection
OHWM Obscured by Agriculture
Drop Structure

Non-jurisdictional Areas

Culvert
Metal Brow Ditch
Non-jurisdictional Feature

N
W E
S

350 175 0 350
Feet

Job No: TSG-13 Date: 09/16/13

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CDFW Jurisdictional Areas/Impacts

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

Figure 9

CVAR_09427

5.1.5 MSHCP Consistency

As described in Section 4, the San Gorgonio Crossings property lies outside of any Criteria Cells; therefore, the proposed project is not required to conserve habitat on site with respect to Criteria Cells.

MSHCP Section 6.1.2 focuses on protection of Riparian/Riverine and vernal pool habitat types. The proposed project will comply with the policies of Section 6.1.2 that protect species associated with vernal pools and Riparian/Riverine habitats. Vernal pools do not exist on the San Gorgonio Crossings project; therefore, vernal pool species do not occur.

The definition of Riparian/Riverine habitats is based on the potential for the habitat to support Riparian/Riverine covered species (i.e., least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo). The ephemeral drainages/streambed on site are not suitable for any of these species; however, the drainages have potential to support downstream Riparian/Riverine habitats and are, therefore, considered Riparian/Riverine habitats under the MSHCP.

Twenty-four plant species are identified in the MSHCP as potentially occurring in Riparian/Riverine and vernal pool habitats. Shrub and tree species such as California black walnut (*Juglans californica* var. *californica*), Engelmann oak (*Quercus engelmannii*), Coulter's matilija poppy (*Romneya coulteri*), and San Miguel savory (*Satureja chandleri*) would have been readily identifiable during project surveys but were not found on site. Several species, including spreading navarretia (*Navarretia fossalis*), California Orcutt grass (*Orcuttia californica*), prostrate navarretia (*Navarrettia prostrate*), San Diego button-celery (*Eryngium aristulatum* var. *parishii*), thread-leaved brodiaea (*Brodiaea filifolia*), fish's milkwort (*Polygala cornuta* var. *fishiae*), lemon lily (*Lilium parryi*), ocellated Humboldt lily (*L. humboldtii* ssp. *ocellatum*), Mojave tarplant (*Deinandra mohavensis*), Parish's meadowfoam (*Limnathes gracilis* var. *parishii*), and slender-horned spineflower (*Dodecahema leptoceras*), have distributions well outside of the study area. The remaining species have a distribution that includes the project area or occur in habitats found on site and are discussed in greater detail below. None of the 24 MSHCP Riparian/Riverine species was observed on the property.

The Santa Ana River woolly-star (*Eriastrum densifolium* spp. *sanctorum*) is found along the Santa Ana River in 2 locations and is restricted to open washes and early-successional alluvial fan scrub on open slopes above main watercourses, such as the Santa Ana River on fluvial deposits, where flooding and scouring occur at a frequency that allows the persistence of open shrublands. No appropriate habitat occurs on site for the Santa Ana River woolly-star.

Suitable habitat for Brand's phacelia (*Phacelia stellaris*) includes coastal dunes and/or coastal scrub in sandy openings, sandy benches, dunes, sandy washes, or flood plains of rivers at elevations between 0 and 1,200 feet. Brand's phacelia is known from 2 locations on sandy terraces along the Santa Ana River (at Fairmont Park and along a horse trail in the Santa Ana Wilderness Area along the Santa Ana River). Given the highly disturbed nature of the site, this species is not expected to occur.

Graceful tarplant (*Holocarpha virgata* ssp. *elongata*) occurs in chaparral, cismontane woodland, coastal sage scrub, and valley and foothill grasslands below 1,900 feet (CNPS 2007). This species would not be expected to occur on site because the site's elevation is higher than the known range for this species.

Mud nama (*Nama stenocarpum*) is restricted to muddy embankments of marshes and swamps and within lake margins and riverbanks (CNPS 2007). Three populations are known from Riverside County, with 2 occurring along the San Jacinto River (Dudek 2003). No appropriate habitat occurs on the project site.

Orcutt's brodiaea (*Brodiaea orcuttii*) occurs in clay soils in mesic native and non-native grasslands that often include vernal pools, as well as moist meadows and along stream courses at higher elevations (Reiser 2001; CNPS 2007). The core population in Riverside County is the Santa Rosa Plateau (Dudek 2003). No clay soils are present on site.

San Jacinto Valley crownscale (*Atriplex coronata* var. *notatior*) is restricted to grassland, playas, and vernal pools with alkali soils (Dudek 2003). This species typically occurs on the margins of areas subject to short-term inundation and does not develop in areas that support regular long-term ponding or flooding. No alkali soils or appropriate habitat occur on site.

Smooth tarplant (*Centromadia pungens*) is found in southwestern California and northwestern Baja California, Mexico (Baja) and occurs in San Bernardino, Riverside, and San Diego counties. This species occurs in a variety of habitats, including alkali scrub and playas, riparian woodland, watercourses, and grasslands with alkaline affinities (Dudek 2003; CNPS 2007). No alkali soils are present on site.

Vernal barley (*Hordeum intercedens*) occurs in grassland, vernal pools, and vernal playas and is restricted to clay and alkaline, silty-clay soils in Riverside County (Dudek 2003). Twelve populations are known from Riverside County along the San Jacinto River and Salt Creek. No appropriate soils occur on site.

Consistency with Section 6.1.2 of the MSHCP, as well as mitigation measures to replace the function and values of the Riverine area on site, are detailed in the DBESP analysis (HELIX 2014).

The project is within an area designated as a NEPSSA area for 2 plant species: Yucaipa onion and many-stemmed dudleya. Sensitive plant surveys were conducted and a small population of Yucaipa onion was observed. The project will avoid 100 percent of the population; therefore, the project is consistent with MSHCP Section 6.1.3.

Section 6.1.4 addresses potential indirect impacts to MSHCP preserve lands such as the Criteria Cells located 0.5 mile north of the proposed project site. The proposed development is designed to leave open space between the development and the northern property border; as a result, the development will occur more than 0.5 mile from MSHCP Conservation Areas and is therefore not subject to Section 6.1.4. Since the project does border open space, the following measures will be implemented by the project to minimize potential indirect impacts:

- BMPs would be implemented to maintain water quality. All runoff would be treated prior to exiting the site or draining into potential preserve areas to reduce pollutants of concern. There would be no change in water flow from the project site;

- The proposed project is the construction of a job center, and it is not expected to produce any toxics or bioproducts that would significantly affect any MSHCP Conservation Area. Any potential pollutants (e.g., increased levels of phosphorous or nitrogen) would be treated through implementation of BMPs;

- The project is not expected to generate levels of noise greater than that of any standard commercial development and is not expected to adversely affect any MSHCP Conservation Area;

- No plants included on the California Invasive Plant Council's (Cal-IPC's) list of invasive species (2006) or in MSHCP Table 6-2 would be used anywhere on site; and

- Manufactured slopes associated with the proposed site development would not extend into any proposed MSHCP Conservation Area.

The project is not within any CASSA area for amphibians or mammals. The project occurs within the burrowing owl survey area. Because no burrowing owls or owl sign was observed during the protocol survey, no conservation is required on site. The project is consistent with MSHCP Section 6.3.2.

5.2 INDIRECT IMPACTS

5.2.1 Noise

Noise from such sources as grubbing, earthwork, and construction would be a temporary impact to local wildlife. Noise-related impacts would be considered significant if listed species were displaced and failed to breed; however, no listed species are known to occur immediately adjacent to the project site. The site is not adjacent to MSHCP Reserve lands, so long-lasting noise from the proposed project would not result in a significant effect to the Reserve.

5.2.2 Water Quality

Water quality in jurisdictional areas can be adversely affected by potential surface runoff and sedimentation during construction. The use of petroleum products (e.g., fuels, oils, and lubricants) and erosion of cleared land during construction could potentially contaminate surface water. Decreased water quality may adversely affect vegetation, aquatic animals, and terrestrial wildlife that depend upon these resources. Impacts to water quality would be significant unless mitigated.

5.2.3 Fugitive Dust

Fugitive dust produced by construction has the potential to disperse onto preserved vegetation, which may reduce the overall vigor of individual plants by reducing their photosynthetic capabilities and increasing their susceptibility to pests or disease. That, in turn, could affect animals dependent on these plants (e.g., raptors or seed-eating rodents). Dust dispersal during project construction would be substantially controlled by standard measures such as water applications during grading between dozer/scraper passes. Because active construction areas and unpaved surfaces would be watered pursuant to grading permit requirements to minimize dust, impacts on biological resources would be less than significant.

5.2.4 Non-native Plant Species

Non-native plants could colonize areas disturbed by construction and development and could potentially spread into adjacent native habitats. Many non-native plants are highly invasive and can displace native vegetation (reducing native species diversity), potentially increase flammability and fire frequency, change ground and surface water levels, and potentially adversely affect native wildlife dependent on native plant species. To prevent potentially significant impacts, exotic/invasive plant species included in the California Invasive Plant Inventory prepared by Cal-IPC (2006) or in MSHCP Table 6-2 would not be used anywhere on site. Therefore, no significant impacts relating to the introduction of non-native plant species are anticipated.

5.2.5 Lighting

Lighting on native habitats can prevent nocturnal wildlife from using an area. Although no lighting is expected to occur within the construction zone because work would occur during the day, there is a potential for night lighting at staging areas for security purposes. Lighting could cause an increased loss in native wildlife. Lighting on native habitats can provide nocturnal predators with an unnatural advantage over their prey. Because no MSHCP preserve lands will be located immediately adjacent to the site, no significant indirect impacts from lighting are expected.

5.2.6 Downstream Hydrology

Sensitive plant species and riparian habitat occur off site and downstream of the proposed project that are dependent upon periodic flows from both on site and upstream of the project. Any adverse change in downstream hydrology to these resources would be considered significant. The proposed project has been designed to ensure that no change in the current hydrological condition will result from project implementation, and no significant impacts to downstream hydrology are anticipated.

6.0 MITIGATION MEASURES

6.1 MITIGATION FOR DIRECT IMPACTS

6.1.1 Vegetation Communities/Habitats

The project applicant shall pay MSHCP Local Development Mitigation Fees (LDMF) as determined by the County. The fee schedule is adjusted annually by the Western Riverside County Regional Conservation Authority (RCA) and was last adjusted on July 1, 2008. The current fee is $6,597 per acre for commercial or industrial uses (RCA 2008). When mixed uses are proposed within the same project, the commercial fee is applied to the whole project based on the underlying classification of the property at the time of issuance of a building permit. Impacts to sensitive vegetation communities will be mitigated to below a level of significance through payment of the MSHCP LDMF.

6.1.2 Riparian/Riverine, USACE, and CDFW Jurisdictional Areas

Section 6.1.2 of the MSHCP focuses on protection of Riparian/Riverine areas and vernal pool habitats capable of supporting MSHCP covered species, particularly within the identified Conservation Area. The project site encompasses 1.37 acres of unvegetated, ephemeral drainage courses that are considered Riverine under Section 6.1.2 and 0.04 acre of disturbed wetland that is considered Riparian. The functions of the unvegetated Riparian/Riverine streams on the property are primarily water conveyance, sediment transport, and energy dissipation (hydrologic regime and flood attenuation).

A DBESP is being prepared for the project (HELIX 2014). The goal of the DBESP process is to determine whether the project has, in fact, provided for a project alternative that results in biologically equivalent or superior preservation. The first priority for sensitive habitats under CEQA and the MSHCP is avoidance of direct impacts. The proposed land use requires large pads that cannot be effectively reshaped to avoid Riparian/Riverine resources. Complete avoidance of Riparian/Riverine resources would eliminate the viability of development on the site because of the distribution of the drainages across the site. Total avoidance can be achieved only by minimal or no project alternatives, which render the project infeasible.

The current project does avoid impacts to 0.30 acre of Riparian/Riverine resources in the northwestern portion of the site. Impacts to 0.30 acres (23 percent) of the Riparian/Riverine resources have been avoided to the maximum extent practicable.

Section 6.2.1 of the MSHCP states:

> If an avoidance alternative is not Feasible, a practicable alternative that minimizes direct and indirect effects to Riparian/Riverine areas and vernal pools and associated functions and values to the greatest extent possible shall be selected.

Mitigation measures that would result in equivalent or superior preservation of the functions and values of Riparian/Riverine resources impacted by the project are shown here. Minimization measures for the proposed project will include the use of standard BMPs to minimize the impacts

during construction. Equipment will be stored in upland areas, outside of drainages except as required by project design (restoration, trash removal, etc.). Removal of trash located throughout the property will decrease the potential of pollutants entering the Riparian/Riverine areas downstream. The removal of the pollutants will increase the functions and values of the Riparian/Riverine areas proposed to be restored, thus replacing a portion of functions and values that will be lost within the project footprint.

Source control and treatment control BMPs will be implemented to minimize the potential contaminants that generated during and post construction. Source control BMPs include landscape planning, roof runoff controls, trash storage areas, use of alternative building materials, and education of future tenants. Treatment control BMPs include detention basins, vegetated swales (bio-swales), drain inlets, and vegetated buffers. Water quality BMPs will be implemented throughout the project to capture and treat contaminants.

Mitigation for impacts to Riparian/Riverine resources will occur through on-site creation at a 2:1 ratio for the 1.11 acres of impacts to Riparian/Riverine resources. In total, the proposed mitigation will result in 2.22 acres of Riparian and Riverine habitat creation/restoration.

The on-site creation of 2.22 acres of Riparian and Riverine habitat will occur at 2 locations on site along the southern boundary (Figure 10). The mitigation areas will receive all upstream flows up to 100 cubic feet per second (CFS). Flows above 100 CFS will bypass the mitigation area in a concrete-lined channel that will outlet at the eastern edge of the project. Flows up to 100 CFS will allow for creation of a braided streambed similar to the drainages that are being impacted. These areas will be revegetated with primarily floodplain scrub vegetation. Scattered pockets of mule fat scrub will also be planted to increase vegetative diversity. Combined, these areas will offset losses of Riparian/Riverine functions and values by providing high quality Riparian/Riverine habitat, as well as other functions and services such as water quality benefits, groundwater recharge, and nutrient cycling. A detailed restoration plan for the on-site mitigation sites will be prepared and submitted to the County for review and approval prior to implementation of the restoration effort.

The amount of mitigation required by the regulatory agencies for impacts to 0.40 acre of USACE and 1.11 acres of CDFW jurisdictional areas will be determined during the permitting process.

6.1.3 Animal Species

Pre-construction presence/absence surveys for burrowing owl shall be conducted on and off site by a qualified biologist within 30 days prior to project disturbance activities, with the results summarized in a report submitted to the County Planning Department, Environmental Programs Division. Owls located as a result of survey efforts will be relocated. A relocation plan shall be submitted to the Environmental Programs Division of the Planning Department for review and approval.

Clearing and grubbing shall occur outside of the bird breeding season (February 1 to August 31), unless a qualified biologist demonstrates to the satisfaction of the County that all nesting is complete through completion of a Nesting Bird Clearance Survey. A Nesting Bird Clearance

Project Boundary
Proposed Mitigation Area
Bypass Channel
Landscaped Greenbelt

Sensitive Species

Am Yucaipa Onion (*Allium marvinii*)

Vegetation

- Riversidian Sage Scrub
- Riversidian - Diegan Coastal Sage Scrub
- Riversidian - Diegan Coastal Sage Scrub - Dist
- Coastal Sage - Chaparral Scrub
- Coastal Sage - Chaparral Scrub - Disturbed
- Scrub Oak Chaparral
- Scrub Oak Chaparral - Disturbed
- Mule Fat Scrub
- Non-native Grassland
- Eucalyptus Woodland
- Disturbed Habitat
- Pasture
- Developed

Am 91

Cherry Valley Boulevard

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Vegetation, Impacts, and Riparian Mitigation Area

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

0 400 Feet

Figure 10

CVAR_09434

Survey report shall be submitted to the Environmental Programs Division for review and approval prior to initiating clearing and grubbing during the breeding season.

6.2 MITIGATION FOR INDIRECT IMPACTS

6.2.1 Water Quality

During project construction, measures shall be implemented to control erosion, sedimentation, and pollution that could impact water resources on and off site. Potential impacts to water quality (on and off site) would be minimized through project design measures as well as compliance with applicable city storm water permitting requirements and the National Pollutant Discharge Elimination System (NPDES) requirements.

6.3 LEVEL OF SIGNIFICANCE AFTER MITIGATION

The proposed project would significantly impact sensitive habitats and MSHCP Riparian/Riverine habitat. Significant impacts to USACE and CDFW jurisdictional areas would occur through implementation of the proposed project. Potentially significant impacts could occur to breeding birds if clearing of vegetation were to occur during the breeding season. Significant indirect or temporary impacts are limited to water quality.

Impacts to sensitive habitats will be mitigated through payment of the MSHCP LDMF of $6,597. Impacts to USACE and CDFW jurisdictional habitats along with impacts to MSHCP Riverine areas shall be mitigated to below a level of significance by on-site creation or restoration at a 2:1 ratio. Impacts to breeding birds shall be avoided through clearing of habitat outside of the breeding season. Indirect impacts associated with water quality shall be mitigated to below a level of significance through compliance with NPDES requirements.

Following implementation of these mitigation measures, all impacts to biological resources will be mitigated to below a level of significance.

7.0 CERTIFICATION/QUALIFICATION

The following individuals contributed to the fieldwork and/or preparation of this report.

Barry L. Jones*	Biologist, HELIX Environmental Planning, Inc. B.A., Biology, Point Loma College, 1982
Stacy Nigro	Biologist, HELIX Environmental Planning, Inc. B.S., Wildlife Ecology, Forest Resources and Conservation, University of Florida-Gainesville, 1994
W. Larry Sward	Biologist, HELIX Environmental Planning, Inc. M.S., Biology, San Diego State University, 1979 B.S., Biology, San Diego State University, 1975
Rob Hogenauer	Biologist, HELIX Environmental Planning, Inc. B.S., Biology, California State Polytechnic University, 2004
Zsolt Kahancza	B.A. Biology, California State at San Bernardino, 1994.
Zack West	B.A., Environmental Studies, California State at San Bernardino, 2004
Scott Taylor	B.A, Biology, Point Loma College, 1984.
Rose Wojnar-Dillon	Technical editor, HELIX Environmental Planning, Inc. B.A., Michigan State University, 1984

*Principal author

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Appendix A

BURROWING OWL SURVEY REPORT (SEPTEMBER 30, 2008)

HELIX environmental planning, inc.

3600 Lime Street, Suite 721
Riverside, CA 92501
fax (951) 328-9978
phone (951) 328-1700

San Diego County Office
phone (619) 462-1515

September 30, 2008 TSG-13

Mr. Brian Rupp
TSG Cherry Valley, LP
114 Pacifica Ct., Ste. 245
Irvine, CA 92618

Subject: Results of Burrowing Owl (*Athene cunicularia*) Survey for the Interstate 10 Gateway Job Center

Dear Mr. Rupp:

At your request, HELIX Environmental Planning, Inc. (HELIX) conducted a focused burrowing owl survey for the Interstate (I-) 10 Gateway Job Center project site. This letter documents the results of the survey, which meets applicable conditions under the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) approved in 2003. The MSHCP is a comprehensive planning effort that includes the County of Riverside (County) and 15 cities. As part of the MSHCP implementation, enrolled jurisdictions are required to impose terms of the MSHCP, including appropriate surveys in accordance with Section 6, Volume I. The site is within the survey area for burrowing owl; therefore, surveys are required if potential habitat is present (Dudek and Associates 2003). This report presents the details and results of the 2008 survey and includes survey results for the burrowing owl conducted in 2005 and 2007.

PROPERTY LOCATION AND DESCRIPTION

The approximately 230-acre property is located east of I-10 and north of Cherry Valley Boulevard in the unincorporated community of Cherry Valley, Riverside County, California (Figure 1). The site is situated in Section 30, Township 2 South, Range 1 West as shown on the U.S. Geological Survey 7.5-minute El Casco quadrangle (Figure 2).

Elevation on site ranges from 2,400 to 2,690 feet above mean sea level. The property is bordered by a chicken ranch to southeast. There is a small horse ranch and I-10 is to the southwest. To the northwest, there is some agricultural land and a residential community. The remainder of the property is bordered by undeveloped land, with the exception of a few rural residential homes to the north. An aerial photo of the property is provided as Figure 3.

PROJECT DESCRIPTION

The proposed project is for the construction of 2 large industrial buildings on approximately 190 acres of the property. The project includes detention basins, parking, landscaping, and other associated infrastructure.

METHODS

The survey was conducted according to the burrowing owl survey guidelines for the MSHCP (County 2006). The survey area included all habitats with potential to support burrowing owls within the project area. Transects approximately 20 to 30 meters apart were surveyed on the entire project site. Steep slopes were visually surveyed with the aid of binoculars. A 500-foot buffer zone was surveyed visually from the subject property, where owl habitat bordered the site. Biologists walked slowly and methodically, closely checking the areas that met the basic requirements of owl habitat, listed below.

- Open expanses of sparsely vegetated areas (less than 30 percent canopy cover for trees and shrubs)
- Gently rolling or level terrain
- An abundance of small mammal burrows, especially those of California ground squirrel (*Spermophilus beecheyi*)
- Fence posts, rock, or other low perching locations

Survey dates, times, and conditions are listed in Table 1.

Table 1
SURVEY INFORMATION

Date	Time (hrs)	Weather Conditions	Personnel
8/27/08	0600-0830	Clear, 62° - 79° F, wind 0-2 mph	Rob Hogenauer Zsolt Kahancza
8/28/08	0625-0830	Partly cloudy, 68° - 77° F, wind 1-3 mph	Rob Hogenauer Zsolt Kahancza
8/29/08	0615-0815	Partly cloudy 68°F - 79° F, wind 0-2 mph	Rob Hogenauer Zsolt Kahancza
8/30/08	0610-0750	Overcast, 67°F - 73° F, wind 4-8 mph	Rob Hogenauer Brian Parker

The first survey of the property covered the entire project area, where biologists searched for burrows with potential to support burrowing owls. Figure 4 identifies the approximate transects surveyed on the property. The topography of the

property caused some variation in the actual transects surveyed. Areas that did not contain burrows with potential to support burrowing owls were not surveyed on subsequent surveys. These excluded areas are comprised of dense vegetation (Figure 5a) or disturbed areas (Figure 5b) lacking burrows with potential to support burrowing owls. Potential owl burrow locations on site include brush piles, fossorial mammal burrows, and rock piles. All potential owl burrows were checked for signs of recent owl occupation, which include:

- Pellets/Casting – regurgitated fur, bones, and insect parts
- White wash – excrement
- Feathers

RESULTS

Vegetation Habitats

Six vegetation habitats along with a small amount of developed habitat occur on the property. The habitats are mule fat scrub, Riversidean sage scrub, coastal sage-chaparral ecotone, scrub oak chaparral, non-native grassland, and disturbed habitat. The survey area was comprised mainly of non-native grassland, Riversidean sage scrub, and disturbed habitats.

Burrowing Owls

No burrowing owls were observed during any of the site visits. Burrows that could support burrowing owls were observed on site but did not show any signs of owl activity. The burrows were primarily located in the southern and western portions of the property. The northern and eastern areas of the property contain relatively few burrows with potential to support burrowing owls. The majority of the grassland on site was comprised of dense stands of mustard (*Hirschfeldia incana*, *Brassica* spp.), Russian thistle (*Salsola tragus*), bromes (*Bromus* spp.), and various weeds, herbs, and forbs.

There are approximately 120 acres of habitat in the project area with low potential to support burrowing owls. The remainder of the property lacks burrows that could support burrowing owls, or is covered with dense vegetation. Surveys conducted in 2005, 2007, and 2008 all had negative results. No burrowing owls or sign of burrowing owl is present on site.

The MSHCP states that pre-construction surveys for burrowing owls should be conducted for all properties that contain suitable burrowing owl habitat. A pre-construction survey is to take place within 30 days prior to disturbance of the property in question.

Attachment A contains a list of animal species observed or detected during the 3 years of burrowing owl surveys and other surveys conducted on the property.

Please call Barry Jones at (619) 462-1515 or me at (951) 328-1700 if you have any questions about this report.

Sincerely,

Rob Hogenauer
Wildlife Biologist

Enclosures: Figure 1 Regional Location Map
2 Project Location Map
3 Aerial Photo
4 Aerial Map
5a and 5b Burrowing Owl Survey Photos
Attachment A Animal Species Observed

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Attachment A

ANIMAL SPECIES OBSERVED – INTERSTATE 10 GATEWAY JOB CENTER

FAMILY	SCIENTIFIC NAME	COMMON NAME
INVERTEBRATES		
Apiidae	*Apis mellifera mellifera*	honey bee
	Bombus spp.	bumble bee
Coccinellidae	*Hippodamia convergens*	ladybird beetle
Formicidae	*Messor* spp.	harvester ant
	Pogonomyrex spp.	harvester ant
Gryllacrididae	*Stenophelmatus fuscus*	Jerusalem cricket
Hesperiidae (subfamily Pyrginae)	*Erynnis funeralis*	funereal duskywing butterfly
	Pyrgus albescens	western checkered skipper
Lycaenidae (subfamily Thecline)	*Strymon melinus*	gray hairstreak butterfly
Nymphalinae	*Vanessa annabella*	west coast lady butterfly
	Vanessa cardui	painted lady butterfly
Pieridae (subfamily Coliadinae)	*Colias eurytheme*	alfalfa sulfur butterfly
	Pieris sisymbrii sisymbrii	California white butterfly
	Pieris protodice	common white butterfly
Polyommatinae	*Hemiargus ceraunus gyas*	Edward's blue butterfly
	Icaricia acmon	Acmon blue butterfly
	Leptotes marina	marine blue butterfly
Pompilidae	*Pepsis* spp.	tarantula hawk wasp
Riodinidae	*Apodemia vergulti*	Behr's metalmark butterfly
Tenebrionidae	*Eleodes* spp.	darkling beetle
Theridiidae	*Latrodectus hesperus*	black widow spider
Order Orthoptera	*Trimeroptropis* spp.	pallid-winged grasshopper
Scarabaeidae	*Cotinus mutabilis*	green fruit beetle
VERTEBRATES		
Reptiles		
Colubridae	*Pituophis catenifer*	gopher snake
Phrynosomatidae	*Uta stansburiana*	common side-blotched lizard
Teiidae	*Cnemidophorus hyperythrus*†	orange-throated whiptail
Birds		
Accipitridae	*Buteo jamaicensis*	red-tailed hawk
	Circus cyaneus†	northern harrier
Aegithalidae	*Psaltriparus minimus*	bushtit
Cardinalidae	*Passerina amoena*	Lazuli bunting

CVAR_09446

Attachment A (cont.)
ANIMAL SPECIES OBSERVED – INTERSTATE 10 GATEWAY JOB CENTER

FAMILY	SCIENTIFIC NAME	COMMON NAME
VERTEBRATES (cont.)		
Birds (cont.)		
Cardinalidae	*Guiraca caerulea*	blue grosbeak
Charadriidae	*Charadrius vociferous*	killdeer
Columbidae	*Columba livia*	rock dove
	Zenaida macroura	mourning dove
Corvidae	*Corvus brachyrhynchos*	American crow
	Corvus corax	common raven
Cuculidae	*Geococcyx californianus*	greater road runner
Emberizidae	*Amphispiza belli belli*†	Bell's sage sparrow
	Chondestes grammacus	lark sparrow
	Melospiza melodia	song sparrow
	Pipilo crissalis	California towhee
	Pipilo erythrophthalmus	spotted towhee
Fringillidae	*Carpodacus mexicanus*	house finch
	Carduelis psaltria	lesser goldfinch
Falconidae	*Falco sparverius*	American kestrel
Icteridae	*Icterus bullockii*	Bullock's oriole
	Icterus cucullatus	hooded oriole
	Molothrus ater	brown-headed cowbird
	Sturnella neglecta	western meadowlark
Mimidae	*Mimus polyglottos*	northern mockingbird
Odontophoridae	*Callipepla californica*	California quail
Parulidae	*Dendroica coronata*†	yellow-rumped warbler
Passeridae	*Passer domesticus*	house sparrow
Ptilogonatidae	*Phainopepla nitens*	phainopepla
Sturnidae	*Sturnus vulgaris*	European starling
Timaliidae	*Chamaea fasciata*	wrentit
Trochilidae	*Calypte anna*	Anna's hummingbird
	Calypte costae†	Costa's hummingbird
Troglodytidae	*Thryomanes bewickii*	Bewick's wren
Turdidae	*Sialia mexicana*	western bluebird
Tyrannidae	*Sayornis nigricans*	black phoebe
	Sayornis saya	Say's phoebe
	Tyrannus verticalis	western kingbird
	Tyrannus vociferans	Cassin's kingbird
Falconidae	*Falco sparverius*	American kestrel
Sylviidae	*Polioptila melanura*	blue-gray gnatcatcher

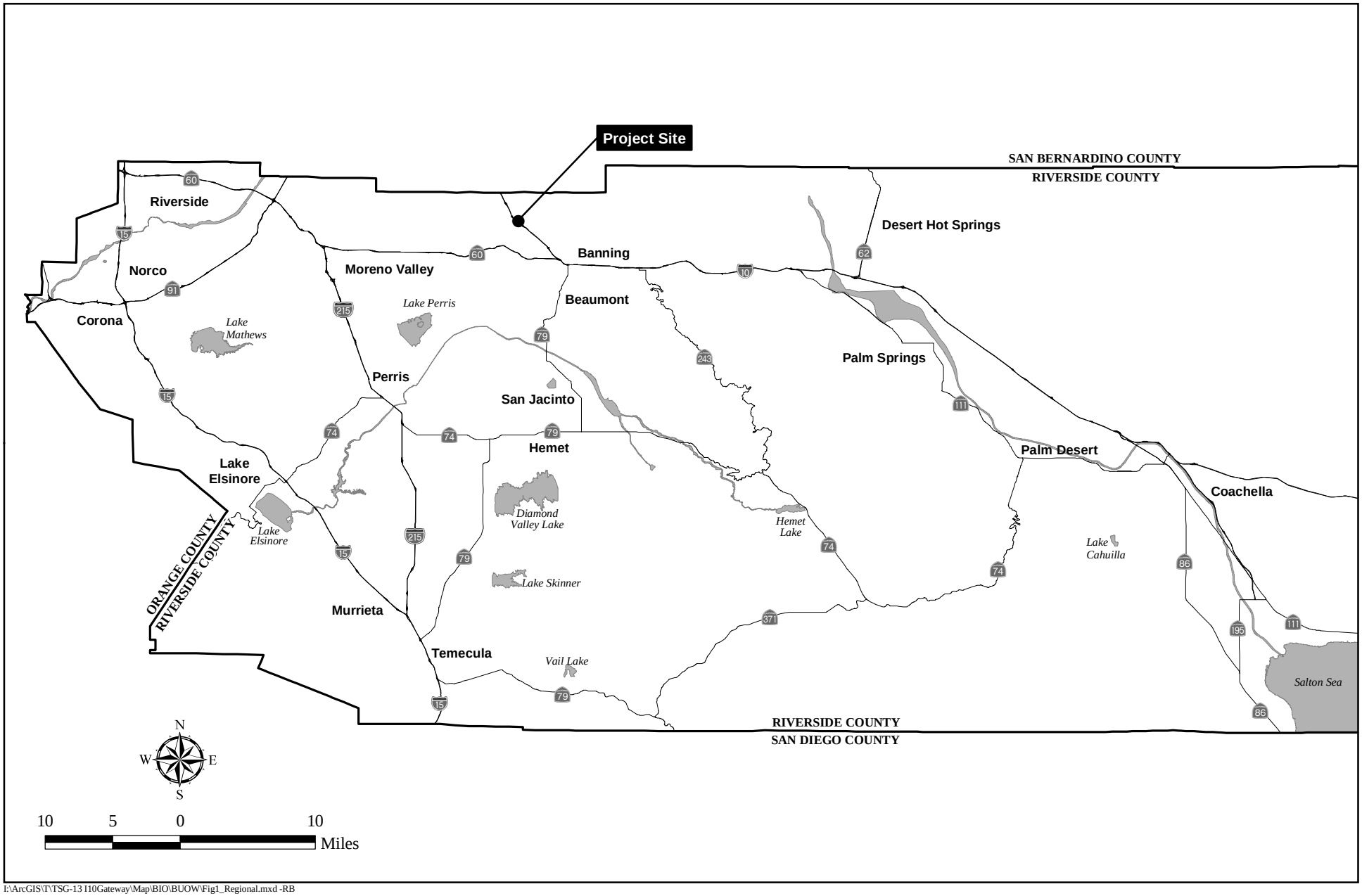
CVAR_09447

Attachment A (cont.)
ANIMAL SPECIES OBSERVED – INTERSTATE 10 GATEWAY JOB CENTER

FAMILY	SCIENTIFIC NAME	COMMON NAME
VERTEBRATES (cont.)		
Mammals		
Bovidae	*Capra hircus*	domestic goat
Canidae	*Canis latrans*	coyote
Geomyidae	*Thomomys bottae*	Botta's pocket gopher
Heteromyidae	*Dipodomys* spp.	kangaroo rat
Leporidae	*Sylvilagus audubonii*	desert cottontail
Sciuridae	*Spermophilus beecheyi*	California ground squirrel
Mephitidae	*Mephitis mephitis*	striped skunk
Bovidae	*Ovis aries*	domestic sheep

†Sensitive species

CVAR_09448



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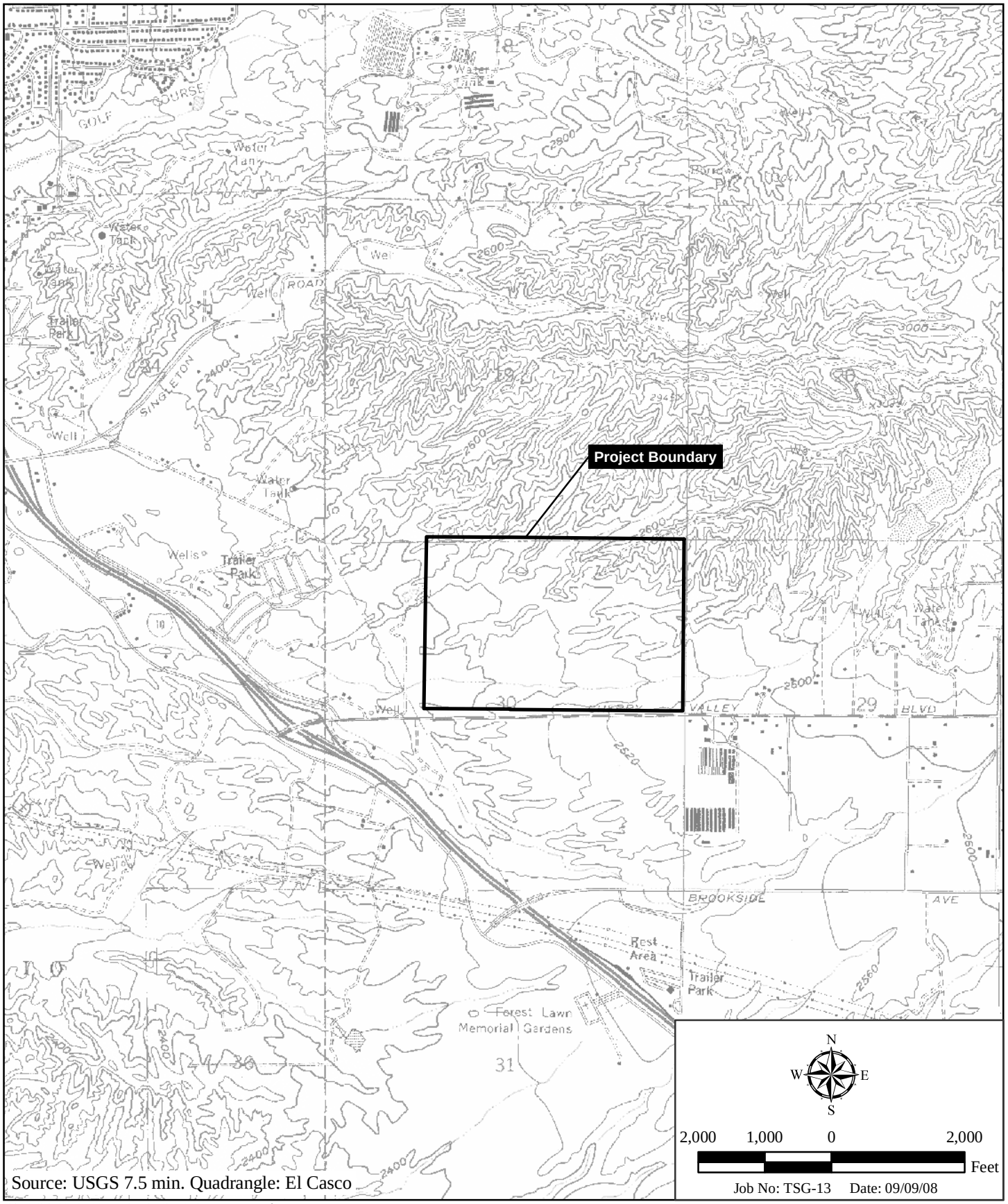
Regional Location Map

I-10 GATEWAY JOB CENTER

HELIX

Figure 1

CVAR_09449



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Project Location Map

I-10 GATEWAY JOB CENTER

HELIX

Figure 2

CVAR_09450



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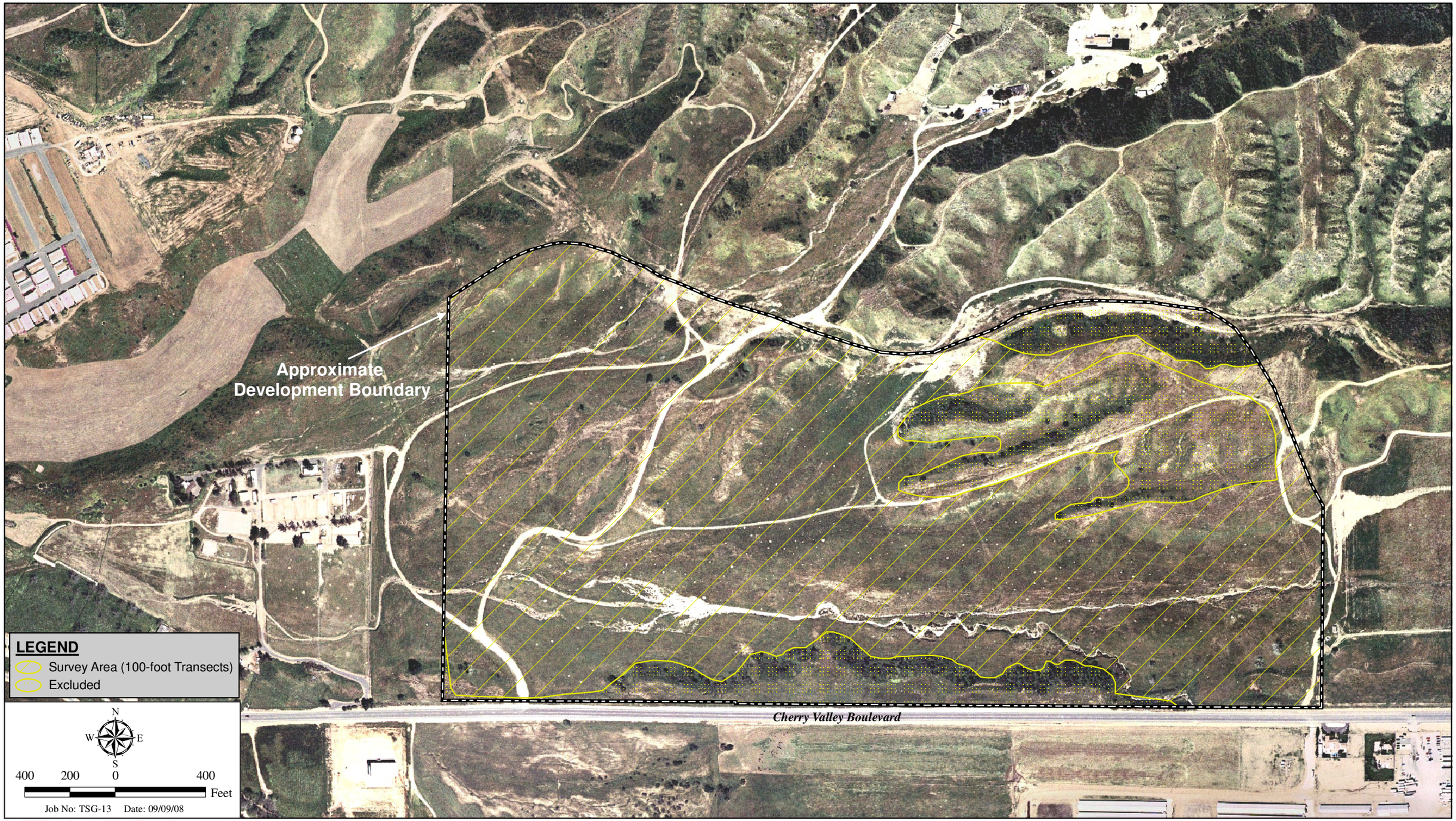
Aerial Photo

I-10 GATEWAY JOB CENTER

HELIX

Figure 3

CVAR_09451



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Aerial Map

I-10 GATEWAY JOB CENTER

HELIX

Figure 4

CVAR_09452



5a. Low potential habitat is visible in foreground, with dense vegetation in background.



5b. View of graded slope that was excluded from survey area. Grassland in foreground and background was included in the survey area.

H:\BioGroup\Projects\TSG-13 (Cherry Valley, was TSG-02)\Plans and exhibits\buow 2008

Burrowing Owl Survey Photos

I-10 GATEWAY JOB CENTER

HELIX

Figure 5

CVAR_09453

Appendix B

FEDERAL JURISDICTIONAL INFORMATION

Appendix B
FEDERAL JURISDICTIONAL INFORMATION

Wetlands and "Waters of the U.S." Definitions

The U.S. Army Corps of Engineers (Corps; Federal Register 1982) and the Environmental Protection Agency (Federal Register 1980) jointly define wetlands as "[t]hose areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (Environmental Laboratory 1987).

The official definition of "Waters of the U.S." and their limits of jurisdiction (as they may apply) are defined by the Corps' Regulatory Program Regulations (Section 328.3, paragraphs [a] 1-3 and [e], and Section 328.4, paragraphs [c] 1 and 2) as follows:

> All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; all waters including interstate wetlands, all other waters such as interstate lakes, rivers, streams [including intermittent streams], mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate commerce including any such water, which are or could be used by interstate travelers for recreation or other purposes; or from which fish or shellfish are or could be taken and sold in interstate commerce; or which are or could be used for industries in interstate commerce; or wetlands adjacent to waters [other than waters that are themselves wetlands].
>
> Non-tidal Waters of the U.S. The limits of jurisdiction in non-tidal waters: In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark, or when adjacent wetlands are present, the jurisdiction extends to the limit of the adjacent wetlands.
>
> The term ordinary high water mark means that line on the shore established by the fluctuation of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation (scouring), the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Waters of the U.S. must exhibit an ordinary high water mark (OHWM) or other evidence of surface flow created by hydrologic physical changes. These physical changes include (Riley 2005):

- Natural line impressed on the bank
- Shelving
- Changes in the character of soil
- Destruction of terrestrial vegetation
- Presence of litter and debris
- Wracking
- Vegetation matted down, bent, or absent
- Sediment sorting
- Leaf litter disturbed or washed away
- Scour
- Deposition
- Multiple observed flow events
- Bed and banks
- Water staining
- Change in plant community

Jurisdictional areas also must be connected to Waters of the U.S. (Guzy and Anderson 2001; U.S. Supreme Court 2001).

As a consequence of the U.S. Supreme Court decision in Rapanos v. United States, a memorandum was developed regarding Clean Water Act jurisdiction (Grumbles and Woodley 2007). The memorandum states that the EPA and the Corps will assert jurisdiction over traditional navigable waters (TNW), wetlands adjacent to TNW, tributaries to TNWs that are a relatively permanent water body (RPW), and wetlands adjacent to TNW. An RPW has year round flow or continuous seasonal flow (i.e., typically for three months or longer). Jurisdiction over other waters (i.e., non TNW and RPW) will be based on a fact specific analysis to determine if they have a significant nexus to a TNW.

Pursuant to the Corps Instructional Guidebook (Corps and EPA 2007), the significant nexus evaluation will cover the subject reach of the stream (upstream and downstream) as well as its adjacent wetlands (Illustrations 2 through 6, Corps and EPA 2007). The evaluation will include the flow characteristics, annual precipitation, ability to provide habitat for aquatic species, ability to retain floodwaters and filter pollutants, proximity of the subject reach to a TNW, drainage area, and the watershed.

Wetland Criteria

Wetland boundaries are determined using three mandatory criteria (hydrophytic vegetation, wetland hydrology, and hydric soil) established for wetland delineations and described within the Wetlands Delineation Manual (Environmental Laboratory 1987) and the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Corps 2006). Following is a brief discussion of the three criteria and how they are evaluated.

Vegetation

"Hydrophytic vegetation is defined herein as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present" (Environmental Laboratory 1987).

The wetland indicator status (obligate upland, facultative upland, facultative, facultative wetland, obligate wetland, or no indicator status) of the dominant plant species of all vegetative layers is

determined. Species considered to be hydrophytic include the classifications of facultative, facultative wetland, and obligate wetland as defined by the U.S. Fish and Wildlife Service (1988; Table A-1). The percent of dominant wetland plant species is calculated. The hydrophytic vegetation criterion is considered to be met if it meets the "Dominance Test," "Prevalence Index," or the vegetation has morphological adaptations for prolonged inundation.

Table B-1
DEFINITIONS OF PLANT INDICATOR CATEGORIES

Indicator Categories	Abbreviation	Probability of Occurring in Wetlands
Obligate wetland	OBL	Occur almost exclusively in wetlands
Facultative wetland	FACW	Usually found in wetlands (66 to 99 percent probability) but occasionally in uplands
Facultative	FAC	Equally likely to occur in wetland (34 to 66 percent probability) or non-wetland
Facultative upland	FACU	Usually occur in non-wetlands but occasionally found in wetlands
Obligate upland	UPL	Occur almost exclusively in non-wetlands
No indicator	NI	Inconclusive status

Hydrology

"The term 'wetland hydrology' encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic reducing conditions, respectively" (Environmental Laboratory 1987).

Hydrologic characteristics must indicate that the ground is saturated to within 12 inches of the surface for at least 5 percent of the growing season during a normal rainfall year (approximately 18 days for most of low-lying southern California). Hydrology criteria are evaluated based on the characteristics listed below (Corps 2006). Where positive indicators of wetland hydrology are present, the limit of the OHWM (or the limit of adjacent wetlands) is noted and mapped. Evidence of wetland hydrology is met by the presence of a single primary indicator or two secondary indicators.

Primary

- surface water (A1)
- high water table (A2)
- saturation (A3)
- water marks (B1; non-riverine)
- sediment deposits (B2; non-riverine)
- drift deposits (B3; non-riverine)
- surface soil cracks (B6)
- inundation visible on aerial imagery (B7)
- water-stained leaves (B9)
- salt crust (B11)
- biotic crust (B12)
- aquatic invertebrates (B13)
- hydrogen sulfide odor (C1)
- oxidized rhizospheres along living roots (C3)
- Primary (continued)
- presence of reduced iron (C4)
- recent iron reduction in plowed soils (C8)

Secondary

- watermarks (B1; riverine)
- sediment deposits (B2; riverine)
- drift deposits (B3; riverine)
- drainage patterns (B10)
- dry-season water table (C2)
- thin muck surface (C7)
- crayfish burrows (C8)
- saturation visible on aerial imagery (C9)
- shallow aquitard (D3)
- FAC-neutral test (D5)

In the absence of all other hydrologic indicators and in the absence of significant modifications of an area's hydrologic function, positive hydric soil characteristics are assumed to indicate positive wetland hydrology. This assumption applies unless the site visit was done during the wet season of a normal or wetter-than-normal year. Under those circumstances, wetland hydrology would not be present.

Soils

"A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (Natural Resource Conservation Service [NRCS] 2004).

Soils must exhibit physical and/or chemical characteristics indicative of permanent or periodic saturation. Soil matrix and mottle colors are identified at each sampling plot using a Munsell soil color chart (Kollmorgen 1994). Generally, an 18-inch or deeper pit is excavated with a shovel at each sampling plot unless refusal occurs above 18 inches.

Soils in each area are closely examined for hydric soil indicators, including the characteristics listed below. Hydric soil indicators are presented in three groups. Indicators for "All Soils" (A) are used in any soil regardless of texture, indicators for "Sandy Soils" (S) area used in soil layers with USDA textures of loamy fine sand or coarser, and indicators for "Loamy and Clayey Soils" (F) are used with soil layers of loamy very fine sand and finer (Corps 2006).

- histosols (A1)
- histic epipedons (A2)
- black histic (A3)
- sulfidic odor (A4)
- stratified layers (A5)
- 1 cm muck (A9)
- depleted below dark surface (A11)
- thick dark surface (A12)
- sandy mucky mineral (S1)
- sandy gleyed matrix (S4)

- sandy redox (S5)
- stripped matrix (S6)
- loamy mucky mineral (F1)
- loamy gleyed matrix (F2)
- depleted matrix (F3)
- redox dark surface (F6)
- depleted dark surface (F7)
- redox depressions (F8)
- vernal pools (F9)
- 2 cm muck (A10)
- reduced vertic (F18)
- red parent material (TF2; indicator is currently being tested by NRCS).

Hydric soils may be assumed to be present in plant communities that have complete dominance of obligate or facultative wetland species. In some cases, there is only inundation during the growing season and determination must be made by direct observation during that season, recorded hydrologic data, testimony of reliable persons, and/or indication on aerial photographs.

Non-wetland Waters of the U.S.

The non-wetland Waters of the U.S. designation is met when an area has periodic surface flows but lacks sufficient indicators to meet the hydrophytic vegetation and/or hydric soils criteria. For purposes of delineation and jurisdictional designation, the non-wetland Waters of the U.S. boundary in non-tidal areas is the OHWM as described in the Section 404 regulations (33 CFR Part 328).

USGS Mapping

The USGS Quad maps are one of the resources used to aid in the identification and mapping of jurisdictional areas. Their primary uses include understanding the subregional landscape position of a site, major topographical features, and a project's position in the watershed.

In our experience the designation of watercourse as a blue-line stream (intermittent or perennial) on USGS maps has been unreliable and typically overstates the hydrology of most streams. This has also been the experience of others, including the late Luna Leopold. Leopold was a hydrologist with USGS from 1952 to 1972, Professor in the Department of Geology and Geophysics, and Department of Landscape Architecture, University of California, Berkeley from 1972 to 1986, and Professor Emeritus from 1987 until his death in 2006. In regard to stream mapping on USGS maps, Dr. Leopold opined that ". . . blue lines on a map are drawn by nonprofessional, low-salaried personnel. In actual fact, they are drawn to fit a rather personalized aesthetic."

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Appendix C

PLANT SPECIES OBSERVED

Appendix C
PLANT SPECIES OBSERVED

Family	Scientific Name	Common Name
DICOTS		
Anacardiaceae	*Rhus ovata*	sugar bush
	Rhus trilobata	basket bush
Apiaceae	*Bowlesia incana*	American bowlesia
Asteraceae	*Acourtia microcephala*	perizia
	Artemisia californica	California sagebrush
	Artemisia dracunculus	tarragon
	Baccharis salicifolia	mule fat
	Encelia californica	California encelia
	Encelia farinosa	brittlebush
	Eriophyllum confertiflorum	golden-yarrow
	Filago californica	fluffweed
	Hazardia squarrosa	sawtooth goldenbush
	Hypochaeris glabra	smooth cat's-ear
	Lactuca serriola	wild lettuce
	Corethrogyne filaginifolia var. *filaginifolia*	California-aster
	Uropappus lindleyi	silver puffs
Boraginaceae	*Amsinckia menziesii var. intermedia*	rancher's fiddleneck
	Cryptantha intermedia	nievitas
Brassicaceae	*Brassica sp.*	mustard
	Hirschfeldia incana *	short pod mustard
	Raphanus sativus *	wild radish
Caprifoliaceae	*Isomeris arborea*	San Diego honeysuckle
	Sambucus nigra	blue elderberry
Chenopodiaceae	*Chenopodium californicum*	California pigweed
Cucurbitaceae	*Marah macrocarpus*	wild cucumber
	Marah macrocarpus	wild cucumber
Euphorbiaceae	*Croton californicus*	croton
Fabaceae	*Acmispon glaber*	coastal deerweed
Fagaceae	*Quercus berberidifolia*	scrub oak
	Quercus berberidifolia	scrub Oak
Geraniaceae	*Erodium botrys*	long-beak filaree
	Erodium cicutarium	red-stem filaree
	Erodium moschatum	green-stem filaree
Hydrophyllaceae	*Phacelia minor*	California bluebells
	Pholistoma membranaceum	pholistoma
	Pholistoma racemosum	filaree-leaf nemophila

CVAR_09462

Appendix C (cont.)
PLANT SPECIES OBSERVED

Family	Scientific Name	Common Name
DICOTS (cont.)		
Lamiaceae	*Marrubium vulgare*	horehound
Lamiaceae	*Salvia apiana*	white sage
Lamiaceae	*Salvia mellifera*	black sage
Malvaceae	*Malacothamnus* sp.	bushmallow
Myrtaceae	*Eucalyptus* sp.	eucalyptus
Oleaceae	*Fraxinus velutina*	velvet ash
Onagraceae	*Camissonia* sp.	sun cup
Poaceae	*Leymus condensatus*	giant rye grass
Polygonaceae	*Eriogonum fasciculatum* ssp. *fasciculatum*	California buckwheat
	Eriogonum fasciculatum ssp. *polifolium*	rosemary flat-top buckwheat
Portulacaceae	*Calandrinia ciliata*	red maids
	Claytonia perfoliata	miners lettuce
Portulaceae	*Claytonia perfoliata* ssp. *perfoliata*	miner's lettuce
Rhamnaceae	*Rhamnus crocea*	spiny redberry
Rosaceae	*Adenostoma fasciculatum*	chamise
Solanaceae	*Nicotiana glauca**	tree tobacco
MONOCOTS		
Liliaceae	*Bloomeria crocea*	golden stars
Poaceae	*Bromus diandrus*	common ripgut grass
	Bromus madritensis ssp. *rubens*	foxtail chess
	*Bromus madritensis ssp. rubens**	red brome
	*Lamarckia aurea**	goldentop or toothbrush grass
	Nassella spp.	needlegrass
	Schismus barbatus	Mediterranean grass
	Vulpia microstachys	small fescue

*Non-native species

Appendix D

ANIMAL SPECIES OBSERVED OR DETECTED

Appendix D
ANIMAL SPECIES OBSERVED OR DETECTED

FAMILY	SCIENTIFIC NAME	COMMON NAME
INVERTEBRATES		
Apiidae	*Apis mellifera mellifera*	honey bee
	Bombus spp.	bumble bee
Coccinellidae	*Hippodamia convergens*	ladybird beetle
Formicidae	*Messor* spp.	harvester ant
	Pogonomyrex spp.	harvester ant
Gryllacrididae	*Stenophelmatus fuscus*	Jerusalem cricket
Hesperiidae (subfamily Pyrginae)	*Erynnis funeralis*	funereal duskywing butterfly
	Pyrgus albescens	western checkered skipper
Lycaenidae (subfamily Thecline)	*Strymon melinus*	gray hairstreak butterfly
Nymphalinae	*Vanessa annabella*	west coast lady butterfly
	Vanessa cardui	painted lady butterfly
Pieridae (subfamily Coliadinae)	*Colias eurytheme*	alfalfa sulfur butterfly
	Pieris sisymbrii sisymbrii	California white butterfly
	Pieris protodice	common white butterfly
Polyommatinae	*Hemiargus ceraunus gyas*	Edward's blue butterfly
	Icaricia acmon	Acmon blue butterfly
	Leptotes marina	marine blue butterfly
Pompilidae	*Pepsis* spp.	tarantula hawk wasp
Riodinidae	*Apodemia vergulti*	Behr's metalmark butterfly
Tenebrionidae	*Eleodes* spp.	darkling beetle
Theridiidae	*Latrodectus hesperus*	black widow spider
Order Orthoptera	*Trimeroptropis* spp.	pallid-winged grasshopper
Scarabaeidae	*Cotinus mutabilis*	green fruit beetle
VERTEBRATES		
Reptiles		
Colubridae	*Pituophis catenifer*	gopher snake
Phrynosomatidae	*Uta stansburiana*	common side-blotched lizard
Teiidae	*Cnemidophorus hyperythrus*†	orange-throated whiptail
Birds		
Accipitridae	*Buteo jamaicensis*	red-tailed hawk
	Circus cyaneus†	northern harrier

Attachment D (cont.)
ANIMAL SPECIES OBSERVED

FAMILY	SCIENTIFIC NAME	COMMON NAME
VERTEBRATES (cont.)		
Birds (cont.)		
Aegithalidae	*Psaltriparus minimus*	bushtit
Cardinalidae	*Passerina amoena*	Lazuli bunting
	Guiraca caerulea	blue grosbeak
Charadriidae	*Charadrius vociferous*	killdeer
Columbidae	*Columba livia*	rock dove
	Zenaida macroura	mourning dove
Corvidae	*Corvus brachyrhynchos*	American crow
	Corvus corax	common raven
Cuculidae	*Geococcyx californianus*	greater road runner
Emberizidae	*Amphispiza belli belli†*	Bell's sage sparrow
	Chondestes grammacus	lark sparrow
	Melospiza melodia	song sparrow
	Pipilo crissalis	California towhee
	Pipilo erythrophthalmus	spotted towhee
Fringillidae	*Carpodacus mexicanus*	house finch
	Carduelis psaltria	lesser goldfinch
Falconidae	*Falco sparverius*	American kestrel
Icteridae	*Icterus bullockii*	Bullock's oriole
	Icterus cucullatus	hooded oriole
	Molothrus ater	brown-headed cowbird
	Sturnella neglecta	western meadowlark
Mimidae	*Mimus polyglottos*	northern mockingbird
Odontophoridae	*Callipepla californica*	California quail
Parulidae	*Dendroica coronata*	yellow-rumped warbler
Passeridae	*Passer domesticus*	house sparrow
Ptilogonatidae	*Phainopepla nitens*	phainopepla
Sturnidae	*Sturnus vulgaris*	European starling
Timaliidae	*Chamaea fasciata*	wrentit
Trochilidae	*Calypte anna*	Anna's hummingbird
	Calypte costae	Costa's hummingbird
Troglodytidae	*Thryomanes bewickii*	Bewick's wren
Turdidae	*Sialia mexicana*	western bluebird
Tyrannidae	*Sayornis nigricans*	black phoebe
	Sayornis saya	Say's phoebe
	Tyrannus verticalis	western kingbird
	Tyrannus vociferans	Cassin's kingbird
Falconidae	*Falco sparverius*	American kestrel

Attachment D (cont.)
ANIMAL SPECIES OBSERVED

FAMILY	SCIENTIFIC NAME	COMMON NAME
VERTEBRATES (cont.)		
Birds (cont.)		
Sylviidae	*Polioptila melanura*	blue-gray gnatcatcher
Mammals		
Bovidae	*Capra hircus*	domestic goat
Canidae	*Canis latrans*	coyote
Geomyidae	*Thomomys bottae*	Botta's pocket gopher
Heteromyidae	*Dipodomys spp.*	kangaroo rat
Leporidae	*Sylvilagus audubonii*	desert cottontail
Sciuridae	*Spermophilus beecheyi*	California ground squirrel
Mephitidae	*Mephitis mephitis*	striped skunk
Bovidae	*Ovis aries*	domestic sheep

†Sensitive species

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Appendix E

EXPLANATION OF STATUS CODES FOR PLANT AND ANIMAL SPECIES

Appendix E
EXPLANATION OF STATUS CODES FOR PLANT AND ANIMAL SPECIES

U.S. Fish and Wildlife Service (USFWS)

BCC Birds of Conservation Concern
FE Federally listed endangered
FT Federally listed threatened

California Department of Fish and Game (CDFW)

SE State listed endangered
ST State listed threatened
SSC State species of special concern

Multiple Species Habitat Conservation Plan (MSHCP) Covered

MSHCP Covered indicates that the species is part of a proposed list of species (146 total) considered at this time to be adequately conserved by the Western Riverside MSHCP, provided that participants meet all conditions listed in the Final MSHCP.

California Native Plant Society (CNPS) Codes

Lists

1A = Presumed extinct.

1B = Rare, threatened, or endangered in California and elsewhere. Eligible for state listing.

2 = Rare, threatened, or endangered in California but more common elsewhere. Eligible for state listing.

3 = Distribution, endangerment, ecology, and/or taxonomic information needed. Some eligible for state listing.

4 = A watch list for species of limited distribution. Needs monitoring for changes in population status. Few (if any) eligible for state listing.

List/Threat Code Extensions

.1 = Seriously endangered in California (over 80 percent of occurrences threatened/high degree and immediacy of threat)

.2 = Fairly endangered in California (20 to 80 percent occurrences threatened)

.3 = Not very endangered in California (less than 20 percent of occurrences threatened, or no current threats known)

A CA Endemic entry corresponds to those taxa that only occur in California.

All List 1A (presumed extinct in California) and some List 3 (need more information; a review list) plants lacking threat information receive no threat code extension. Threat Code guidelines represent only a starting point in threat level assessment. Other factors, such as habitat vulnerability and specificity, distribution, and condition of occurrences are considered in setting the Threat Code.

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C.2 - Determination of Biologically Equivalent or Superior Preservation

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Memorandum

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
Suite 200
La Mesa, CA 91942
SallyT@helixepi.com
619.462.1515 **tel**
619.462.0552 **fax**
www.**helixepi**.com

HELIX Environmental Planning

Date: May 2, 2016

To: Harry Sandoval, County of Riverside

Cc: Lonnie Ellisor, The Shopoff Group

From: Barry Jones

Subject: Response to Comments Determination of Biologically Equivalent or Superior Preservation for San Gorgonio Crossings

HELIX Proj. No.: TSG-16

Message: The U.S. Fish and Wildlife Service and California Department of Fish and Wildlife (collectively "Resource Agencies") submitted comments to the County of Riverside on April 5, 2016, on the Determination of Biologically Equivalent or Superior Preservation (DBESP) for San Gorgonio Crossings project prepared by HELIX Environmental Planning, Inc. This memo addresses those comments. It is my understanding that the County will address comments 1 and 2 and these will not be addressed further here.

3. Pages 2 and 3 provide a complete description of the methods used to determine the limits of Riparian/Riverine resources on the site. The dates of the fieldwork are identified, the definition used to determine Riparian/Resources is provided, and as backup further information is provided on state and federal jurisdictional delineation methodologies are provided. It should be noted that the Riparian/Riverine mapping was provided as part of the pre-DBESP processing for the project, and was revised based on comments by the Resource Agencies prior to submittal of the DBESP. No additional information is required.

4. Figure 8 of the DBESP identifies the drainage and outfall that will collect flows from the Drainage "B" complex and release flows at the same location where those flows currently exit the site. Similarly, Drainage "A" is being conveyed through the mitigation channel along the southern end of the project before outletting offsite to the west at the same location that the flows currently exit the site.

5. The project will be conditioned to provide a more detailed mitigation plan for review and approval by the County prior to initiating project impacts. The information provided in the DBESP is adequate to determine that the mitigation as proposed will provide equivalent or superior preservation as required by the DBESP process.

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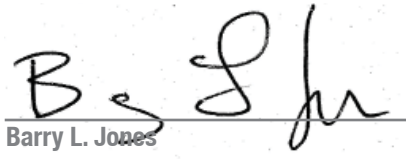
HELIX
Environmental Planning

San Gorgonio Crossings

Determination of Biologically Equivalent or Superior Preservation Report

November 11, 2014



Barry L. Jones
Senior Consulting Biologist

Prepared for:
TSG Cherry Valley, LP
2 Park Plaza, Suite 700
Irvine, CA 92614

Prepared by:
HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard, Suite 200
La Mesa, CA 91942

CVAR_09476

San Gorgonio Crossings Project
Determination of Biologically Equivalent or Superior Preservation Report

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CVAR_09478

I. INTRODUCTION

The purpose of this Determination of Biologically Equivalent or Superior Preservation (DBESP) analysis is to summarize the San Gorgonio Crossings project's compliance with the County of Riverside's (County's) Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP; Dudek and Associates [Dudek] 2003). The I-10 Gateway Job Center property is comprised of 7 Assessor Parcel Numbers (APNs): 407-220-004, -007, -008, -009, -014, -016, and -017. The project site is located within the Pass Area Plan of the MSHCP; however, it is not located within any Criteria Cell. This project has not yet received its U.S. Army Corps of Engineers (USACE) Section 404 Permit, California Department of Fish and Wildlife (CDFW) Streambed Alteration Agreement, or Regional Water Quality Control Board (RWQCB) Section 401 Water Quality Certification.

MSHCP Section 6.1.2, Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools, states:

> The purpose of the procedures described in this section is to ensure that the biological functions and values of these areas throughout the MSHCP Plan Area are maintained such that Habitat values for species inside the MSHCP Conservation Area are maintained.

The emphasis is on conservation of habitats capable of supporting MSHCP Covered Species, particularly within the identified Conservation Area. For projects that propose impacts to Riparian/Riverine or vernal pool resources, a DBESP assessment must be completed to ensure that the proposed alternative provides for "replacement of any lost functions and values of Habitat as it relates to Covered Species." This DBESP analysis provides information necessary for the County to find that the project meets these objectives.

II. DEFINITION OF PROJECT AREA

The approximately 229.9-acre San Gorgonio Crossings property is located east of Interstate 10 (I-10) on the north side of Cherry Valley Boulevard in the northwestern portion of Riverside County, California (Figures 1 and 2). The property is situated on the U.S. Geological Survey (USGS) 7.5-minute El Casco quadrangle in the northern portion of Section 30, Township 2 South, Range 1 West (Figure 3).

The southern and central portions of the property consist of a broad, sloping grassland, with steep ridges and canyons occurring on the northern half of the site. Grazing and past active agriculture has disturbed much of the site, which is currently grazed by sheep and goats. Several dirt roads and trails traverse the site and extend off site to the north and east. A small horse ranch and I-10 occur to the southwest of the property, while the remains of a chicken ranch occur to the southeast. The remainder of the property is bordered by undeveloped land, with the exception of a few rural residences to the north. An aerial photograph of the project site is included as Figure 4.

Elevations on site range from approximately 2,400 to 2,690 feet above mean sea level. Overall, site drainage is to the west and southwest. Soils on site are primarily Hanford coarse sandy loam and terrace escarpments with Gorgonio gravelly loamy fine sand, Greenfield sandy loam, Hanford cobbly coarse sandy loam, and Ramona sandy loam (Knecht 1971).

III. PROJECT DESCRIPTION

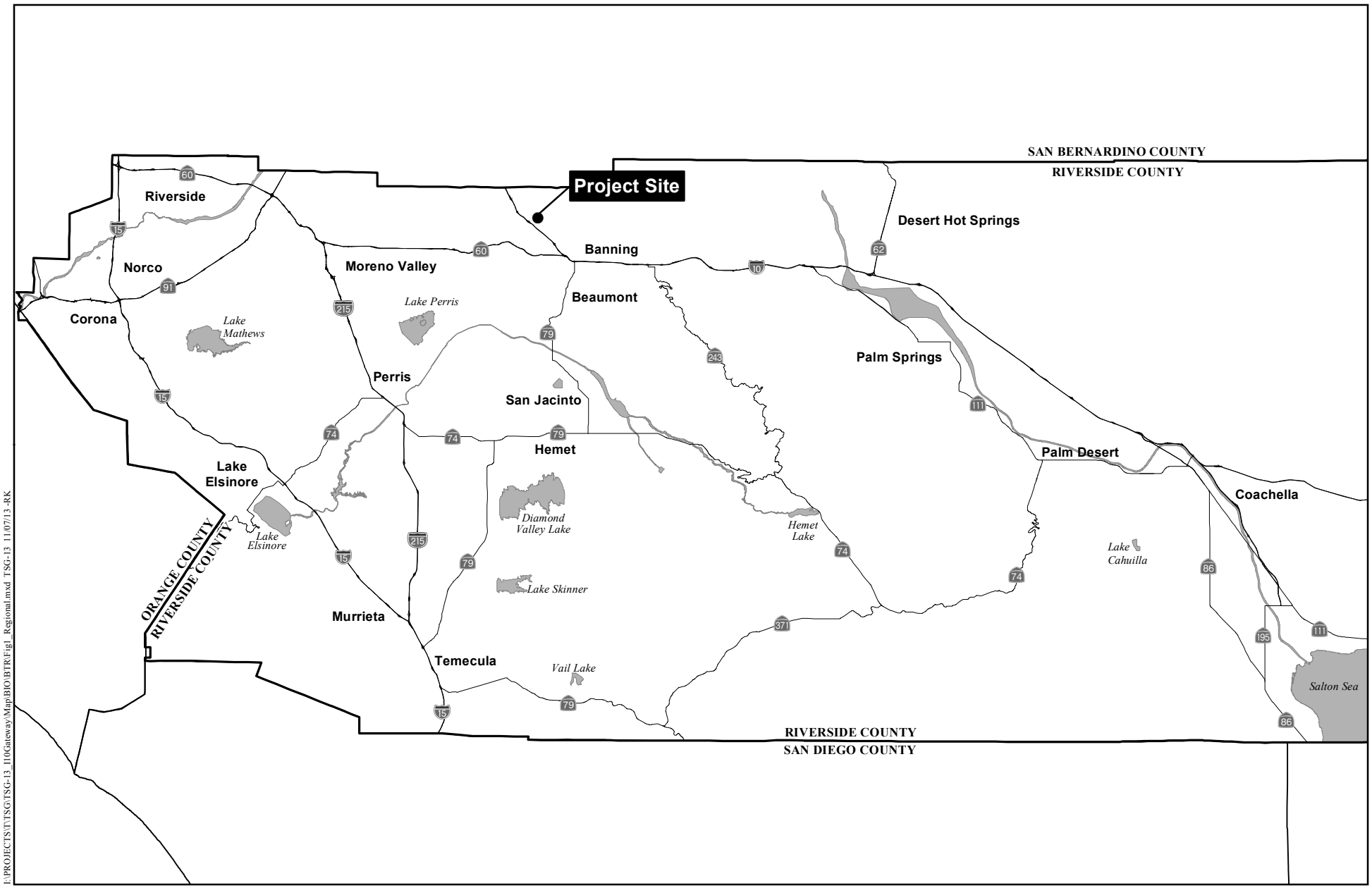
The proposed project is for the construction of 2 large industrial buildings on approximately 145.6 acres of the property. The project includes detention basins, parking, landscaping, and other associated infrastructure. An additional 13.5 acres of offsite impacts resulting from infrastructure construction occur to the north of the site. The 2 industrial buildings will be designed to be eligible for Leadership in Energy and Environmental Design (LEED) Silver Certification. Building 1 will comprise approximately 811,000 square feet, and Building 2 approximately 1,012,760 square feet for a total of approximately 1,823,760 square feet of floor area. Additionally, the project includes the use of solar panels on roofs, with 23 percent of the project's power needs being provided by the on-site solar panels.

Existing drainage flows from offsite areas to the north would be conveyed through the site and would ultimately be conveyed offsite to the west side of the project site. As included in the Hydrology analysis for Tentative Parcel Map 36564, there are two drainage areas that exist onsite: Drainage area "A" and "B." The project includes a number of drainage facilities designed to safely convey the off-site 100-year storm runoffs through the project site, limit the storm flow resulting from project activities including: use of bio-treatment BMPs such as extended detention basins and trenches, sized to accommodate the first flush flows generated in the proposed development area; storm drain facilities that will collect and route onsite runoff through a detention basin that is sized to limit 10-year storm discharge from the site to be equal or less than flows under the existing condition; and a detention basin that will incorporate hydro modification requirements by limiting the increase in the 2-year storm flow caused by the proposed development to less than 10 percent more than existing conditions.

IV. METHODS

HELIX Environmental Planning, Inc. (HELIX) conducted a jurisdictional delineation in areas that were suspected to be jurisdictional wetlands and non-wetland waters of the U.S. (WUS) on January 27 and February 8, 2005. HELIX returned to the site on November 24, 2008 to update the jurisdictional mapping. An updated assessment was conducted by Larry Sward on September 17, 2012. The offsite study area was assessed by Larry Sward on October 22, 2013 (HELIX 2013). These surveys were the basis for the Riparian/Riverine and vernal pool habitats assessment, according to the MSHCP definition as follows:

- Riparian/Riverine areas are lands that contain habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens, which occur close to or depend upon soil moisture from a nearby freshwater source; or areas with freshwater flow during all or a portion of the year.



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Regional Location Map

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

N

0 10 Miles

Figure 1

CVAR_09481



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Aerial Location Map

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

N 0 2,000 Feet

Figure 2

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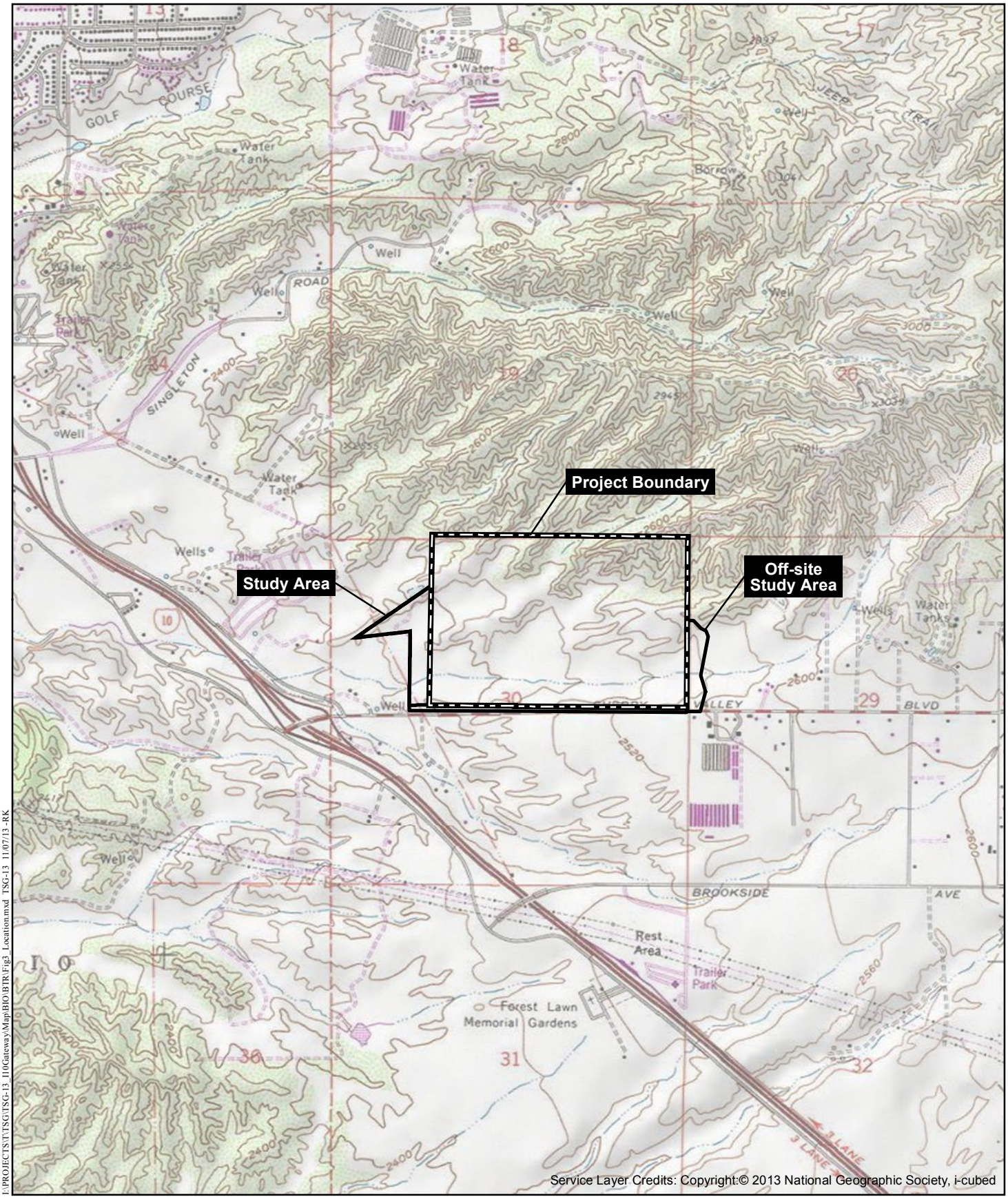

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Project Location Map

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

N 0 2,000 Feet

Figure 3

CVAR_09483



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Aerial Photograph

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

N 0 500 Feet

Figure 4

CVAR_09484

- Vernal pools are seasonal wetlands that occur in depression areas that have wetland indicators of all 3 parameters (soils, vegetation, and hydrology) during the wetter portion of the growing season but normally lack wetland indicators of hydrology and/or vegetation during the drier portion of the growing season. Obligate hydrophytes and facultative wetlands plant species are normally dominant during the wetter portion of the growing season, while upland species (annuals) may be dominant during the drier portion of the growing season. The determination that an area exhibits vernal pool characteristics and the definition of the watershed supporting vernal pool hydrology must be made on a case-by-case basis. Such determinations should consider the length of time the area exhibits upland and wetland characteristics and the manner in which the area fits into the overall ecological system as a wetland. Evidence concerning the persistence of an area's wetness can be obtained from its history, vegetation, soils, and drainage characteristics, uses to which it has been subjected, and weather and hydrologic records.

- All areas with depressions, drainage channels, or wetland vegetation were evaluated for the presence of WUS, including jurisdictional wetlands and Riparian/Riverine resources. Each area was inspected according to the USACE' wetland delineation guidelines. USACE wetland boundaries were determined using 3 criteria (vegetation, hydrology, and soils) established for wetland delineations as described within the Wetlands Delineation Manual (Environmental Laboratory 1987). Other references included memoranda (Studt 1991; Williams 1992) that help clarify the wetlands manual. CDFW jurisdictional boundaries were determined based on the presence of any 1 of the 3 criteria being present.

Plants were identified according to Hickman, ed. (1993) and/or Roberts et al. (2004). Wetland affiliations of plant species follow the U.S. Fish and Wildlife Service's (USFWS's) Branch of Habitat Assessment (USFWS 1996). Soils information was taken from Knecht (1971) and hydric soil lists for the area (U.S. Department of Agriculture 1992). Soil chromas were identified according to Kollmorgen Instruments Corporation (1994).

The area was then determined to be a federal (USACE) wetland if it satisfied all 3 wetland criteria (vegetation, hydrology, and soil). Areas were determined to be non-wetland WUS if there was evidence of regular surface flow (e.g., bed and bank) but vegetation or soils criterion was not met. Jurisdictional limits for these areas were defined by the ordinary high water mark and measured, and the surrounding vegetation was noted.

Waters of the state (CDFW jurisdictional) boundaries were determined based on the presence of riparian vegetation or regular surface flow. Streambeds within CDFW jurisdiction were delineated based on the definition of streambed as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports riparian vegetation" (Title 14, Section 1.72). Riparian habitat is not defined in Title 14, but the section refers to vegetation and habitat associated with a stream. Waters of the state include all riparian shrub or tree canopy that may extend beyond stream banks.

Table 1 SURVEY INFORMATION		
DATE	**PERSONNEL**	**SURVEY TYPE**
01/27/05	Larry Sward, Stacy Nigro	Vegetation mapping, Jurisdictional delineation
01/28/05	Rob Hogenauer, Zack West	Winter burrowing owl survey
01/31/05	Rob Hogenauer, Scott Taylor	Winter burrowing owl survey
02/8/05	Larry Sward, Stacy Nigro	Vegetation mapping, Jurisdictional delineation
5/27/05	Larry Sward	Rare plant survey
6/15/05	Rob Hogenauer Zack West	Breeding season burrowing owl survey
6/16/05	Rob Hogenauer Zack West	Breeding season burrowing owl survey
8/9/05	Rob Hogenauer Zack West	Breeding season burrowing owl survey
8/11/05	Rob Hogenauer Zack West	Breeding season burrowing owl survey
8/18/05	Rob Hogenauer Zack West	Breeding season burrowing owl survey
4/18/07	Rob Hogenauer, Zsolt Kahancza	Breeding season burrowing owl survey
4/20/07	Rob Hogenauer	Breeding season burrowing owl survey
4/23/07	Rob Hogenauer	Breeding season burrowing owl survey
4/30/07	Rob Hogenauer	Breeding season burrowing owl survey
5/2/07	Rob Hogenauer	Breeding season burrowing owl survey
5/4/07	Rob Hogenauer	Breeding season burrowing owl survey
5/7/07	Rob Hogenauer	Breeding season burrowing owl survey
5/15/07	Rob Hogenauer	Breeding season burrowing owl survey
5/21/07	Rob Hogenauer	Breeding season burrowing owl survey
5/23/07	Rob Hogenauer	Breeding season burrowing owl survey
8/27/08	Rob Hogenauer, Zsolt Kahancza	Breeding season burrowing owl survey
8/28/08	Rob Hogenauer, Zsolt Kahancza	Breeding season burrowing owl survey
8/29/08	Rob Hogenauer, Zsolt Kahancza	Breeding season burrowing owl survey
8/30/08	Rob Hogenauer, Brian Parker	Breeding season burrowing owl survey
9/17/12	Larry Sward	Jurisdictional delineation

V. RIPARIAN/RIVERINE RESOURCES

A. RIPARIAN/RIVERINE HABITATS

The site contains streambed, mule fat scrub, Riversidean sage scrub, Riversidean-Diegan coastal sage scrub (including disturbed), coastal sage-chaparral scrub (including disturbed), scrub oak chaparral (including disturbed), non-native grassland, eucalyptus woodland, and disturbed habitat (Figure 5; Table 1). No vernal pools exist on site, and no vernal pool species are expected to occur.

Riparian/Riverine habitats occur on site as 2 main drainages that traverse the site from east to west and from northeast to southwest, in addition to a few other shorter, scattered drainages (Figure 6). All but 2 small areas of the on-site drainages are ephemeral and do not support wetland vegetation, and are considered Riverine and total 1.25 acres. The 2 small disturbed

Project Boundary
Study Area
Off-site Study Area

Sensitive Species

Am Yucaipa Onion (*Allium marvinii*)

Vegetation

- Riversidian Sage Scrub
- Riversidian - Diegan Coastal Sage Scrub
- Riversidian - Diegan Coastal Sage Scrub - Dist
- Coastal Sage - Chaparral Scrub
- Coastal Sage - Chaparral Scrub - Disturbed
- Scrub Oak Chaparral
- Scrub Oak Chaparral - Disturbed
- Mule Fat Scrub
- Non-native Grassland
- Eucalyptus Woodland
- Disturbed Habitat
- Pasture
- Developed

Am

Cherry Valley Boulevard

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Vegetation Map

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

N 0 400 Feet

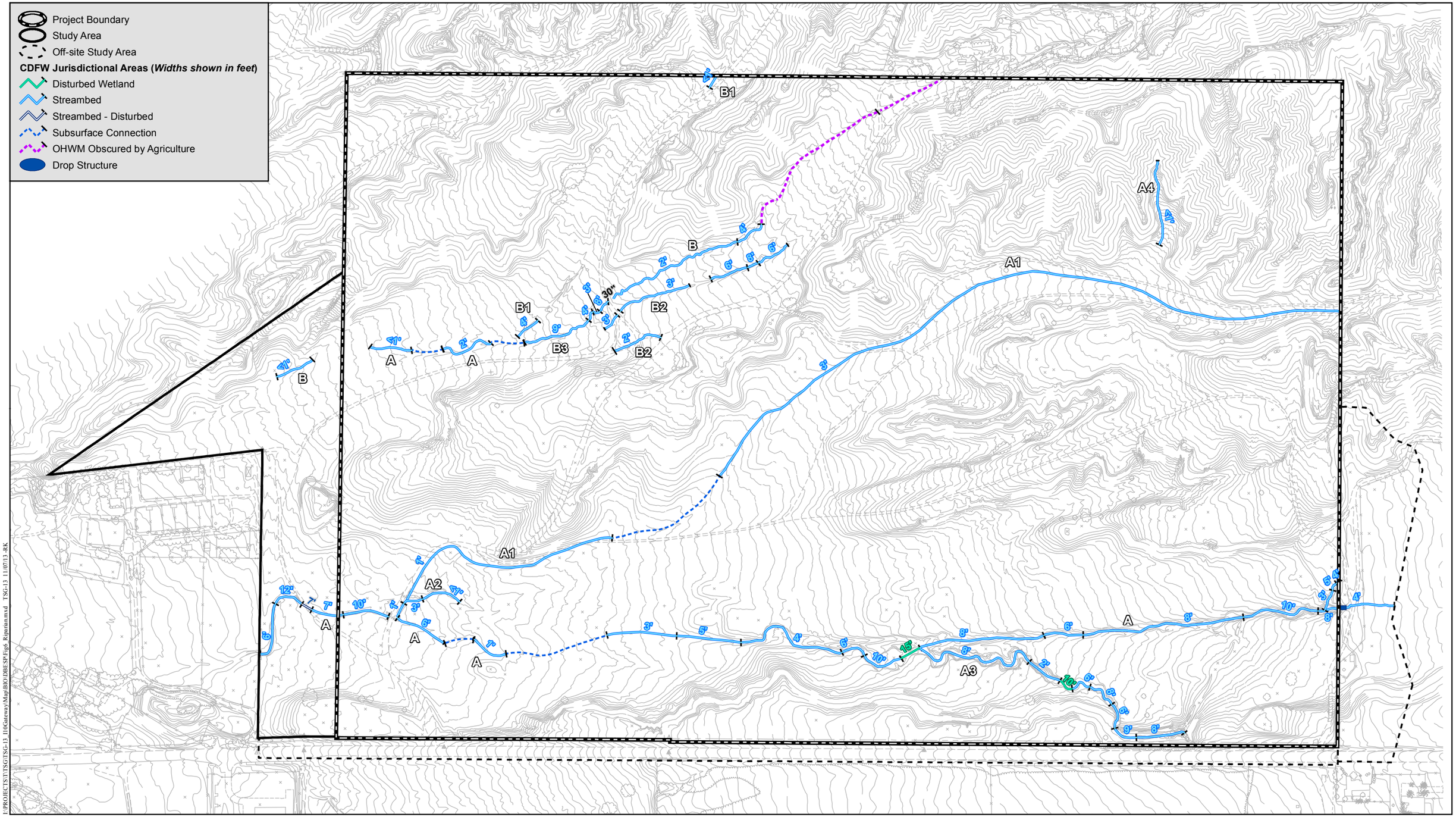
Figure 5

CVAR_09487

Project Boundary
Study Area
Off-site Study Area

CDFW Jurisdictional Areas (*Widths shown in feet*)

Disturbed Wetland
Streambed
Streambed - Disturbed
Subsurface Connection
OHWM Obscured by Agriculture
Drop Structure



Riparian/Riverine Areas

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

0 350 Feet

Figure 6

CVAR_09488

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wetland areas are considered Riparian and total 0.04 acre. An additional 0.12 acre of ephemeral drainage occurs in the offsite study area. The drainages are depicted in Figure 5 but are not presented in Table 1 as they were included as part of the vegetation communities they traverse. There is a total of 1.41 acres of Riparian/Riverine habitats.

B. JURISDICTIONAL HABITAT

As previously noted, a focused jurisdictional delineation was conducted in areas that were suspected to be jurisdictional wetlands and non-wetland WUS in January and February 2005 by HELIX. This delineation was updated in 2008 based on a site visit with USACE and RWQCB personnel. An updated assessment was conducted by Larry Sward on September 17, 2012. Ephemeral drainage/streambed occurs on site as 2 main drainages that traverse the site from east to west and from northeast to southwest, in addition to a few other shorter, scattered drainages (Figure 6). Widths of on-site drainages range from less than 1 foot to 15 feet. All on-site drainages are ephemeral and do not support wetland vegetation. These areas are regulated by the USACE as non-wetland WUS and by the CDFW as streambeds.

Mule fat scrub consists of a small, isolated stand of mule fat in the southeastern corner of the site. The soil in this area is not hydric and therefore did not meet USACE wetland criteria. Since this area is not associated with a drainage or pond, it was also determined not to be CDFW jurisdictional habitat. This area is also not considered Riparian/Riverine habitat under the MSHCP.

The WUS (USACE jurisdiction) is comprised of 0.46 acre of ephemeral drainage, of which 0.01 occurs in the offsite study area. The waters of the state (CDFW jurisdiction) consists of 1.40 acres, including 0.04 acre of disturbed wetland and 1.37 acres of streambed, which is subject CDFW regulation under California Fish and Game Code Sections 1600 through 1616. The 1.37 acres of streambed included 0.12 acre within the offsite study area.

C. RIPARIAN/RIVERINE AND VERNAL POOL SPECIES

The definition of Riparian/Riverine habitats is based on potential for the habitat to support Riparian/Riverine Covered Species, which are identified in MSHCP Section 6.1.2 and described below.

1. Plants

Twenty-four plant species are identified as potentially occurring in Riparian/Riverine and vernal pool habitats. Shrub and tree species such as California black walnut (*Juglans californica* var. *californica*), Engelmann oak (*Quercus engelmannii*), Coulter's matilija poppy (*Romneya coulteri*), and San Miguel savory (*Satureja chandleri*) would have been readily identifiable during project surveys but were not found on site. Several species, including spreading navarretia (*Navarretia fossalis*), California Orcutt grass (*Orcuttia californica*), prostrate navarretia (*Navarrettia prostrate*), San Diego button-celery (*Eryngium aristulatum* var. *parishii*), thread-leaved brodiaea (*Brodiaea filifolia*), Fish's milkwort (*Polygala cornuta* var. *fishiae*), lemon lily (*Lilium parryi*), ocellated Humboldt lily (*L. humboldtii* ssp. *ocellatum*), Mojave

tarplant (*Deinandra mohavensis*), Parish's meadowfoam (*Limnathes gracilis* var. *parishii*), and slender-horned spineflower (*Dodecahema leptoceras*) have distributions well outside of the study area. The remaining species have a distribution that includes the project area or occur in habitats found on site and are discussed in greater detail below.

The Santa Ana River woolly-star (*Eriastrum densifolium* spp. *sanctorum*) is found along the Santa Ana River in 2 locations and is restricted to open washes and early-successional alluvial fan scrub on open slopes above main watercourses, such as the Santa Ana River on fluvial deposits where flooding and scouring occur at a frequency that allows the persistence of open shrublands. No appropriate habitat occurs on site for the Santa Ana River woolly-star.

Suitable habitat for Brand's phacelia (*Phacelia stellaris*) includes coastal dunes and/or coastal scrub in sandy openings, sandy benches, dunes, sandy washes, or flood plains of rivers at elevations between 0 and 1,200 feet. Brand's phacelia is known from 2 locations on sandy terraces along the Santa Ana River (at Fairmont Park and along a horse trail in the Santa Ana Wilderness Area along the Santa Ana River). Given the highly disturbed nature of the site, this species is not expected to occur.

Graceful tarplant (*Holocarpha virgata* ssp. *elongata*) occurs in chaparral, cismontane woodland, coastal sage scrub, and valley and foothill grasslands below 1,900 feet (California Native Plant Society [CNPS] 2013). This species would not be expected to occur on site because the site's elevation is higher than the known range for this species.

Mud nama (*Nama stenocarpum*) is restricted to muddy embankments of marshes and swamps and within lake margins and riverbanks (CNPS 2013). Three populations are known from Riverside County, with 2 occurring along the San Jacinto River (Dudek 2003). No appropriate habitat occurs on site.

Orcutt's brodiaea (*Brodiaea orcuttii*) occurs in clay soils in mesic native and non-native grasslands that often include vernal pools as well as moist meadows and along stream courses at higher elevations (Reiser 2001; CNPS 2013). The core population in Riverside County is the Santa Rosa Plateau (Dudek 2003). No clay soils are present on site.

San Jacinto Valley crownscale (*Atriplex coronata* var. *notatior*) is restricted to grassland, playas, and vernal pools with alkali soils (Dudek 2003). This species typically occurs on the margins of areas subject to short-term inundation and does not develop in areas that support regular long-term ponding or flooding. No alkali soils or appropriate habitat occurs on site.

Smooth tarplant (*Centromadia pungens*) is found in southwestern California and northwestern Baja California, Mexico (Baja), and occurs in San Bernardino, Riverside, and San Diego counties. This species occurs in a variety of habitats, including alkali scrub and playas, riparian woodland, watercourses, and grasslands with alkaline affinities (Dudek 2003; CNPS 2013). No alkali soils are present on site.

Vernal barley (*Hordeum intercedens*) occurs in grassland, vernal pools, and vernal playas and is restricted to clay and alkaline, silty-clay soils in Riverside County (Dudek 2003). Twelve populations are known from Riverside County along the San Jacinto River and Salt Creek. No appropriate soils occur on site.

2. Animals

Invertebrates

Vernal pool fairy shrimp (*Branchinecta lynchi*) occurs throughout the Central Valley and in several disjunct populations in Riverside County. This species exists in vernal pools and other ephemeral basins, often located in patches of grassland and agriculture interspersed in Diegan coastal sage scrub and chaparral. Riverside fairy shrimp (*Streptocephalus woottoni*) occurs in Riverside, Orange, and San Diego counties as well as in northern Baja. This species is typically found in deeper vernal pools and other ephemeral basins that hold water for long periods of time (30 or more days). Santa Rosa Plateau fairy shrimp (*Linderiella santarosae*) are limited to the Santa Rosa Plateau. No vernal pools or ephemeral basins occur on site and none of the four sensitive fairy shrimp species is expected to occur.

Fish

The Santa Ana sucker (*Catastomus santaanae*) is restricted to the Santa Ana River watershed with year-round flows. No appropriate habitat occurs on site.

Amphibians

No appropriate habitat for the 3 amphibian species (arroyo toad [*Bufo californicus*], mountain yellow-legged frog [*Rana muscosa*], or California red-legged frog [*Rana aurora draytonii*]) listed under MSHCP 6.1.2 occurs on site, and none of these species has any potential to occur on site.

Birds

The least Bell's vireo (*Vireo bellii pusillus*) is found in riparian scrub, forest, and woodland habitats that typically feature dense cover within 1 to 2 meters of the ground and a dense, stratified canopy. It inhabits low, dense riparian growth along water or dry parts of intermittent streams. Typically, the vireo is associated with southern willow scrub, cottonwood forest, mule fat scrub, sycamore alluvial woodland, coast live oak riparian forest, arroyo willow riparian forest, wild blackberry, or mesquite in desert localities. It uses habitat limited to the immediate vicinity of water. The vireo primarily nests in vegetation typically dominated by willows and mule fat but may also use a variety of shrubs, trees, and vines. There is no suitable habitat on site to support the vireo.

The southwestern willow flycatcher (*Empidonax traillii extimus*) is restricted to riparian woodlands along streams and rivers with mature, dense stands of willows, cottonwoods (*Populus* spp.), or smaller spring fed or boggy areas with willows or alders (*Alnus* spp.). It breeds in

relatively dense riparian habitats. There is no riparian woodland present on site; therefore, there is no suitable habitat to support the flycatcher.

The western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) requires dense, wide riparian woodlands with well-developed understories for breeding. It occurs in densely foliaged, deciduous trees and shrubs, especially willows that are required for roost and nest sites. When breeding, the cuckoo is restricted to river bottoms and other mesic habitats where humidity is high and where dense understory abuts slow-moving watercourses, backwaters, or seeps. Willow is almost always a dominant component of the vegetation. There is no suitable habitat on site to support the cuckoo.

Both the bald eagle (*Haliaeetus leucocephalus*) and peregrine falcon (*Falco peregrinus*) occur primarily in and adjacent to open water habitats, with the falcon possibly occurring in riparian areas. No suitable habitat occurs on site.

VI. IMPACTS

A. RIPARIAN/RIVERINE AND VERNAL POOL HABITATS

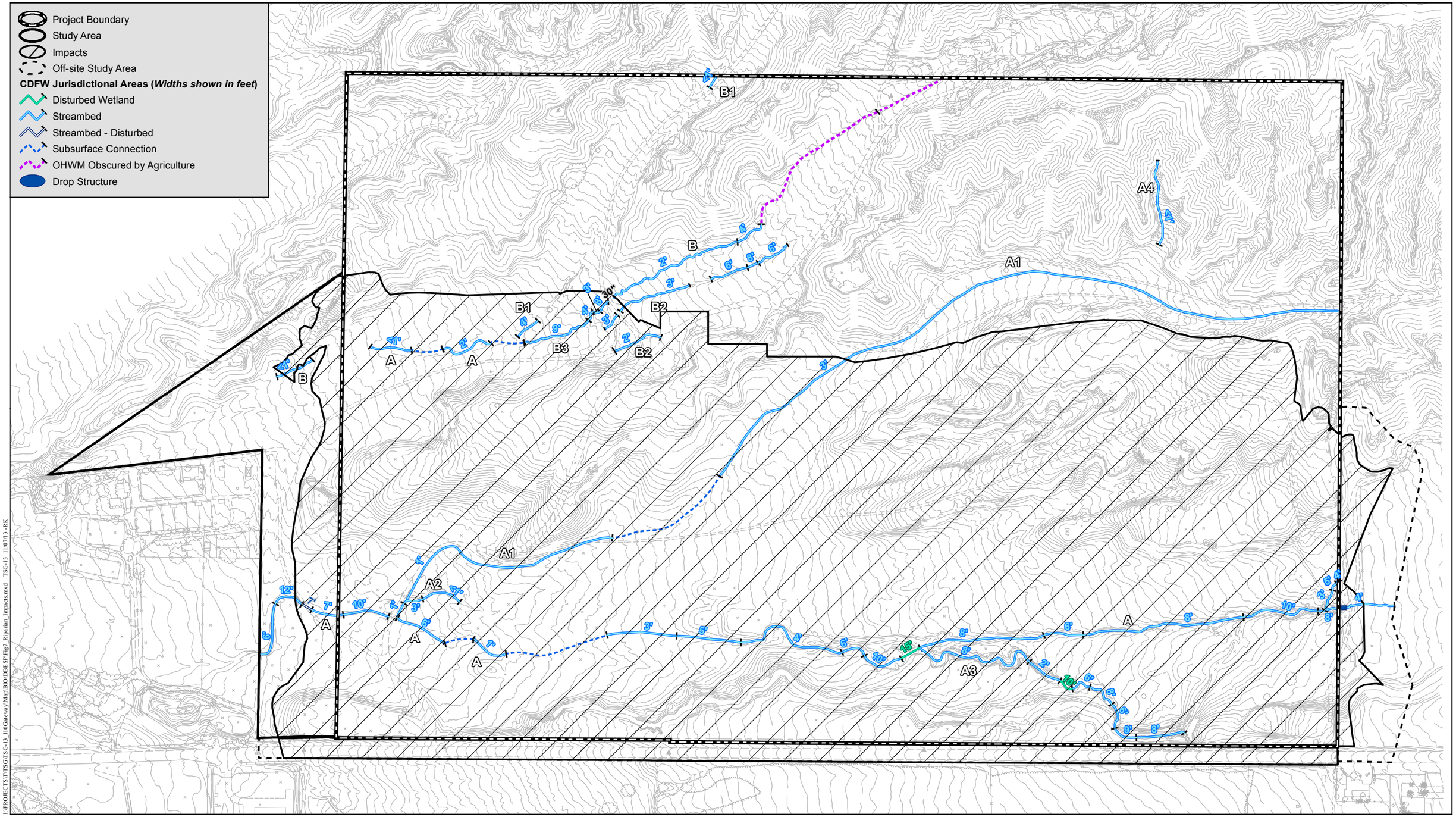
As described above, the emphasis of the MSHCP's Riparian/Riverine and vernal pool policy is on conservation of habitats capable of supporting MSHCP Covered Species. The goal of the DBESP process is to determine if the project has in fact provided for a project alternative that results in biologically equivalent or superior preservation. The first priority for Riparian/Riverine habitats that have potential to contribute to the biological values of the MSHCP preserve is avoidance of direct impacts. The proposed project would impact approximately 1.07 acre of streambed habitat considered Riverine and 0.04 acre of disturbed wetland that is considered Riparian (Figure 7) that does not support Riparian/Riverine target species and does not contribute substantially to the on-site biological values of the MSHCP because the project site is outside of any Criteria Cells and is not targeted for conservation. The functions of the unvegetated Riverine streams and disturbed wetland on the property are primarily water conveyance, sediment transport, and energy dissipation (hydrologic regime and flood attenuation).

B. RIPARIAN/RIVERINE COVERED SPECIES

None of the species covered under Section 6.1.2 has any potential to occur on the project site; however, the drainages on the site are considered Riverine and the disturbed wetland is considered Riparian as these are tributary to downstream resources with potential to support sensitive riparian species.

C. JURISDICTIONAL HABITAT

The USACE, CDFW, and RWQCB regulate a project's effects on aquatic resources. As noted above, a focused jurisdictional delineation was conducted in areas that were suspected to be



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Riparian/Riverine Areas and Impacts

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

Figure 7

CVAR_09493

jurisdictional wetlands and non-wetland WUS in January and February 2005 and November 2008, and updated in September 2012 by HELIX.

The Riverine habitat that would be impacted by the project consists of unvegetated, ephemeral drainages that traverse the property east to west. Total impacts include 0.40 acre of USACE and 1.11 acre of CDFW (including the 0.40 acres of USACE jurisdictional area) jurisdictional streambed.

The project will need to obtain an Individual Permit under Section 404 of the Clean Water Act. A Water Quality Certification application will need to be submitted to the RWQCB in compliance with Section 401 of the Clean Water Act. A Section 1602 Streambed Alteration Agreement request will need to be submitted to the CDFW for project effects on waters of the state.

VII. AVOIDANCE AND MITIGATION

A. AVOIDANCE

MSHCP Section 6.1.2 states:

> The purpose of the procedures described in this section is to ensure that the biological functions and values of these areas throughout the MSHCP Plan Area are maintained such that Habitat values for species inside the MSHCP Conservation Area are maintained.

The first priority for Riparian/Riverine habitats within Cell Criteria areas that have potential to contribute to MSHCP preserve biological values is avoidance of direct impacts.

The MSHCP states that:

> [f]or identified and mapped resources not necessary for inclusion in the MSHCP Conservation Area, applicable mitigation under California Environmental Quality Act (CEQA), which may include federal and state regulatory standards related to wetland functions and values, will be imposed by the Permittees. To ensure that these standards are met, Permittees shall ensure that, through the CEQA process, project applicants develop project alternatives demonstrating efforts that first avoid, and then minimize direct and indirect effects to the mapped wetlands and shall review these alternatives with the Permittee. An avoidance alternative shall be selected, if feasible. If an avoidance alternative is selected, measures shall be incorporated into the project design to ensure the long-term conservation of the areas to be avoided.
>
> If an avoidance alternative is not feasible, a practicable alternative that minimizes direct and indirect effects to Riparian/Riverine areas and vernal pools and associated functions and values to the greatest extent possible shall be selected.

> Those impacts that are unavoidable shall be mitigated such that the lost functions and values as they relate to Covered Species are replaced as set forth below under the Determination of Biologically Equivalent or Superior Preservation.

The first priority for sensitive habitats under the CEQA and under the MSHCP is avoidance of direct impacts. The proposed land use requires large pads that cannot be effectively reshaped to avoid Riverine and limited Riparian resources. Complete avoidance of the Riverine and limited Riparian resources would eliminate the viability of the development on the site because of the distribution of the drainages across the site. Total avoidance can be achieved only by minimal or no project alternatives, which render the project infeasible.

The current project does avoid impacts to the Riparian/Riverine resources in the northwestern portion of the site. Impacts to 0.30 acre (23 percent) of the Riverine resources have been avoided to the maximum extent practicable.

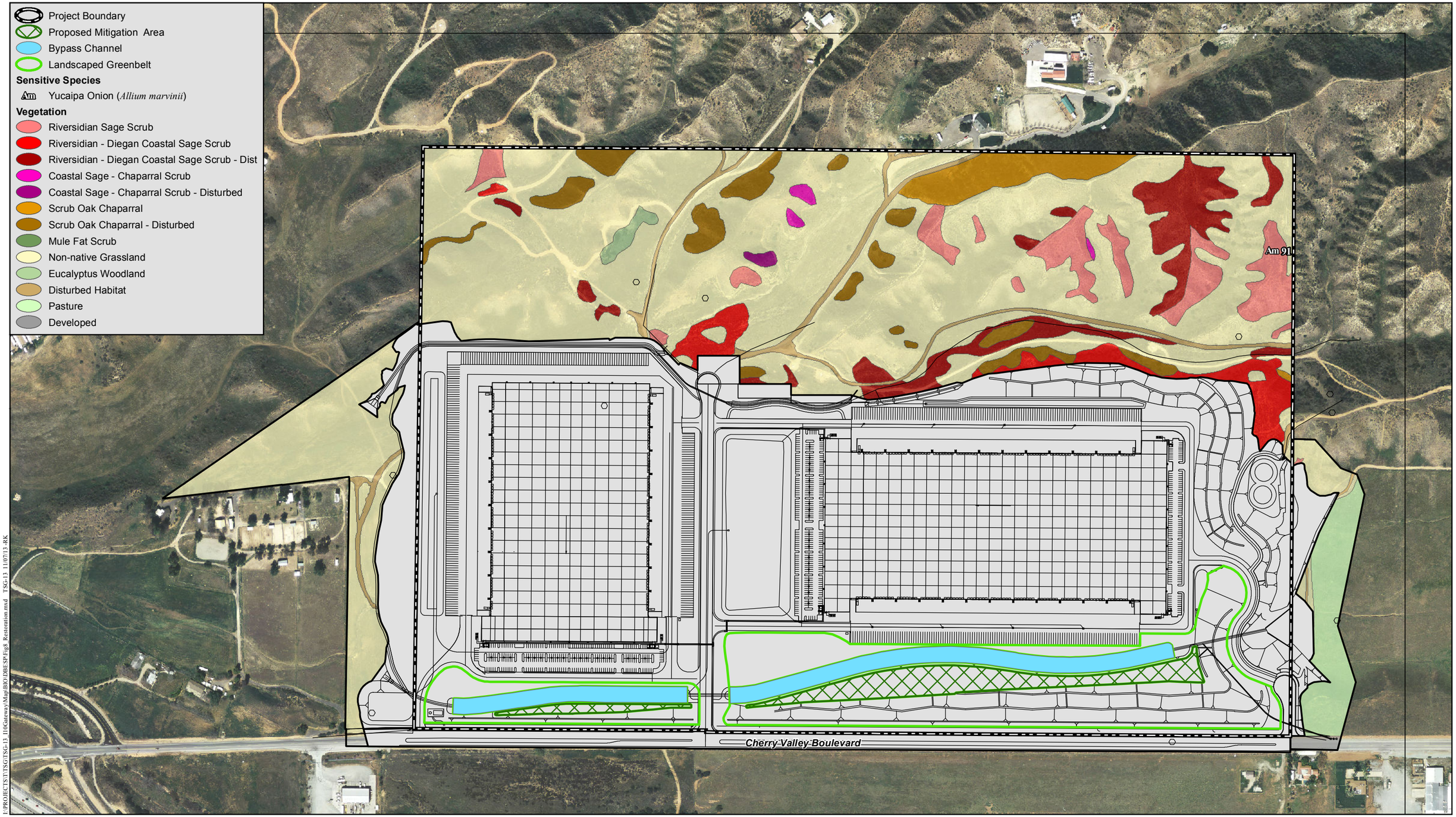
B. MITIGATION

Mitigation measures that would result in equivalent or superior preservation of the functions and values of riverine resources impacted by the project are shown here. Minimization measures for the proposed project will include the use of standard Best Management Practices (BMPs) to minimize the impacts during construction. Equipment will be stored in upland areas, outside of drainages except as required by project design (restoration, trash removal, etc.). Removal of trash located throughout the property will decrease the potential of pollutants entering the Riparian/Riverine areas downstream. The removal of the pollutants will increase the functions and values of the Riparian/Riverine areas proposed to be restored, thus replacing a portion of functions and values that will be lost within the project footprint.

Source control and treatment control BMPs will be implemented to minimize the potential contaminants that generated during and post construction. Source control BMPs include landscape planning, roof runoff controls, trash storage areas, use of alternative building materials, and education of future tenants. Treatment control BMPs include detention basins, vegetated swales (bio-swales), drain inlets, and vegetated buffers. The water quality BMPs will be implemented throughout the project to capture and treat contaminants.

To meet the criteria of a biologically equivalent or superior alternative, the applicant will offset impacts to Riverine resources through on-site creation at a 2:1 ratio for the 1.11 acres of impacts to Riverine and limited Riparian resources. In total, the proposed mitigation will result in 2.22 acres of Riparian and Riverine habitat creation/restoration.

The on-site creation of 2.22 acres of Riparian and Riverine habitat will occur at 2 locations on site along the southern boundary (Figure 8). The mitigation areas will receive all upstream flows up to 100 cubic feet per second (CFS). Flows above 100 CFS will bypass the mitigation area in a concrete-lined channel that will outlet at the eastern edge of the project. Flows up to 100 CFS will allow for creation of a braided streambed similar to the drainages that are being impacted. These areas will be revegetated with primarily floodplain scrub vegetation. Scattered pockets of mule fat scrub will also be planted to increase vegetative diversity. Combined, these areas will



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Vegetation, Impacts, and Riparian Mitigation Area

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

0 400 Feet

Figure 8

CVAR_09496

offset losses of Riparian/Riverine functions and values by providing high quality Riparian/Riverine habitat, and provide for other functions and services such as water quality benefits, groundwater recharge, and nutrient cycling. A detailed restoration plan for the on-site mitigation sites will be prepared and submitted to the County for review and approval prior to implementation of the restoration effort.

The on-site mitigation would meet the definition of a Biologically Equivalent Preservation Alternative consistent with MSHCP Section 6.1.2.

VIII. CONCLUSION

The project is being implemented consistent with MSHCP Section 6.1.2 based on the following:

- Avoidance of the 100 percent of the unvegetated streambeds is not considered feasible as the project requires the use of large pads that cannot be reshaped; and

- Mitigation for direct impacts would occur through creation of Riparian/Riverine habitat on site.

Based on this DBESP assessment, the project is consistent with MSHCP Section 6.1.2.

IX. CERTIFICATION/QUALIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

DATE: November 11, 2014 SIGNED: _____

Barry L. Jones
Senior Consulting Biologist

Fieldwork Performed By:

Robert Hogenauer
Biologist, HELIX Environmental Planning, Inc.
B.S., Biology, California State Polytechnic University, 2004

Zsolt Kahancza
Biologist, HELIX Environmental Planning, Inc.
B.A. Biology, California State at San Bernardino, 1994

Stacy Nigro
Biologist, HELIX Environmental Planning, Inc.
B.S., Wildlife Ecology (Forest Resources and Conservation), University of Florida, 1994

W. Larry Sward
Biologist, HELIX Environmental Planning, Inc.
M.S., Biology, San Diego State University, 1979; B.S., Biology, San Diego State University, 1975

Scott Taylor
Biologist, HELIX Environmental Planning, Inc.
B.A, Biology, Point Loma College, 1984

Zackry West
Biologist, HELIX Environmental Planning, Inc.
B.A., Environmental Studies, California State at San Bernardino, 2004

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C.3 - Multiple Species Habitat Conservation Plan

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HELIX
Environmental Planning

San Gorgonio Crossings

Multiple Species Habitat Conservation Plan Consistency Analysis

November 11, 2014

Barry L. Jones
Senior Consulting Biologist

Prepared for:
TSG Cherry Valley, LP
2 Park Plaza, Suite 700
Irvine, CA 92614

Prepared by:
HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard, Suite 200
La Mesa, CA 91942

CVAR_09504

Report Date: November 11, 2014

Title: MSHCP Compliance Report for the San Gorgonio Crossings Project

Project Location: The approximately 229-acre San Gorgonio Crossings project is located east of Interstate 10 on the north side of Cherry Valley Boulevard in the northwestern portion of Riverside County, California. The property is situated on the U.S. Geological Survey 7.5-minute El Casco quadrangle in the northern portion of Section 30, Township 2 South, Range 1 West.

Assessor's Parcel Numbers (APNs): The project site is comprised of APNs 407-220-004, -007, -008, -009, -014, -016, and -017

Owner/Applicant: TSG Cherry Valley, LP
Attn: Mr. Brian G. Rupp
2 Park Plaza, Suite 700
Irvine, CA 92614

Principal Investigator: HELIX Environmental Planning, Inc.
7578 El Cajon Blvd., Suite 200
La Mesa, CA 91942
(619) 462-1515

Report Summary: The approximately 229-acre property is comprised of agriculture and undeveloped land. Biological surveys conducted on the property include vegetation mapping, a general botanical and zoological survey, burrowing owl surveys, rare plant survey, and a Riparian/Riverine and vernal pool habitat assessment.

Report Preparer: Barry Jones/Rob Hogenauer
(619)462-1515

All Field Personnel: Rob Hogenauer
Larry Sward
Stacy Nigro
Zsolt Kahancza
Zachary West
Scott Taylor

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Multiple Species Habitat Conservation Plan Consistency Analysis for the San Gorgonio Crossings Project

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1.0 INTRODUCTION

The purpose of this report is to summarize the biological data on TSG Cherry Valley, LP's San Gorgonio Crossings project site for consistency with the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP; Dudek and Associates [Dudek] 2003). The San Gorgonio Crossings property is comprised of seven Assessor's Parcel Numbers (APNs): 407-220-004, -007, -008, -009, -014, -016, and -017. The project site is located within the Pass Area Plan of the MSHCP; however, it is not located within any Criteria Cell. Because the project lies outside of any Cell Criteria areas, the project is not subject to Joint Project Review (JPR).

1.1 SITE LOCATION AND DESCRIPTION

The approximately 229-acre San Gorgonio Crossings property is located east of Interstate 10 (I-10) on the north side of Cherry Valley Boulevard in the northwestern portion of Riverside County, California (Figures 1 and 2). The property is situated on the U.S. Geological Survey (USGS) 7.5-minute El Casco quadrangle in the northern portion of Section 30, Township 2 South, Range 1 West (Figure 3).

The southern and central portions of the property consist of a broad, sloping grassland, with steep ridges and canyons occurring on the northern half of the site. Grazing and past active agriculture has disturbed much of the site, which is currently grazed by sheep and goats. Several dirt roads and trails traverse the site and extend off site to the north and east. A small horse ranch and I-10 occur to the southwest of the property, while the remains of a chicken ranch occur to the southeast. The remainder of the property is bordered by undeveloped land, with the exception of a few rural residences to the north. An aerial photograph of the project site is included as Figure 4.

Elevations on site range from approximately 2,400 to 2,690 feet above mean sea level. Overall, site drainage is to the west and southwest. Soils on site are primarily Hanford coarse sandy loam and terrace escarpments with Gorgonio gravelly loamy fine sand, Greenfield sandy loam, Hanford cobbly coarse sandy loam, and Ramona sandy loam (Knecht 1971).

1.2 PROJECT DESCRIPTION

The proposed project is for the construction of 2 large industrial buildings on approximately 145.6 acres of the property. The project includes detention basins, parking, landscaping, and other associated infrastructure. The 2 industrial buildings will be designed to be eligible for Leadership in Energy and Environmental Design (LEED) Silver Certification. Building 1 will comprise approximately 811,000 square feet, and Building 2 will comprise approximately 1,012,760 square feet for a total of approximately 1,823,760 square feet of floor area. Additionally, the project includes the use of solar panels on roofs, with 23 percent of the project's power needs being provided by the on-site solar panels.

Existing drainage flows from offsite areas to the north would be conveyed through the site and would ultimately be conveyed offsite to the west side of the project site. As included in the

Hydrology analysis for Tentative Parcel Map 36564, there are two drainage areas that exist onsite: Drainage area "A" and "B." The project includes a number of drainage facilities designed to safely convey the off-site 100-year storm runoffs through the project site, limit the storm flow resulting from project activities including: use of bio-treatment BMPs such as extended detention basins and trenches, sized to accommodate the first flush flows generated in the proposed development area; storm drain facilities that will collect and route onsite runoff through a detention basin that is sized to limit 10-year storm discharge from the site to be equal or less than flows under the existing condition; and a detention basin that will incorporate hydro modification requirements by limiting the increase in the 2-year storm flow caused by the proposed development to less than 10 percent more than existing conditions.

Refer to Appendix A for a compilation of project information, including RCIP summaries, Biological Report Summary Sheet, and Level of Significance Checklist.

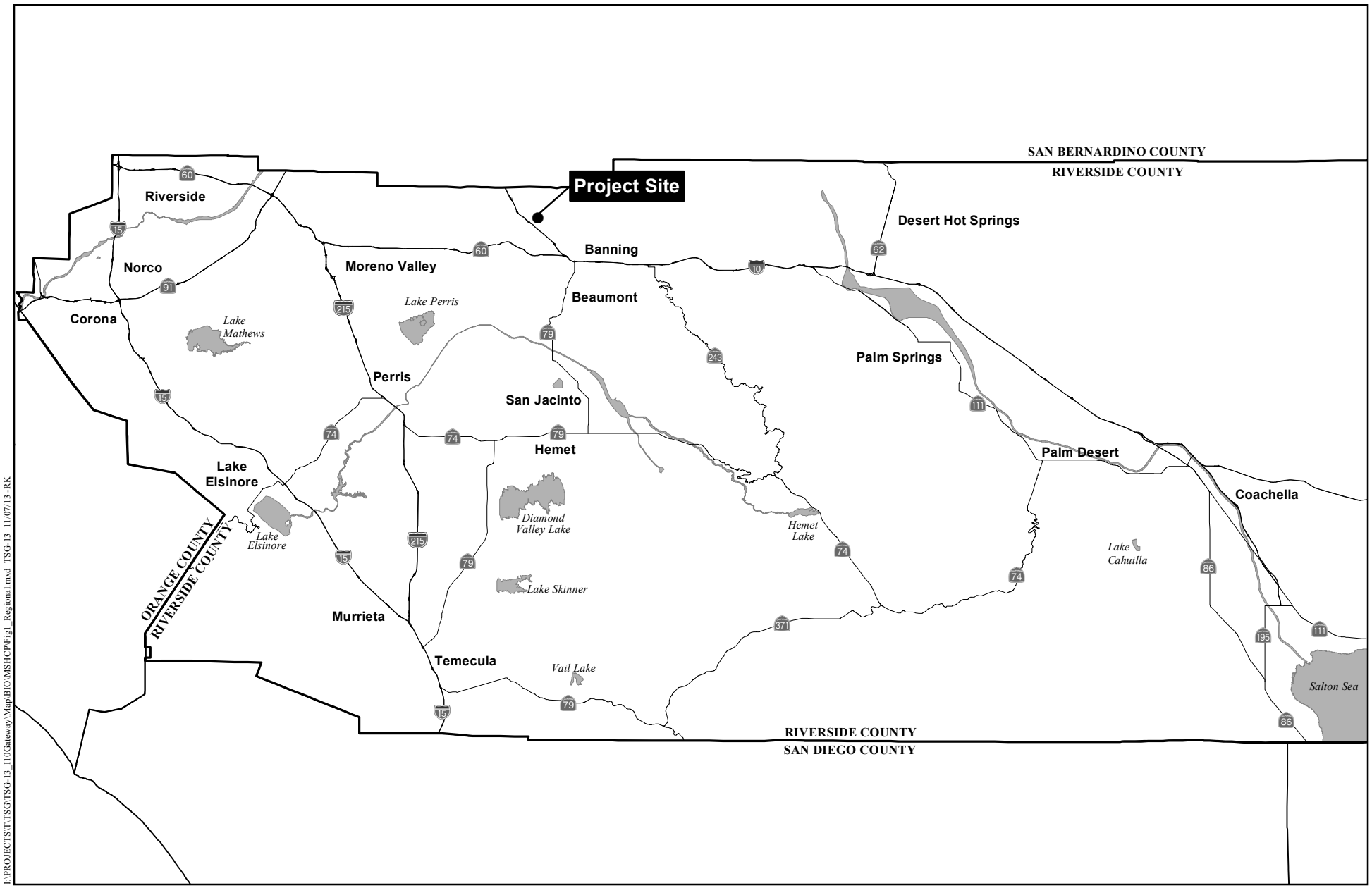
2.0 WESTERN RIVERSIDE MULTIPLE SPECIES HABITAT CONSERVATION PLAN

The MSHCP is a comprehensive multi-jurisdictional effort that includes Riverside County and 14 cities in western Riverside County. Rather than address sensitive species on an individual basis, the MSHCP focuses on the conservation of 146 species, proposing a reserve system of approximately 500,000 acres and a mechanism to fund and implement the reserve system (Dudek 2003). Most importantly, the MSHCP allows participating entities to issue take permits for listed species so that individual applicants need not seek their own permits from the U.S. Fish and Wildlife Service (USFWS) and/or California Department of Fish and Wildlife (CDFW, formerly California Department of Fish and Game [CDFG]). The MSHCP was adopted on June 17, 2003 by the Riverside County Board of Supervisors. The Incidental Take Permit was issued by both the USFWS and CDFW on June 22, 2004. As this property is in unincorporated Riverside County, the County of Riverside (County) is the lead agency/permittee.

The MSHCP is implemented by the Western Riverside County Regional Conservation Authority (RCA). As noted, JPR is not required because the project lies outside of any Criteria Cells (Figure 5). Because there are impacts to Riverine resources, however, the RCA will process a Determination of Biologically Equivalent or Superior Preservation (DBESP) analysis.

3.0 METHODS

Prior to conducting field surveys, HELIX Environmental Planning, Inc. (HELIX) conducted a review of the MSHCP to determine which biological surveys would be required for the project site. Additionally, HELIX reviewed the MSHCP to determine what, if any, conservation requirements were applicable to the property.



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Regional Location Map

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

N 0 10 Miles

Figure 1

CVAR_09513



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Aerial Location Map

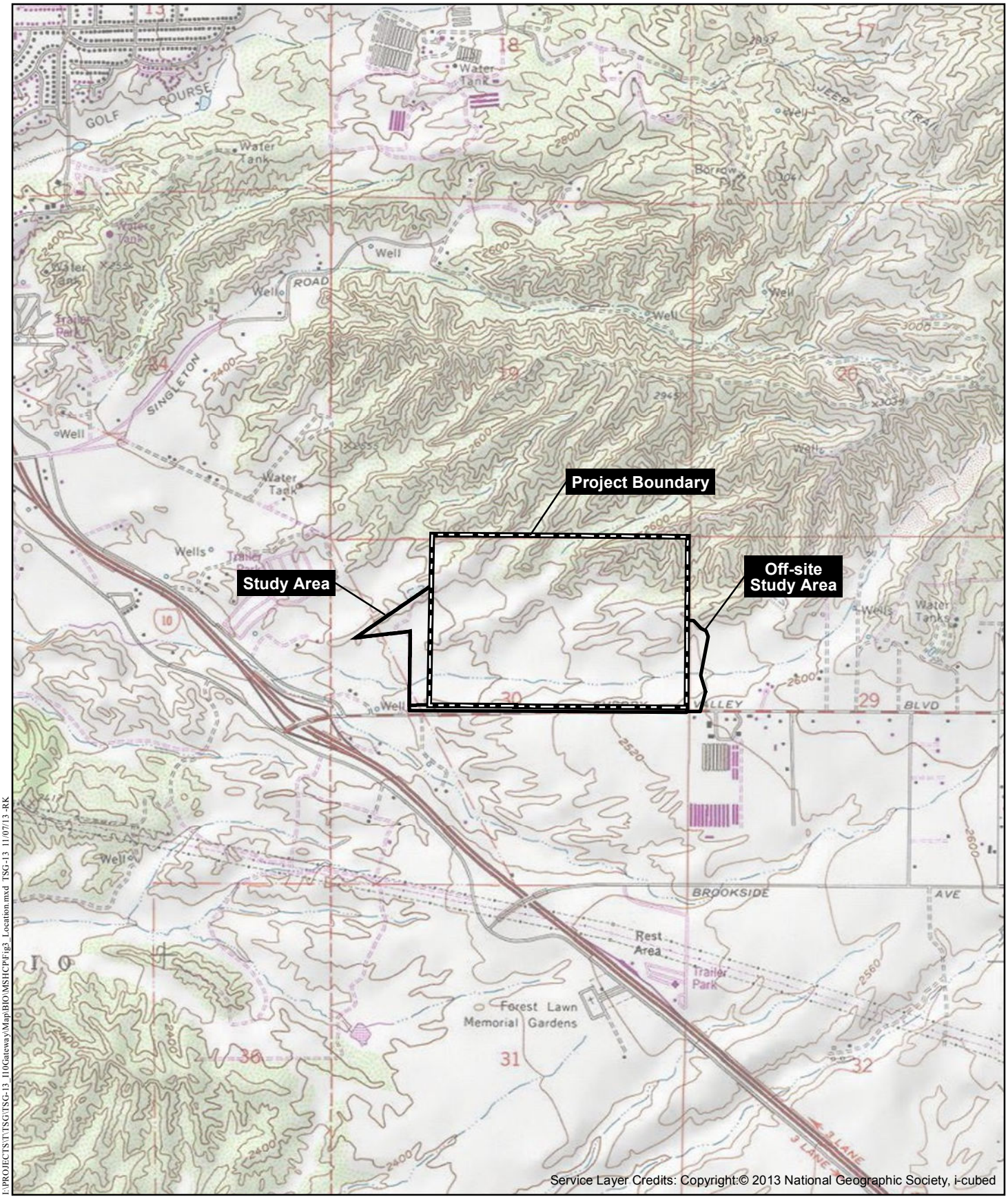
SAN GORGONIO CROSSINGS

HELIX Environmental Planning

N 0 2,000 Feet

Figure 2

CVAR_09514



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Project Location Map

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

0 2,000 Feet

Figure 3

CVAR_09515



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Aerial Photograph

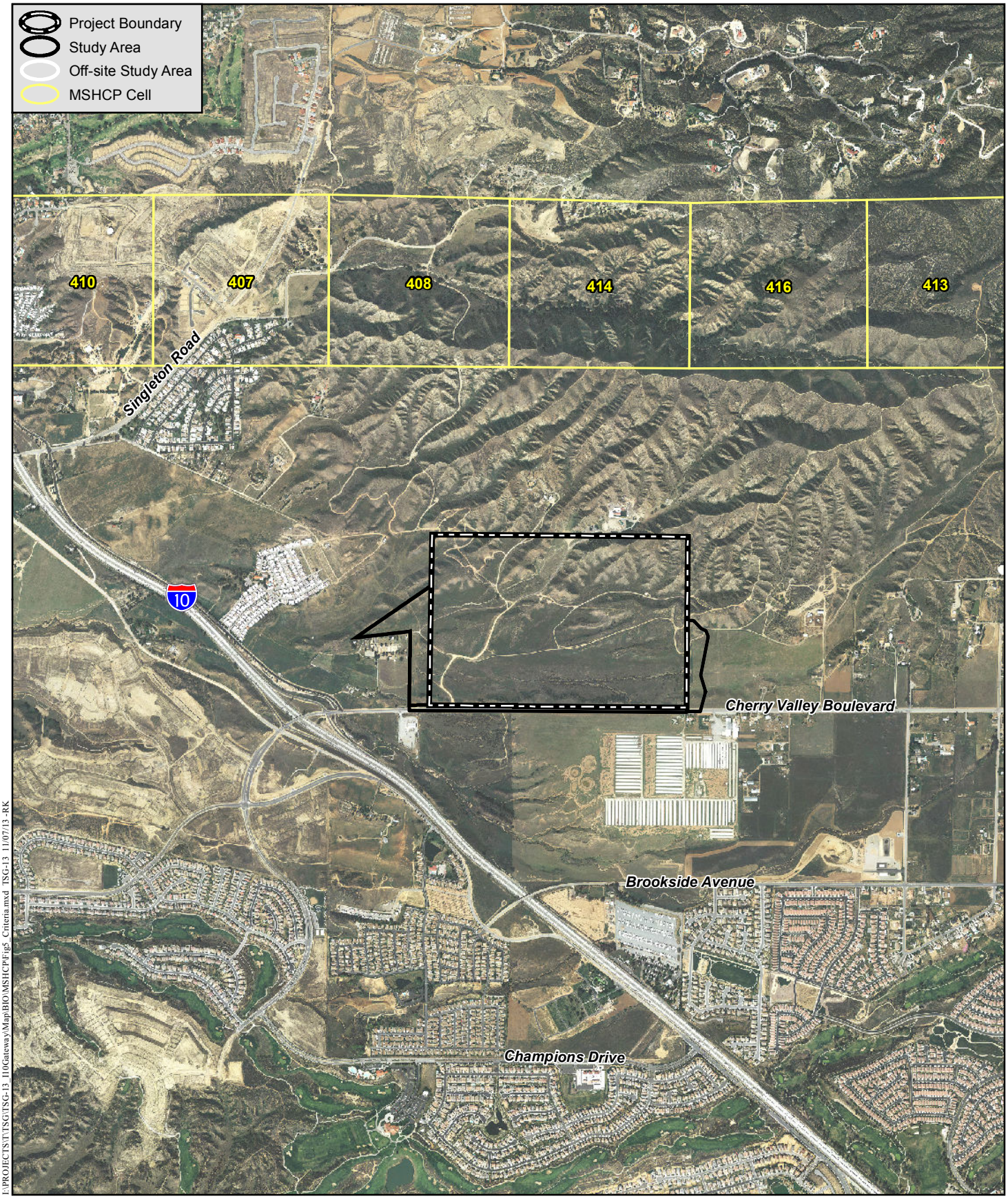
SAN GORGONIO CROSSINGS

HELIX Environmental Planning

N 0 500 Feet

Figure 4

CVAR_09516



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MSHCP Criteria Map

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

N 0 2,000 Feet

Figure 5

CVAR_09517

3.1 VEGETATION MAPPING

Vegetation communities were mapped on a 1"=400' scale aerial photograph. Vegetation was classified and mapped according to the County's biological resource mapping requirements.

3.2 SENSITIVE PLANTS

The MSHCP has designated certain areas as requiring surveys for sensitive plant. The property occurs within Narrow Endemic Plant Species Survey Area (NEPSSA) 8. HELIX conducted focused surveys for NEPSSA Area 8 plants, Yucaipa (Marvin's) onion (*Allium marvinii*) and many-stemmed dudleya (*Dudleya multicaulis*), in accordance with the requirements of the MSHCP. Surveys for Yucaipa onion and many-stemmed dudleya were conducted by HELIX biologists on May 27, 2005 during the flowering period of sensitive plants with potential to occur. The soil survey for the western Riverside area (Knecht 1971) was reviewed to determine if clay soils were mapped on site as the target plant species prefer clay soil habitats. Surveys were focused on areas of potential habitat within the site: clay soil openings in chaparral (for Yucaipa onion) and clay/cobbly soil openings within chaparral, coastal sage scrub, and grassland. Surveys were performed by systematically walking transects of the entire site.

3.3 BURROWING OWL

The site is within the MSHCP Burrowing Owl Survey Area. Winter season burrowing owl (*Athene cunicularia*) surveys were conducted in early 2005, and breeding season burrowing owl surveys were conducted in June 2005 (HELIX 2005), April-May 2007 (HELIX 2007), and in August 2008 (HELIX 2008; Appendix B). The 2005 surveys were conducted in accordance with the CDFW field protocol (California Department of Fish and Game [CDFG] 1995); 2007 and 2008 surveys were conducted according to MSHCP Burrowing Owl Survey Guidelines (County 2006). The survey area consisted of the entire project site where potential habitat for owls existed. The biologist walked slowly and methodically along transects no farther than 30 meters apart on all potential burrowing habitat that occurs on site, and closely checked areas that met basic owl habitat requirements. All burrows were inspected for indications of recent owl occupation. A 500-foot buffer zone was surveyed visually where potential burrowing owl habitat bordered the property.

3.4 RIPARIAN/RIVERINE RESOURCES

A focused jurisdictional delineation and an MSHCP Riparian/Riverine assessment were conducted in areas that were suspected to be jurisdictional wetlands and non-wetland Waters of the U.S. (WUS) on January 27 and February 8, 2005 by HELIX. This delineation was updated in 2008 based on a site visit with U.S. Army Corps of Engineers (USACE) and Regional Water Quality Control Board personnel (HELIX 2009b). An updated assessment was conducted by HELIX biologist Larry Sward on September 17, 2012. Prior to beginning fieldwork, aerial photographs (1"=400' scale) and 100-scale color orthophoto topo prepared specifically for this purpose, topographic maps (1"=100' scale), and USGS topographical maps were reviewed by HELIX to determine the location of potential jurisdictional and/or Riparian/Riverine areas that could be impacted by the project. All areas with depressions or drainage channels were evaluated for the presence of WUS, including jurisdictional wetlands. Each area was inspected

according to the USACE wetland delineation guidelines. USACE wetland boundaries were determined using three criteria (vegetation, hydrology, and soils) established for wetland delineations as described within the Wetlands Delineation Manual (Environmental Laboratory 1987). CDFW jurisdictional (Waters of the State) boundaries were determined based on the presence of any one of the three criteria being present.

Areas were assessed to determine if Riparian/Riverine or vernal pool habitats are present on site (HELIX 2009a), consistent with Section 6.1.2 of the MSHCP. The Riparian/Riverine and vernal pool assessment was conducted according to the following MSHCP definitions:

- Riparian/Riverine areas are lands that contain habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens, which occur close to or depend upon soil moisture from a nearby freshwater source; or areas with freshwater flow during all or a portion of the year; and

- Vernal pools are seasonal wetlands that occur in depression areas that have wetland indicators of all 3 parameters (soils, vegetation, and hydrology) during the wetter portion of the growing season but normally lack wetland indicators of hydrology and/or vegetation during the drier portion of the growing season. Obligate hydrophytes and facultative wetlands plant species are normally dominant during the wetter portion of the growing season, while upland species (annuals) may be dominant during the drier portion of the growing season. The determination that an area exhibits vernal pool characteristics and the definition of the watershed supporting vernal pool hydrology must be made on a case-by-case basis. Such determinations should consider the length of time the area exhibits upland and wetland characteristics and the manner in which the area fits into the overall ecological system as a wetland. Evidence concerning the persistence of an area's wetness can be obtained from its history, vegetation, soils, drainage characteristics, uses to which it has been subjected, and weather and hydrologic records.

3.5 NOMENCLATURE

Nomenclature used in this report follows the conventions used in the MSHCP. Vegetation community classifications follow the vegetation communities shown in Section 2.1.3 of the MSHCP (Dudek 2003) and Holland (1986). Latin names of plants follow Hickman, ed. (1993), while common names follow Hickman or the California Native Plant Society (CNPS; 2012). Sensitive plant status follows the CDFW California Natural Diversity Data Base (CNDDB; CDFG 2012). Animal nomenclature used in this report is taken from Collins and Taggart (2009) for amphibians and reptiles, the American Ornithologists' Union (2008) for birds, and Baker et al. (2003) for mammals. Sensitive animal status follows the CNDDB (CDFG 2011).

4.0 RESULTS

The southern and central portions of the property consist of broad, sloping grassland, with steep ridges and canyons occurring on the northern half of the site. The northern and western portions of the property were affected by fire between 2007 and 2008. The larger scrub and trees were

affected by the fire although most remain and are recovering. Following is a summary of resources mapped on the site.

4.1 VEGETATION COMMUNITIES

Vegetation communities mapped on site include streambed, mule fat scrub, Riversidean sage scrub, Riversidean-Diegan coastal sage scrub (including disturbed), coastal sage-chaparral scrub (including disturbed), scrub oak chaparral, non-native grassland, exotic (eucalyptus woodland), and disturbed habitat. Developed areas along Cherry Valley Boulevard occur within off-site impact areas (Figure 6; Table 1).

Table 1
SURVEY INFORMATION

Date	Personnel	Survey type
01/27/05	Larry Sward, Stacy Nigro	Vegetation mapping, Jurisdictional delineation
01/28/05	Rob Hogenauer, Zack West	Winter burrowing owl survey
01/31/05	Rob Hogenauer, Scott Taylor	Winter burrowing owl survey
02/8/05	Larry Sward, Stacy Nigro	Vegetation mapping, Jurisdictional delineation
5/27/05	Larry Sward	Rare plant survey
6/15/05	Rob Hogenauer Zack West	Breeding season burrowing owl survey
6/16/05	Rob Hogenauer Zack West	Breeding season burrowing owl survey
8/9/05	Rob Hogenauer Zack West	Breeding season burrowing owl survey
8/11/05	Rob Hogenauer Zack West	Breeding season burrowing owl survey
8/18/05	Rob Hogenauer Zack West	Breeding season burrowing owl survey
4/18/07	Rob Hogenauer, Zsolt Kahancza	Breeding season burrowing owl survey
4/20/07	Rob Hogenauer	Breeding season burrowing owl survey
4/23/07	Rob Hogenauer	Breeding season burrowing owl survey
4/30/07	Rob Hogenauer	Breeding season burrowing owl survey
5/2/07	Rob Hogenauer	Breeding season burrowing owl survey
5/4/07	Rob Hogenauer	Breeding season burrowing owl survey
5/7/07	Rob Hogenauer	Breeding season burrowing owl survey
5/15/07	Rob Hogenauer	Breeding season burrowing owl survey
5/21/07	Rob Hogenauer	Breeding season burrowing owl survey
5/23/07	Rob Hogenauer	Breeding season burrowing owl survey
8/27/08	Rob Hogenauer, Zsolt Kahancza	Breeding season burrowing owl survey
8/28/08	Rob Hogenauer, Zsolt Kahancza	Breeding season burrowing owl survey
8/29/08	Rob Hogenauer, Zsolt Kahancza	Breeding season burrowing owl survey
8/30/08	Rob Hogenauer, Brian Parker	Breeding season burrowing owl survey
9/17/12	Larry Sward	Jurisdictional delineation

4.1.1 Mule Fat Scrub

Mule fat scrub is a depauperate, shrubby riparian scrub community dominated by mule fat (*Baccharis salicifolia*) and interspersed with shrubby willows (*Salix* spp.). This habitat generally occurs along intermittent stream channels with a fairly coarse substrate and moderate depth to the water table (Holland 1986). It consists of a small (0.06 acre), isolated stand in the southeastern corner of the site.

4.1.2 Riversidean Sage Scrub

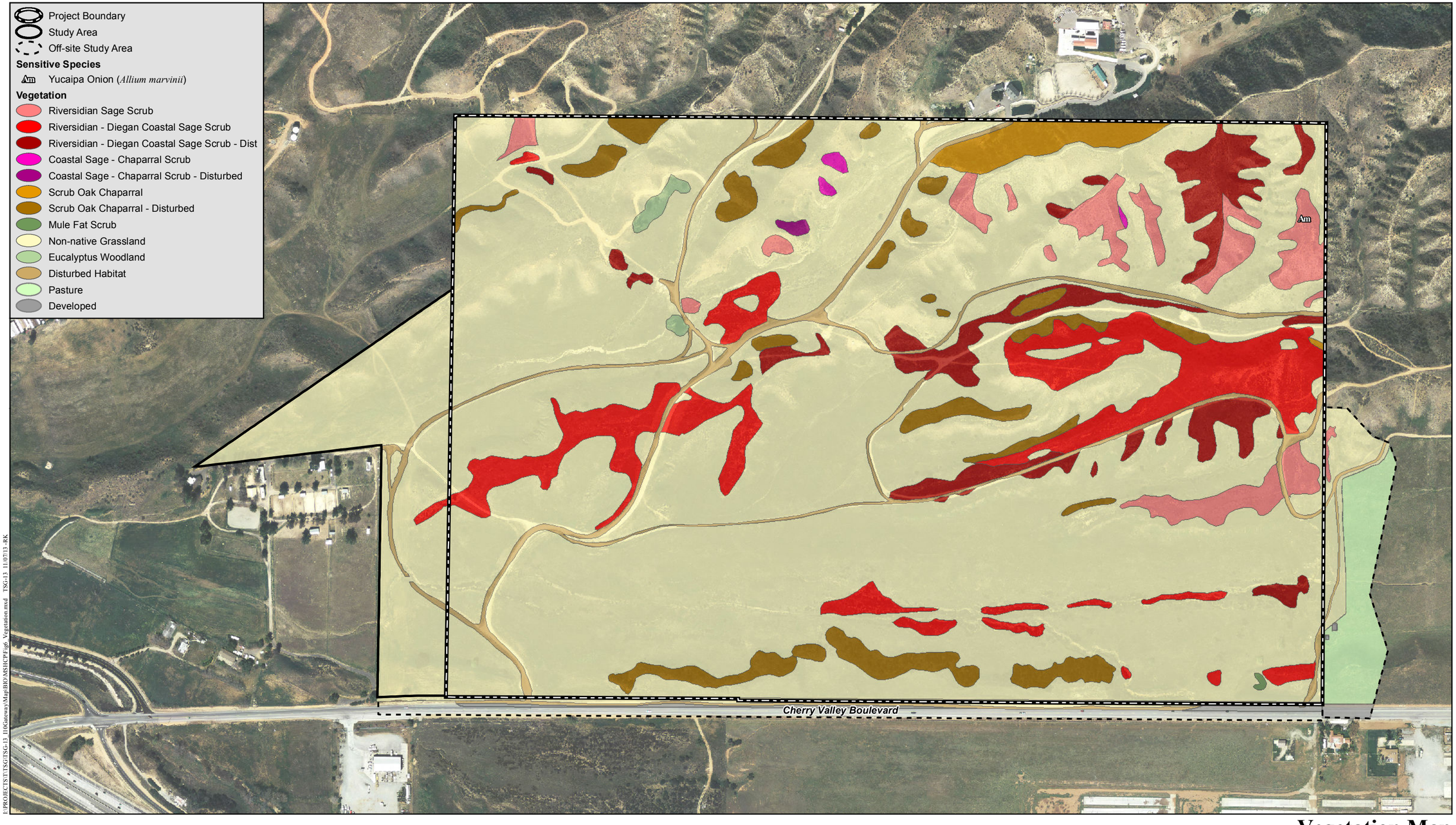
Riversidean sage scrub occupies xeric sites such as steep slopes, severely drained soils, or clays that slowly release stored soil moisture. It is dominated by sub-shrubs with leaves that are deciduous during drought, an adaptation that allows the habitat to withstand the prolonged drought period in the summer and fall. Sage scrub species have relatively shallow root systems and open canopies that allow for the occurrence of a substantial herbaceous (annual plant) component. Typical stands are fairly open and dominated by species such as coastal sagebrush (*Artemisia californica*), brittlebush (*Encelia farinosa*), and flat-topped buckwheat (*Eriogonum fasciculatum*; Holland 1986). This habitat type occurs mainly in the eastern portions of the site and is dominated by brittlebush, rosemary flat-topped buckwheat (*Eriogonum fasciculatum* ssp. *polifolium*), and coastal sagebrush. Other species present include deerweed (*Lotus scoparius*), filarees (*Erodium* spp.), black and white sage (*Salvia mellifera* and *S. apiana*), California buckwheat (*Eriogonum fasciculatum* ssp. *fasciculatum*), and non-native grasses. A total of 7.7 acres of this habitat occurs on the site.

4.1.3 Riversidean-Diegan Coastal Sage Scrub (including disturbed)

This habitat type is a mix of both Riversidean and Diegan coastal sage scrubs, both of which occupy low-moisture sites and are dominated by drought-deciduous sub-shrubs (Holland 1986). This habitat type is found mainly in the central portions of the site and totals approximately 17.7 acres. It is generally taller and comprised of greater percentages of coastal sagebrush and flat-topped buckwheat than the pure Riversidean sage scrub habitat. Other species present include California encelia (*Encelia californica*), black sage, deerweed, and non-native grasses. Disturbed portions totaling approximately 10.1 acres consist of sparse shrub cover and a high percentage of non-native grasses and forbs. An additional 0.1 acre of Riversidean-Diegan coastal sage scrub occurs within the off-site impact area.

4.1.4 Coastal Sage-Chaparral Scrub (including disturbed)

Areas of shrub habitat occur on site that contain a mix of sage scrub and chaparral species. Three small pockets of this habitat type totaling 0.3 acre occur in the northern portion of the site and consist of chamise (*Adenostoma fasciculatum*), coastal sagebrush, black sage, and various grasses. A 0.2-acre patch of disturbed coastal sage-chaparral scrub occurs in the north-central portion of the property.



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Vegetation Map

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

0 400 Feet

Figure 6

CVAR_09522

4.1.5 Scrub Oak Chaparral (including disturbed)

Scrub oak chaparral is a dense evergreen chaparral that can grow to 20 feet tall. It is dominated by scrub oak (*Quercus berberidifolia*) at this location. Most of the scrub oak chaparral on site is fairly open, and numerous trees exhibit stress, possibly from past drought conditions; these areas of sparse shrubs were identified as disturbed. This habitat is found on the slope adjacent to Cherry Valley Boulevard and other slopes throughout the site. Approximately 2.9 acres of scrub oak chaparral and 9.8 acres of disturbed scrub oak chaparral occur on the site. Species occurring include scrub oak, spiny redberry (*Rhamnus crocea*), sugar bush (*Rhus ovata*), miner's lettuce (*Claytonia perfoliata*), fiesta flower (*Pholistoma racemosum*), black sage, American bowlesia (*Bowlesia incana*), and wild cucumber (*Marah macrocarpa*).

4.1.6 Non-native Grassland

Non-native grassland contains annual grasses of varying cover and is often associated with showy-flowered, native annual forbs. This association occurs on gradual slopes with deep, fine-textured, usually clay soils (Holland 1986). This is the dominant habitat type on site and the off-site grading areas, totaling 173.1 acres. Species present include ripgut grass (*Bromus diandrus*), foxtail chess (*B. madritensis* ssp. *rubens*), Mediterranean grass (*Schismus barbatus*), rancher's fiddleneck (*Amsinckia intermedia*), horehound (*Marrubium vulgare*), and filaree. An additional 4.2 acres of non-native grassland occurs within the off-site impact area.

4.1.7 Exotic (Eucalyptus Woodland)

Eucalyptus woodlands were first established in California in the late 1800s and have since been planted extensively for wind blocks, ornamentals, and hardwood production. Most groves are monotypic, with the most common species being either blue gum (Eucalyptus globulus) or red gum (E. globulus) eucalyptus. The understory within well-established groves is usually very sparse due to the closed canopy and allelopathic nature of the leaf litter. As a wildlife habitat, these woodlands provide excellent nesting sites for a variety of raptors, including golden eagles. During winter migrations, a large variety of warblers may be found feeding on the insects attracted to eucalyptus flowers. The sparse understory offers only limited wildlife habitats. This habitat occurs on site as two stands in the northwestern portion of the property and totals approximately 0.6 acre.

4.1.8 Disturbed Habitat

Disturbed habitat includes unvegetated or sparsely vegetated areas, particularly where the soil has been heavily compacted by either vehicles (roads) or prior development, or where agricultural lands have been abandoned. Disturbed habitat is generally dominated by non-native weedy species that adapt to frequent disturbance or consists of dirt trails and roads, as is the case on site. Disturbed habitat on site totals approximately 6.3 acres. An additional 1.1 acres of disturbed habitat occurs within the off-site impact area.

4.2 RIPARIAN/RIVERINE AND VERNAL POOL ASSESSMENT (MSHCP SECTION 6.2.1)

The unnamed drainages on site periodically convey surface water but with the exception of two small areas of disturbed wetland, do not support wetland vegetation. There are two main ephemeral drainages that traverse the site from east to west and from northeast to southwest, in addition to a few other shorter, scattered drainages, totaling 1.24 acres (Figure 7). Widths of on-site drainages range from less than 1 foot to 15 feet. All on-site drainages are considered Riverine but not Riparian. The disturbed wetland on site totals 0.09 acre and is considered Riparian. The mule fat scrub that occurs on site is isolated from the drainages and is not considered Riparian/Riverine. No vernal pool habitat is present on site.

The definition of Riparian/Riverine habitats is based on potential for the habitat to support Riparian/Riverine Covered Species, which are identified in MSHCP Section 6.1.2 and described below.

4.2.1 Plants

Twenty-four plant species are identified in the MSHCP as potentially occurring in Riparian/Riverine and vernal pool habitats. Shrub and tree species such as California black walnut (*Juglans californica* var. *californica*), Engelmann oak (*Quercus engelmannii*), Coulter's matilija poppy (*Romneya coulteri*), and San Miguel savory (*Satureja chandleri*) would have been readily identifiable during project surveys but were not found on site. Several species, including spreading navarretia (*Navarretia fossalis*), California Orcutt grass (*Orcuttia californica*), prostrate navarretia (*Navarrettia prostrate*), San Diego button-celery (*Eryngium aristulatum* var. *parishii*), thread-leaved brodiaea (*Brodiaea filifolia*), fish's milkwort (*Polygala cornuta* var. *fishiae*), lemon lily (*Lilium parryi*), ocellated Humboldt lily (*L. humboldtii* ssp. *ocellatum*), Mojave tarplant (*Deinandra mohavensis*), Parish's meadowfoam (*Limnathes gracilis* var. *parishii*), and slender-horned spineflower (*Dodecahema leptoceras*), have distributions well outside of the study area. The remaining species have a distribution that includes the project area or occur in habitats found on site and are discussed in greater detail below. None of the 24 MSHCP Riparian/Riverine species, including those discussed below, was observed on the property.

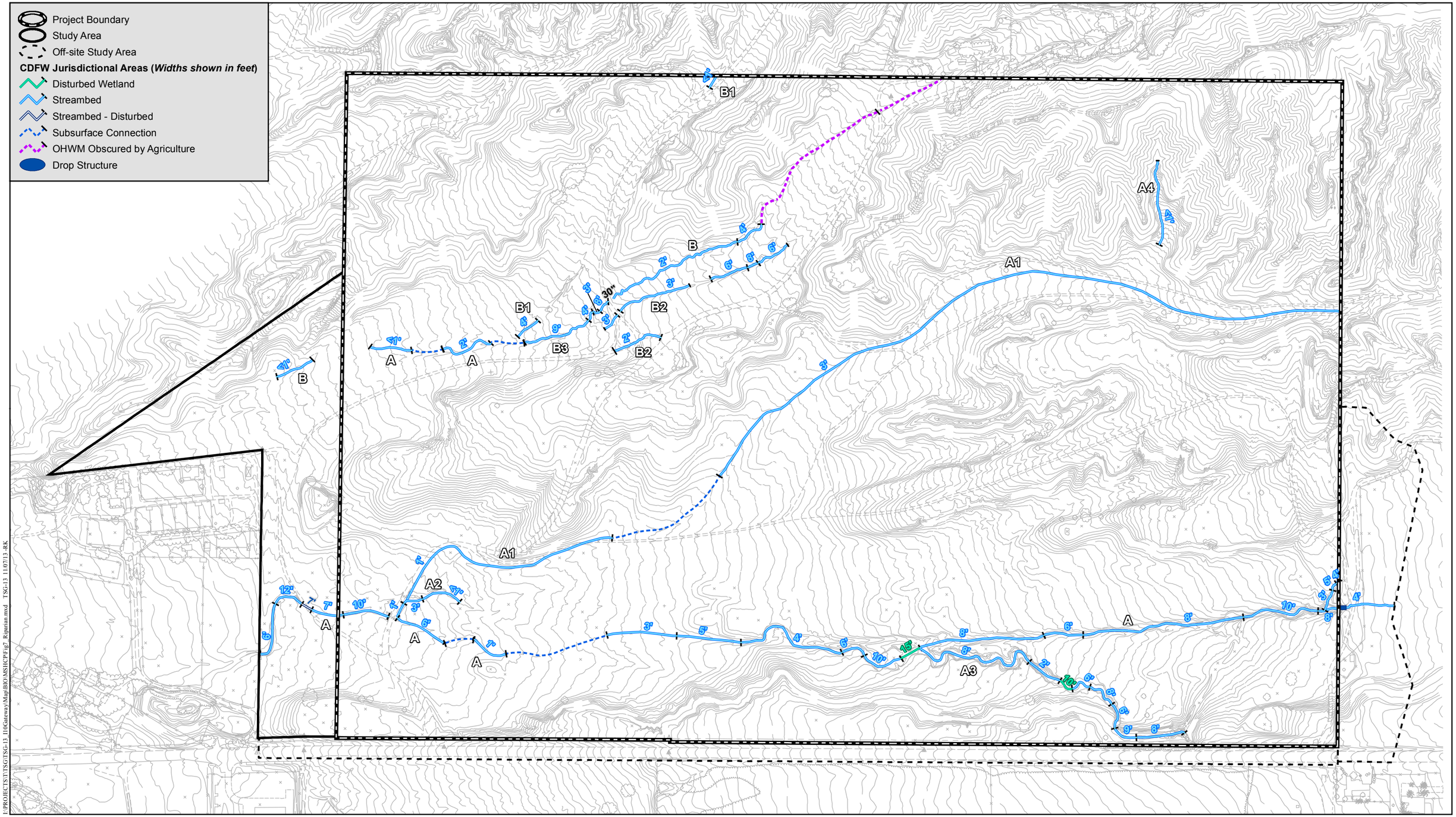
The Santa Ana River woolly-star (*Eriastrum densifolium* spp. *sanctorum*) is found along the Santa Ana River in two locations and is restricted to open washes and early-successional alluvial fan scrub on open slopes above main watercourses, such as the Santa Ana River on fluvial deposits where flooding and scouring occur at a frequency that allows the persistence of open shrublands. No appropriate habitat occurs on site for the Santa Ana River woolly-star.

Suitable habitat for Brand's phacelia (*Phacelia stellaris*) includes coastal dunes and/or coastal scrub in sandy openings, sandy benches, dunes, sandy washes, or flood plains of rivers at elevations between 0 and 1,200 feet. Brand's phacelia is known from two locations on sandy terraces along the Santa Ana River (at Fairmont Park and along a horse trail in the Santa Ana Wilderness Area along the Santa Ana River). Given the highly disturbed nature of the site, this species is not expected to occur.

Project Boundary
Study Area
Off-site Study Area

CDFW Jurisdictional Areas (*Widths shown in feet*)

Disturbed Wetland
Streambed
Streambed - Disturbed
Subsurface Connection
OHWM Obscured by Agriculture
Drop Structure



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Riparian/Riverine Areas

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

0 350 Feet

Figure 7

CVAR_09525

Graceful tarplant (*Holocarpha virgata* ssp. *elongata*) occurs in chaparral, cismontane woodland, coastal sage scrub, and valley and foothill grasslands below 1,900 feet (CNPS 2009). This species would not be expected to occur on site.

Mud nama (Nama stenocarpum) is restricted to muddy embankments of marshes and swamps and within lake margins and riverbanks (CNPS 2009). Three populations are known from Riverside County, with 2 occurring along the San Jacinto River (Dudek 2003). No appropriate habitat occurs on site.

Orcutt's brodiaea (*Brodiaea orcuttii*) occurs in clay soils in mesic native and non-native grasslands that often include vernal pools as well as moist meadows and along stream courses at higher elevations (Reiser 2001; CNPS 2009). The core population in Riverside County is the Santa Rosa Plateau (Dudek 2003). No clay soils are present on site.

San Jacinto Valley crownscale (*Atriplex coronata* var. *notatior*) is restricted to grassland, playas, and vernal pools with alkali soils (Dudek 2003). This species typically occurs on the margins of areas subject to short-term inundation and does not develop in areas that support regular long-term ponding or flooding. No alkali soils or appropriate habitat occur on site.

Smooth tarplant (*Centromadia pungens*) is found in southwestern California and northwestern Baja California, Mexico (Baja) and occurs in San Bernardino, Riverside, and San Diego counties. This species occurs in a variety of habitats, including alkali scrub and playas, riparian woodland, watercourses, and grasslands with alkaline affinities (Dudek 2003; CNPS 2009). No alkali soils are present on site.

Vernal barley (*Hordeum intercedens*) occurs in grassland, vernal pools, and vernal playas and is restricted to clay and alkaline, silty-clay soils in Riverside County (Dudek 2003). Twelve populations are known from Riverside County along the San Jacinto River and Salt Creek. No appropriate soils occur on site.

4.2.2 Animals

Invertebrates

Vernal pool fairy shrimp (*Branchinecta lynchi*) occurs throughout the Central Valley and in several disjunct populations in Riverside County. This species exists in vernal pools and other ephemeral basins often located in patches of grassland and agriculture interspersed in Diegan coastal sage scrub and chaparral. Riverside fairy shrimp (*Streptocephalus woottoni*) occurs in Riverside, Orange, and San Diego counties as well as in northern Baja. This species is typically found in deeper vernal pools and other ephemeral basins that hold water for long periods of time (30 or more days). Santa Rosa Plateau fairy shrimp (Linderiella santarosae) are limited to the Santa Rosa Plateau. No vernal pools or ephemeral basins occur on site and none of the four sensitive fairy shrimp species is expected to occur.

Fish

The Santa Ana sucker (*Catastomus santaanae*) is restricted to the Santa Ana River watershed with year-round flows. No appropriate habitat occurs on site.

Amphibians

No appropriate habitat for the 3 amphibian species (arroyo toad [*Bufo californicus*], mountain yellow-legged frog [*Rana muscosa*], or California red-legged frog [*Rana aurora draytonii*]) listed under MSHCP 6.1.2 occurs on site, and none of these species has any potential to occur on site.

Birds

The least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), and western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) are found in southern willow scrub, cottonwood forest, mule fat scrub, sycamore alluvial woodland, and arroyo willow riparian forest habitats that typically feature dense cover. No suitable habitat for the least Bell's vireo, southwestern willow flycatcher, and western yellow-billed cuckoo occurs on site.

Both the bald eagle (*Haliaeetus leucocephalus*) and peregrine falcon (*Falco peregrinus*) occur primarily in and adjacent to open water habitats, with the falcon possibly occurring in riparian areas. No suitable habitat occurs on site.

The ephemeral drainage and mule fat scrub on the proposed project site are not suitable to support any of the above-mentioned MSHCP covered species.

4.3 NEPSSA SENSITIVE PLANT SPECIES

The site occurs in an area identified by the MSHCP as requiring focused surveys for NEPSSA Area 8 plant species Yucaipa onion and many-stemmed dudleya. Focused surveys were conducted for these 2 species, which were not detected; therefore, it is concluded that they are not present on the site.

4.4 SENSITIVE ANIMAL SPECIES

The only focused survey required for sensitive animal species on the site is for the burrowing owl. Both winter (January 2005) and breeding (June 2005; April-May 2007; August 2008) season burrowing owl surveys were conducted on the project site by HELIX with negative results. The habitat assessment determined that the mule fat scrub habitat present is not developed enough to support riparian bird species such as the least Bell's vireo or southwestern willow flycatcher. No additional focused animal surveys are required.

5.0 MSHCP CONSISTENCY/ BIOLOGICAL ISSUES AND CONSIDERATIONS

As noted above, this project is within the Pass Area Plan but lies entirely outside of any Criteria Cells (Figure 5). The site is required to show MSHCP compliance through specific habitat assessments, applicable biological surveys, and provision of an MSHCP compliance analysis. Because the site lies outside of Criteria Cells, it is not required to be reviewed through the Habitat Acquisition and Negotiation Strategy process or the RCA's JPR to demonstrate MSHCP compliance.

5.1 RIPARIAN/RIVERINE AND VERNAL POOLS MSHCP SECTION 6.1.2

Section 6.1.2, Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools, states:

> The purpose of the procedures described in this section is to ensure that the biological functions and values of these areas throughout the MSHCP Plan Area are maintained such that Habitat values for species inside the MSHCP Conservation Area are maintained.

Section 6.1.2 of the MSHCP focuses on protection of Riparian/Riverine areas and vernal pool habitats capable of supporting MSHCP covered species, particularly within the identified Conservation Area. The project site encompasses 1.25 acres of unvegetated, ephemeral drainage courses that are considered Riverine under Section 6.1.2. An additional 0.04 acre of disturbed wetland occurs on site and is considered Riparian under Section 6.1.2 (Figure 7). An additional 0.12 acre of ephemeral drainage occurs in the offsite study area. The functions of the unvegetated Riverine streams and disturbed wetland on the property are primarily water conveyance, sediment transport, and energy dissipation (hydrologic regime and flood attenuation).

Within the site, in addition to the 0.04 acre of disturbed wetland noted above, Riparian vegetation (mule fat scrub) is limited to a very small area (approximately 0.06 acre) in an area outside of any drainage courses; thus, this vegetation is not considered Riparian under the MSHCP. As noted, species associated with Riparian/Riverine habitats (least Bell's vireo, southwestern willow flycatcher, western yellow-billed cuckoo, and others) do not occur on site because no suitable habitat occurs. No vernal pools exist on the site; therefore, no vernal pool species are expected to occur. None of the species covered under Section 6.1.2 has any potential to occur on the project site; however, the drainages on the site are considered Riparian/Riverine as they are tributary to downstream resources with potential to support sensitive Riparian species. Because the proposed project would result in impacts to Riverine and limited Riparian resources, a DBESP must be prepared to be consistent with Section 6.1.2.

A DBESP was prepared for the project (HELIX 2012). The goal of the DBESP process is to determine if the project has in fact provided for a project alternative that results in biologically equivalent or superior preservation. The first priority for sensitive habitats under the California Environmental Quality Act (CEQA) and under the MSHCP is avoidance of direct impacts. The

proposed land use requires large pads that cannot be effectively reshaped to avoid Riparian/Riverine resources. Complete avoidance of the Riparian/Riverine resources would eliminate the viability of the development on the site because of the distribution of the drainages across the site. Total avoidance can be achieved only by minimal or no project alternatives, which render the project infeasible.

The proposed project would impact approximately 1.07 acres of streambed habitat considered Riverine and 0.04 acre of disturbed wetland that is considered Riparian (Figure 8). The current project does avoid impacts to the Riverine resources in the northwestern portion of the site. Impacts to 0.30 acre (23 percent; Figure 8) of the Riverine resources have been avoided to the maximum extent practicable.

Section 6.2.1 of the MSHCP states:

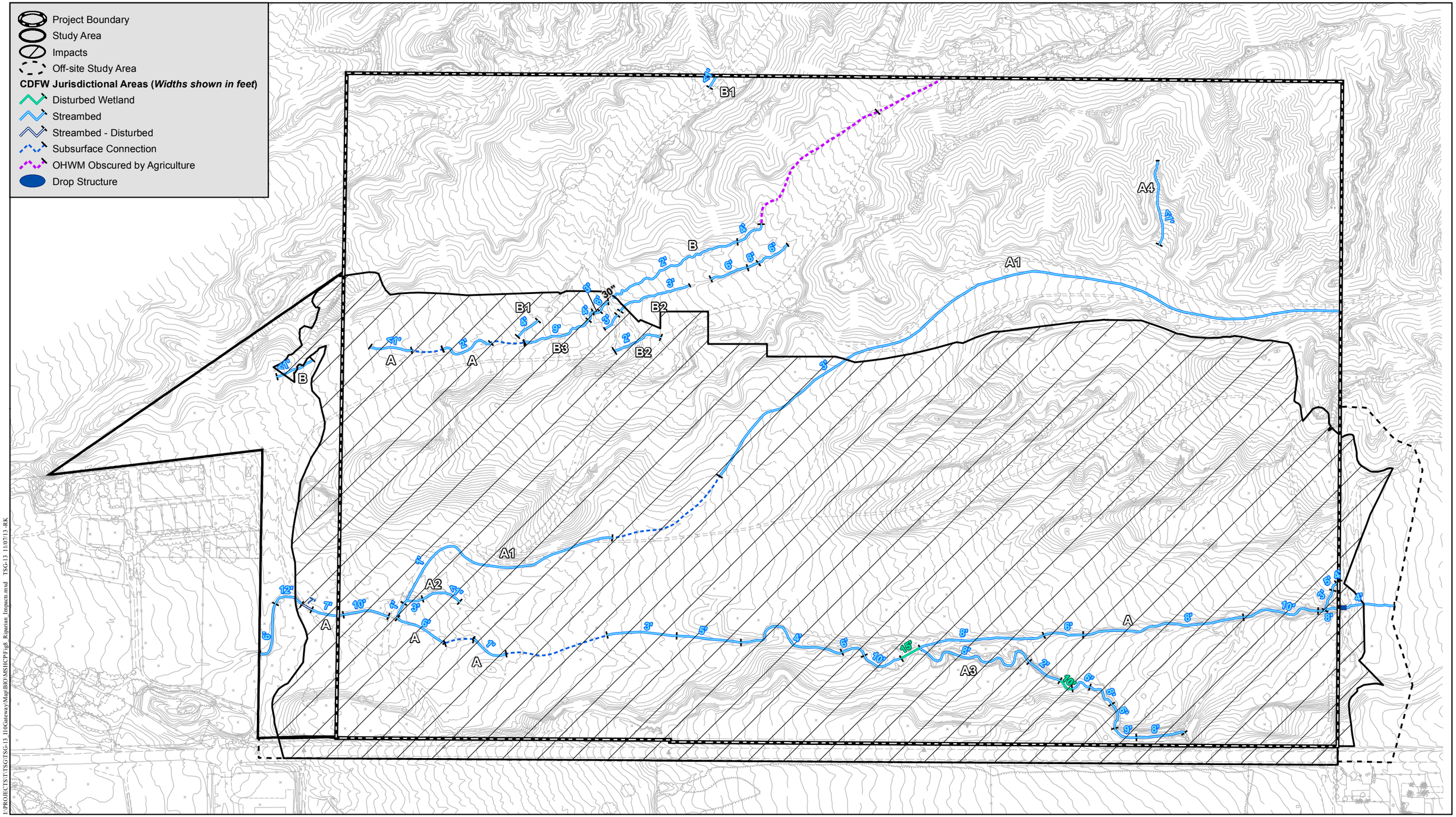
> If an avoidance alternative is not Feasible, a practicable alternative that minimizes direct and indirect effects to Riparian/Riverine areas and vernal pools and associated functions and values to the greatest extent possible shall be selected.

Mitigation measures that would result in equivalent or superior preservation of the functions and values of Riverine resources impacted by the project are shown here. Minimization measures for the proposed project will include the use of standard Best Management Practices (BMPs) to minimize the impacts during construction. Equipment will be stored in upland areas, outside of drainages, except as required by project design (restoration, trash removal, etc.). Removal of trash located throughout the property will decrease the potential of pollutants entering the Riparian/Riverine areas downstream. The removal of the pollutants will increase the functions and values of the Riparian/Riverine areas proposed to be restored, thus replacing a portion of functions and values that will be lost within the project footprint.

Source control and treatment control BMPs will be implemented to minimize the potential contaminants that generated during and post construction. Source control BMPs include landscape planning, roof runoff controls, trash storage areas, use of alternative building materials, and education of future tenants. Treatment control BMPs include detention basins, vegetated swales (bio-swales), drain inlets, and vegetated buffers. The water quality BMPs will be implemented throughout the project to capture and treat contaminants.

Mitigation for impacts to 1.11 acres of Riverine and limited Riparian resources will occur through on-site creation at a 2:1. In total, the proposed mitigation will result in 2.22 acres of Riparian and Riverine habitat creation/restoration.

The on-site creation of 2.22 acres of Riparian and Riverine habitat will occur at two locations on site along the southern boundary (Figure 9). The mitigation areas will receive all upstream flows up to 100 cubic feet per second (CFS). Flows above 100 CFS will bypass the mitigation area in a concrete-lined channel that will outlet at the eastern edge of the project. Flows up to 100 CFS will allow for creation of a braided streambed similar to the drainages that are being impacted. These areas will be primarily revegetated with floodplain scrub vegetation. Scattered pockets of mule fat scrub will also be planted to increase vegetative diversity. Combined, these areas will



Riparian/Riverine Areas and Impacts

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

N 0 350 Feet

Figure 8

CVAR_09530

I:\PROJECTS\TSG\TSG-13_110Gateway\Map\BIO\MSHCPFig8_Riparian_Impacts.mxd TSG-13 11/07/13 -RK

Project Boundary
Proposed Mitigation Area
Bypass Channel
Landscaped Greenbelt

Sensitive Species

Am Yucaipa Onion (*Allium marvinii*)

Vegetation

- Riversidian Sage Scrub
- Riversidian - Diegan Coastal Sage Scrub
- Riversidian - Diegan Coastal Sage Scrub - Dist
- Coastal Sage - Chaparral Scrub
- Coastal Sage - Chaparral Scrub - Disturbed
- Scrub Oak Chaparral
- Scrub Oak Chaparral - Disturbed
- Mule Fat Scrub
- Non-native Grassland
- Eucalyptus Woodland
- Disturbed Habitat
- Pasture
- Developed

Am 91

Cherry Valley Boulevard

I:\PROJECTS\TSG\TSG-13_1106Gateway\Map\BIO\MSHCPFig9_Restoration.mxd TSG-13 11/07/13 -RK

Vegetation, Impacts, and Riparian Mitigation Area

SAN GORGONIO CROSSINGS

HELIX Environmental Planning

0 400 Feet

Figure 9

CVAR_09531

offset losses of Riverine functions and values by providing high quality Riparian/Riverine habitat, as well as other functions and services such as water quality benefits, groundwater recharge, and nutrient cycling. A detailed restoration plan for the on-site mitigation sites will be prepared and submitted to the County for review and approval prior to implementation of the restoration effort.

5.2 NARROW ENDEMIC PLANT SPECIES MSHCP SECTION 6.1.3

The proposed project site is within an area designated as a NEPSSA area for two plant species: many-stemmed dudleya and Yucaipa onion. Sensitive plant surveys were conducted and were negative; therefore, the project is consistent with MSHCP Section 6.1.3.

5.2.1 Many-stemmed Dudleya

Many-stemmed dudleya is restricted to clay and cobbly clay soils associated with Altamont, Auld, Bosanko, Claypit, and Porterville series soils. This species occurs in scattered locations primarily in the Temescal Canyon, Gavilan Plateau, and Alberhill areas and the Santa Ana Mountains. None of these soils occurs on the site, and focused surveys for this species were negative.

5.2.2 Yucaipa Onion

This species has been previously associated within clay openings in chaparral habitat. It is known from only two occurrences in the Yucaipa and Beaumont areas of the southern San Bernardino Mountains. Plant locations were recorded in 1921 in the general area of Beaumont, and no positive identifications have been made since that time. Focused surveys for this species were negative.

In compliance with Section 6.1.3, this project would not affect any NEPSSA species, since none is present on site.

5.3 URBAN WILDLAND INTERFACE GUIDELINES MSHCP SECTION 6.1.4

Section 6.1.4 addresses potential indirect impacts to MSHCP preserve lands via the Urban Wildland Interface Guidelines (UWIG). Because the project does not occur within or adjacent to any proposed Conservation Areas within the MSHCP, there are no requirements for consistency with Section 6.1.4.

5.4 ADDITIONAL SURVEYS MSHCP SECTION 6.3.2

The project is not within any Criteria Area Species Survey Area (CASSA), amphibian survey area, or a mammal survey area. The project does occur within the burrowing owl survey area. Both winter and breeding season burrowing owl surveys were conducted, and no burrowing owls or burrows were present on the site (HELIX 2005, 2007, and 2008). No other surveys are required, and the project is consistent with MSHCP Section 6.3.2.

5.5 FUELS MANAGEMENT MSHCP SECTION 6.4

The proposed project site is not in or adjacent to any MSHCP Conservation Area and therefore fuel management associated with the project will not encroach upon the Conservation Area.

5.6 MSHCP FEES

The project applicant shall pay MSHCP Local Development Mitigation fees as determined by the County. The fee schedule is adjusted annually by the RCA, and was last adjusted on July 1, 2008. The current fee is $6,597 per acre for commercial or industrial uses (RCA 2008). When mixed uses are proposed within the same project, the commercial fee is applied to the whole project based on the underlying classification of the property at the time of issuance of a building permit. However, fees may be offset through on- or off-site conservation.

6.0 CONCLUSION

Development of the subject property would be consistent with the MSHCP based on the following:

- While found within the Pass Area Plan of the MSHCP, the project site is not within any Criteria Cell or other Conservation Area.

- The project site does not support any species associated with Riparian/Riverine habitat, and the proposed mitigation offsets functions and values lost by on-site development; therefore, the project is consistent with Section 6.1.2.

- The project is within NEPSSA Area 8, for Yucaipa onion and many-stemmed dudleya. Sensitive plant surveys were conducted and were negative; therefore, the project is consistent with Section 6.1.3.

- The project site is not adjacent to an existing or planned conservation area; therefore, there are no requirements for consistency with Sections 6.1.4 and 6.4.

- The project is not within any CASSA area for plants, amphibians, or mammals. The project occurs within the burrowing owl survey area. No burrowing owls or active burrow locations were observed on the property during the focused surveys. Therefore, the project is consistent with MSHCP Section 6.3.2.

- The project is subject to the MSHCP fee that is currently set at $6,597 per commercial or industrial acre.

7.0 CERTIFICATION/QUALIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

DATE: November 11, 2014 SIGNED: _____

Barry L. Jones
Senior Consulting Biologist

Fieldwork Performed By:

Robert Hogenauer
Biologist, HELIX Environmental Planning, Inc.
B.S., Biology, California State Polytechnic University, 2004

Zsolt Kahancza
Biologist, HELIX Environmental Planning, Inc.
B.A. Biology, California State at San Bernardino, 1994

Stacy Nigro
Biologist, HELIX Environmental Planning, Inc.
B.S., Wildlife Ecology (Forest Resources and Conservation), University of Florida, 1994

W. Larry Sward
Biologist, HELIX Environmental Planning, Inc.
M.S., Biology, San Diego State University, 1979; B.S., Biology, San Diego State University, 1975

Scott Taylor
Biologist, HELIX Environmental Planning, Inc.
B.A., Biology, Point Loma College, 1984

Zackry West
Biologist, HELIX Environmental Planning, Inc.
B.A., Environmental Studies, California State at San Bernardino, 2004

8.0 REFERENCES

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2007. Results of Burrowing Owl Survey for Cherry Valley Gateway. Prepared for TSG Cherry Valley, LP.

2008. Results of Burrowing Owl Survey for Cherry Valley Gateway. Prepared for TSG Cherry Valley, LP. September 30.

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2009b. Jurisdictional Delineation Report for I-10 Gateway Center project. Prepared for TSG Cherry Valley, LP. May 7.

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Appendix A

COUNTY OF RIVERSIDE FORMS

RIVERSIDE COUNTY TLMA TRANSPORTATION & LAND MANAGEMENT AGEN

Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP)

APN	Cell	Cell Group	Acres	Area Plan
407220004	Not A Part	Independent	13.07	The Pass
407220007	Not A Part	Independent	24.84	The Pass
407220008	Not A Part	Independent	5.67	The Pass
407220009	Not A Part	Independent	99.21	The Pass
407220014	Not A Part	Independent	0.22	The Pass
407220016	Not A Part	Independent	65.77	The Pass
407220017	Not A Part	Independent	20.02	The Pass

HABITAT ASSESSMENTS

Habitat assessment shall be required and should address at a minimum potential habitat for the following species:

APN	Amphibia Species	Burrowing Owl	Criteria Area Species	Mammalian Species	Narrow Endemic Plant Species
407220004	NO	**YES**	NO	NO	**YES**
407220007	NO	**YES**	NO	NO	**YES**
407220008	NO	**YES**	NO	NO	**YES**
407220009	NO	**YES**	NO	NO	**YES**
407220014	NO	**YES**	NO	NO	**YES**
407220016	NO	**YES**	NO	NO	**YES**
407220017	NO	**YES**	NO	NO	**YES**

Burrowing Owl

Burrowing owl.

Narrow Endemic Plant Species

8) Marvin's Onion, Many-stemmed dudleya

If potential habitat for these species is determined to be located on the property, focused surveys may be required during the appropriate season.

Background

The final MSHCP was approved by the County Board of Supervisors on June 17, 2003. The federal and state permits were issued on June 22, 2004 and implementation of the MSHCP began on June 23, 2004.

For more information concerning the MSHCP, contact your local city or the County of Riverside for the unincorporated areas. Additionally, the Western Riverside County Regional Conservation Authority (RCA), which oversees all the cities and County implementation of the MSHCP, can be reached at:

Western Riverside County Regional Conservation Authority
3403 10th Street, Suite 320
Riverside, CA 92501

Phone: 951-955-9700
Fax: 951-955-8873

www.wrc-rca.org

Go Back To Previous Page

GIS Home Page

TLMA Home Page

BIOLOGICAL REPORT SUMMARY SHEET

(Submit two copies to the County)

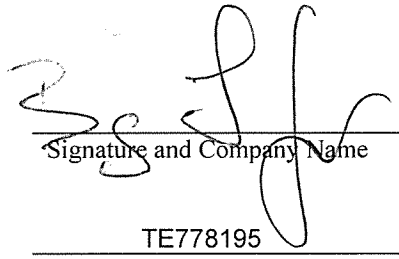
Applicant Name: TSG Cherry Valley, LP Attn: Brian Rupp
Assessor's Parcel Number (APN): 407-220-004, -007, -008, -009, -014, -016, and -017
APN cont. :
Site Location: Section: 30 **Township:** 2 South **Range:** 1 West
Site Address:
Related Case Number(s): **PDB Number:**

CHECK SPECIES SURVEYED FOR	SPECIES or ENVIRONMENTAL ISSUE OF CONCERN	(Circle Yes, No or N/A regarding species findings on the referenced site)		
	Arroyo Southwestern Toad	Yes	No	N/A
X	Blueline Stream(s)	(Yes)	No	N/A
	Coachella Valley Fringe-Toed Lizard	Yes	No	N/A
	Coastal California Gnatcatcher	Yes	No	N/A
X	Coastal Sage Scrub	(Yes)	No	N/A
	Delhi Sands Flower-Loving Fly	Yes	No	N/A
	Desert Pupfish	Yes	No	N/A
	Desert Slender Salamander	Yes	No	N/A
	Desert Tortoise	Yes	No	N/A
	Flat-Tailed Horned Lizard	Yes	No	N/A
	Least Bell's Vireo	Yes	No	N/A
	Oak Woodlands	Yes	No	N/A
	Quino Checkerspot Butterfly	Yes	No	N/A
	Riverside Fairy Shrimp	Yes	No	N/A
	Santa Ana River Woolystar	Yes	No	N/A
	San Bernardino Kangaroo Rat	Yes	No	N/A
	Slender Horned Spineflower	Yes	No	N/A
	Stephens' Kangaroo Rat	Yes	No	N/A
X	Vernal Pools	Yes	(No)	N/A
X	Wetlands	(Yes)	No	N/A

CHECK SPECIES SURVEYED FOR	SPECIES or ENVIRONMENTAL ISSUE OF CONCERN	(Circle Yes, No or N/A regarding species findings on the referenced site)		
X	Burrowing Owl	Yes	(No)	N/A
X	Yucaipa Onion	Yes	(No)	N/A
X	Many-stemmed Dudleya	Yes	(No)	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A
	Other	Yes	No	N/A

Species of concern shall be any unique, rare, endangered, or threatened species. It shall include species used to delineate wetlands and riparian corridors. It shall also include any hosts, perching, or food plants used by any animals listed as rare, endangered, threatened or candidate species by either State, or Federal regulations, or for Riverside County as listed by the California Department of Fish and Game Natural Diversity Data Base (NDDB).

I declare under penalty of perjury that the information provided on this summary sheet is in accordance with the information provided in the biological report.



HELIX Environmental Planning, Inc. — Signature and Company Name

XXXXX XX, 2007 — Report Date

TE778195 — 10(a) Permit Number (if applicable)

July 26, 2015 — Permit Expiration Date

County Use Only

Received by: _____ **Date:** _____

PD-B# _____

LEVEL OF SIGNIFICANCE CHECKLIST
For Biological Resources
(Submit Two Copies)

Case Number: _____ **Lot/Parcel No.:** 407-220-004, -007, -008, -009, -014, -016, and -017. **EA Number:** _____

Wildlife & Vegetation

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

(Check the level of impact the applies to the following questions)

a) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state conservation plan?
☐ ☐ ☐ ☒

b) Have a substantial adverse effect, either directly or through habitat modifications, on any endangered, or threatened species, as listed in Title 14 of the California Code of Regulations (Sections 670.2 or 670.5) or in Title 50, Code of Federal Regulations (Sections 17.11 or 17.12)?
☐ ☐ ☐ ☒

c) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U. S. Wildlife Service?
☐ ☐ ☒ ☐

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident migratory wildlife corridors, or impede the use of native wildlife nursery sites?
☐ ☐ ☐ ☒

e) Have a substantial or adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U. S. Fish and Wildlife Service?
☐ ☒ ☐ ☐

f) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filing, hydrological interruption, or other means?
☐ ☒ ☐ ☐

g) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?
☐ ☐ ☐ ☒

Source: CGP Fig. VI.36-VI.40

Findings of Fact: b. There is potential habitat on site for coastal California gnatcatcher. Potential impacts to this species is covered under the MSHCP.

c. Three state sensitive species were observed on site, orange-throated whiptail, Bell's sage sparrow, and northern harrier, several other sensitive plant and animal species have potential to occur on site. Impact to these species are covered under the MSHCP.
d. The project will result in impact to habitat classified as Riparian/Riverine under the MSHCP.
e. Permits will be obtained from the regulatory agencies prior to impacts to jurisdictional waters.

Proposed Mitigation: b and c. Compliance with the MSHCP covers these impacts.

d. A Determination of Biologically Equivalent or Superior Preservation will be prepared and will document the mitigation for the Riparian/Riverine impacts.
e. Mitigation for the impacts to the jurisdictional waters will be determined during the permitting process. The project will comply with the mitigation set forth during the permitting process.

Monitoring Recommended:

Appendix B

RESULTS OF BURROWING OWL SURVEY FOR CHERRY VALLEY GATEWAY

HELIX environmental planning, inc.

3600 Lime Street, Suite 721
Riverside, CA 92501
fax (951) 328-9978
phone (951) 328-1700

San Diego County Office
phone (619) 462-1515

September 30, 2008 TSG-13

Mr. Brian Rupp
TSG Cherry Valley, LP
114 Pacifica Ct., Ste. 245
Irvine, CA 92618

Subject: Results of Burrowing Owl (*Athene cunicularia*) Survey for the Interstate 10 Gateway Job Center

Dear Mr. Rupp:

At your request, HELIX Environmental Planning, Inc. (HELIX) conducted a focused burrowing owl survey for the Interstate (I-) 10 Gateway Job Center project site. This letter documents the results of the survey, which meets applicable conditions under the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) approved in 2003. The MSHCP is a comprehensive planning effort that includes the County of Riverside (County) and 15 cities. As part of the MSHCP implementation, enrolled jurisdictions are required to impose terms of the MSHCP, including appropriate surveys in accordance with Section 6, Volume I. The site is within the survey area for burrowing owl; therefore, surveys are required if potential habitat is present (Dudek and Associates 2003). This report presents the details and results of the 2008 survey and includes survey results for the burrowing owl conducted in 2005 and 2007.

PROPERTY LOCATION AND DESCRIPTION

The approximately 230-acre property is located east of I-10 and north of Cherry Valley Boulevard in the unincorporated community of Cherry Valley, Riverside County, California (Figure 1). The site is situated in Section 30, Township 2 South, Range 1 West as shown on the U.S. Geological Survey 7.5-minute El Casco quadrangle (Figure 2).

Elevation on site ranges from 2,400 to 2,690 feet above mean sea level. The property is bordered by a chicken ranch to southeast. There is a small horse ranch and I-10 is to the southwest. To the northwest, there is some agricultural land and a residential community. The remainder of the property is bordered by undeveloped land, with the exception of a few rural residential homes to the north. An aerial photo of the property is provided as Figure 3.

PROJECT DESCRIPTION

The proposed project is for the construction of 2 large industrial buildings on approximately 190 acres of the property. The project includes detention basins, parking, landscaping, and other associated infrastructure.

METHODS

The survey was conducted according to the burrowing owl survey guidelines for the MSHCP (County 2006). The survey area included all habitats with potential to support burrowing owls within the project area. Transects approximately 20 to 30 meters apart were surveyed on the entire project site. Steep slopes were visually surveyed with the aid of binoculars. A 500-foot buffer zone was surveyed visually from the subject property, where owl habitat bordered the site. Biologists walked slowly and methodically, closely checking the areas that met the basic requirements of owl habitat, listed below.

- Open expanses of sparsely vegetated areas (less than 30 percent canopy cover for trees and shrubs)
- Gently rolling or level terrain
- An abundance of small mammal burrows, especially those of California ground squirrel (*Spermophilus beecheyi*)
- Fence posts, rock, or other low perching locations

Survey dates, times, and conditions are listed in Table 1.

Table 1
SURVEY INFORMATION

Date	Time (hrs)	Weather Conditions	Personnel
8/27/08	0600-0830	Clear, 62° - 79° F, wind 0-2 mph	Rob Hogenauer Zsolt Kahancza
8/28/08	0625-0830	Partly cloudy, 68° - 77° F, wind 1-3 mph	Rob Hogenauer Zsolt Kahancza
8/29/08	0615-0815	Partly cloudy 68°F - 79° F, wind 0-2 mph	Rob Hogenauer Zsolt Kahancza
8/30/08	0610-0750	Overcast, 67°F - 73° F, wind 4-8 mph	Rob Hogenauer Brian Parker

The first survey of the property covered the entire project area, where biologists searched for burrows with potential to support burrowing owls. Figure 4 identifies the approximate transects surveyed on the property. The topography of the

property caused some variation in the actual transects surveyed. Areas that did not contain burrows with potential to support burrowing owls were not surveyed on subsequent surveys. These excluded areas are comprised of dense vegetation (Figure 5a) or disturbed areas (Figure 5b) lacking burrows with potential to support burrowing owls. Potential owl burrow locations on site include brush piles, fossorial mammal burrows, and rock piles. All potential owl burrows were checked for signs of recent owl occupation, which include:

- Pellets/Casting – regurgitated fur, bones, and insect parts
- White wash – excrement
- Feathers

RESULTS

Vegetation Habitats

Six vegetation habitats along with a small amount of developed habitat occur on the property. The habitats are mule fat scrub, Riversidean sage scrub, coastal sage-chaparral ecotone, scrub oak chaparral, non-native grassland, and disturbed habitat. The survey area was comprised mainly of non-native grassland, Riversidean sage scrub, and disturbed habitats.

Burrowing Owls

No burrowing owls were observed during any of the site visits. Burrows that could support burrowing owls were observed on site but did not show any signs of owl activity. The burrows were primarily located in the southern and western portions of the property. The northern and eastern areas of the property contain relatively few burrows with potential to support burrowing owls. The majority of the grassland on site was comprised of dense stands of mustard (*Hirschfeldia incana*, *Brassica* spp.), Russian thistle (*Salsola tragus*), bromes (*Bromus* spp.), and various weeds, herbs, and forbs.

There are approximately 120 acres of habitat in the project area with low potential to support burrowing owls. The remainder of the property lacks burrows that could support burrowing owls, or is covered with dense vegetation. Surveys conducted in 2005, 2007, and 2008 all had negative results. No burrowing owls or sign of burrowing owl is present on site.

The MSHCP states that pre-construction surveys for burrowing owls should be conducted for all properties that contain suitable burrowing owl habitat. A pre-construction survey is to take place within 30 days prior to disturbance of the property in question.

Attachment A contains a list of animal species observed or detected during the 3 years of burrowing owl surveys and other surveys conducted on the property.

Please call Barry Jones at (619) 462-1515 or me at (951) 328-1700 if you have any questions about this report.

Sincerely,

Rob Hogenauer
Wildlife Biologist

Enclosures: Figure 1 Regional Location Map
2 Project Location Map
3 Aerial Photo
4 Aerial Map
5a and 5b Burrowing Owl Survey Photos
Attachment A Animal Species Observed

REFERENCES

County of Riverside (County) Environmental Programs Department. 2006. Burrowing Owl Survey Instructions for the Western Riverside Multiple Species Habitat Conservation Plan Area. URL: http://www.tlma.co.riverside.ca.us/epd/documents/Burrowing_Owl_Survey_Instructions.pdf. March 29.

Dudek and Associates. 2003. Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Final MSHCP Volume I. Prep. for County of Riverside, Transportation and Land Management Agency.

Attachment A

ANIMAL SPECIES OBSERVED – INTERSTATE 10 GATEWAY JOB CENTER

FAMILY	SCIENTIFIC NAME	COMMON NAME
INVERTEBRATES		
Apiidae	*Apis mellifera mellifera*	honey bee
	Bombus spp.	bumble bee
Coccinellidae	*Hippodamia convergens*	ladybird beetle
Formicidae	*Messor* spp.	harvester ant
	Pogonomyrex spp.	harvester ant
Gryllacrididae	*Stenophelmatus fuscus*	Jerusalem cricket
Hesperiidae (subfamily Pyrginae)	*Erynnis funeralis*	funereal duskywing butterfly
	Pyrgus albescens	western checkered skipper
Lycaenidae (subfamily Thecline)	*Strymon melinus*	gray hairstreak butterfly
Nymphalinae	*Vanessa annabella*	west coast lady butterfly
	Vanessa cardui	painted lady butterfly
Pieridae (subfamily Coliadinae)	*Colias eurytheme*	alfalfa sulfur butterfly
	Pieris sisymbrii sisymbrii	California white butterfly
	Pieris protodice	common white butterfly
Polyommatinae	*Hemiargus ceraunus gyas*	Edward's blue butterfly
	Icaricia acmon	Acmon blue butterfly
	Leptotes marina	marine blue butterfly
Pompilidae	*Pepsis* spp.	tarantula hawk wasp
Riodinidae	*Apodemia vergulti*	Behr's metalmark butterfly
Tenebrionidae	*Eleodes* spp.	darkling beetle
Theridiidae	*Latrodectus hesperus*	black widow spider
Order Orthoptera	*Trimeroptropis* spp.	pallid-winged grasshopper
Scarabaeidae	*Cotinus mutabilis*	green fruit beetle
VERTEBRATES		
Reptiles		
Colubridae	*Pituophis catenifer*	gopher snake
Phrynosomatidae	*Uta stansburiana*	common side-blotched lizard
Teiidae	*Cnemidophorus hyperythrus*†	orange-throated whiptail
Birds		
Accipitridae	*Buteo jamaicensis*	red-tailed hawk
	Circus cyaneus†	northern harrier
Aegithalidae	*Psaltriparus minimus*	bushtit
Cardinalidae	*Passerina amoena*	Lazuli bunting

CVAR_09550

Attachment A (cont.)
ANIMAL SPECIES OBSERVED – INTERSTATE 10 GATEWAY JOB CENTER

FAMILY	SCIENTIFIC NAME	COMMON NAME
VERTEBRATES (cont.)		
Birds (cont.)		
Cardinalidae	*Guiraca caerulea*	blue grosbeak
Charadriidae	*Charadrius vociferous*	killdeer
Columbidae	*Columba livia*	rock dove
	Zenaida macroura	mourning dove
Corvidae	*Corvus brachyrhynchos*	American crow
	Corvus corax	common raven
Cuculidae	*Geococcyx californianus*	greater road runner
Emberizidae	*Amphispiza belli belli*†	Bell's sage sparrow
	Chondestes grammacus	lark sparrow
	Melospiza melodia	song sparrow
	Pipilo crissalis	California towhee
	Pipilo erythrophthalmus	spotted towhee
Fringillidae	*Carpodacus mexicanus*	house finch
	Carduelis psaltria	lesser goldfinch
Falconidae	*Falco sparverius*	American kestrel
Icteridae	*Icterus bullockii*	Bullock's oriole
	Icterus cucullatus	hooded oriole
	Molothrus ater	brown-headed cowbird
	Sturnella neglecta	western meadowlark
Mimidae	*Mimus polyglottos*	northern mockingbird
Odontophoridae	*Callipepla californica*	California quail
Parulidae	*Dendroica coronata*†	yellow-rumped warbler
Passeridae	*Passer domesticus*	house sparrow
Ptilogonatidae	*Phainopepla nitens*	phainopepla
Sturnidae	*Sturnus vulgaris*	European starling
Timaliidae	*Chamaea fasciata*	wrentit
Trochilidae	*Calypte anna*	Anna's hummingbird
	Calypte costae†	Costa's hummingbird
Troglodytidae	*Thryomanes bewickii*	Bewick's wren
Turdidae	*Sialia mexicana*	western bluebird
Tyrannidae	*Sayornis nigricans*	black phoebe
	Sayornis saya	Say's phoebe
	Tyrannus verticalis	western kingbird
	Tyrannus vociferans	Cassin's kingbird
Falconidae	*Falco sparverius*	American kestrel
Sylviidae	*Polioptila melanura*	blue-gray gnatcatcher

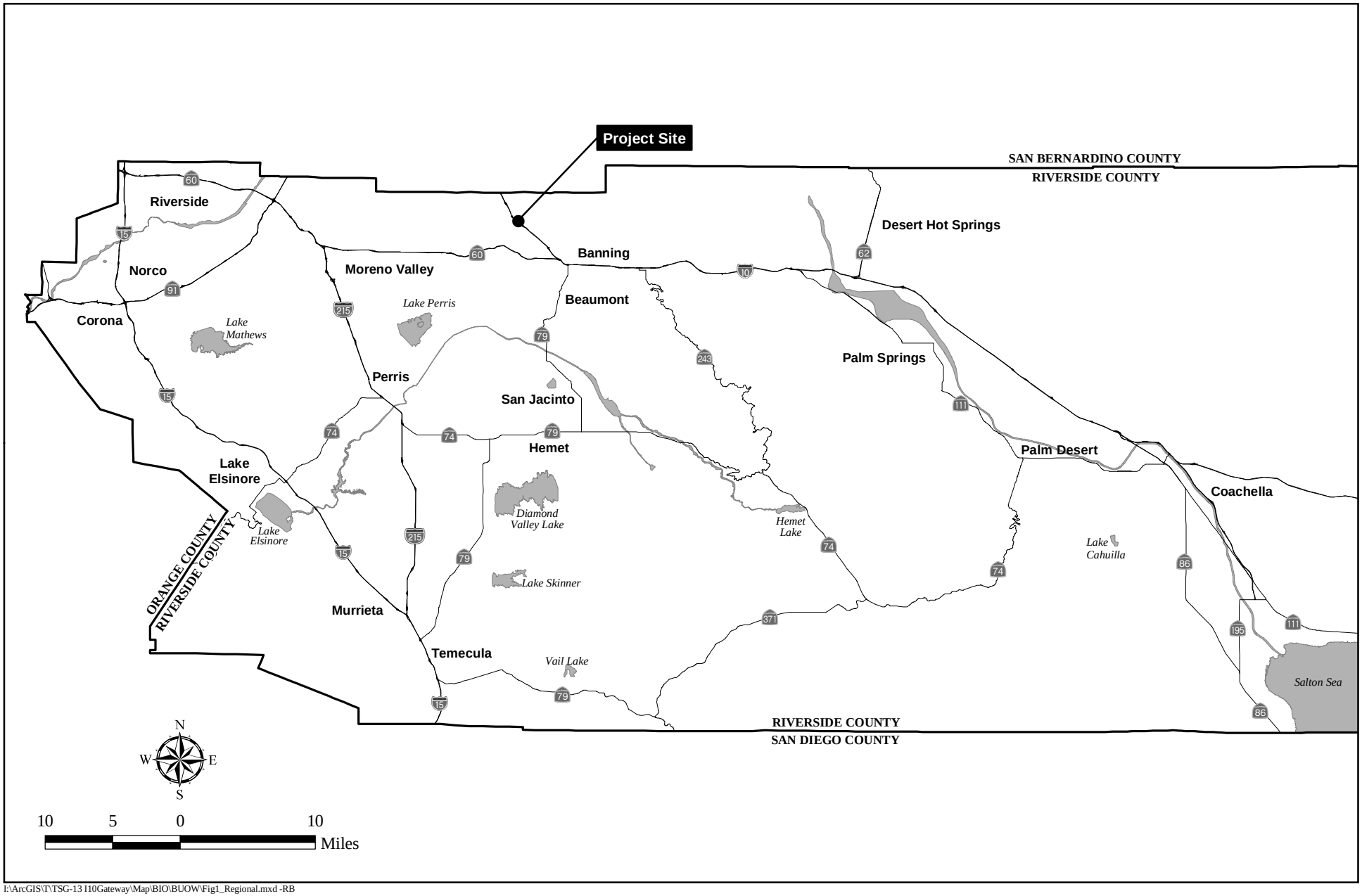
CVAR_09551

Attachment A (cont.)
ANIMAL SPECIES OBSERVED – INTERSTATE 10 GATEWAY JOB CENTER

FAMILY	SCIENTIFIC NAME	COMMON NAME
VERTEBRATES (cont.)		
Mammals		
Bovidae	*Capra hircus*	domestic goat
Canidae	*Canis latrans*	coyote
Geomyidae	*Thomomys bottae*	Botta's pocket gopher
Heteromyidae	*Dipodomys* spp.	kangaroo rat
Leporidae	*Sylvilagus audubonii*	desert cottontail
Sciuridae	*Spermophilus beecheyi*	California ground squirrel
Mephitidae	*Mephitis mephitis*	striped skunk
Bovidae	*Ovis aries*	domestic sheep

†Sensitive species

CVAR_09552



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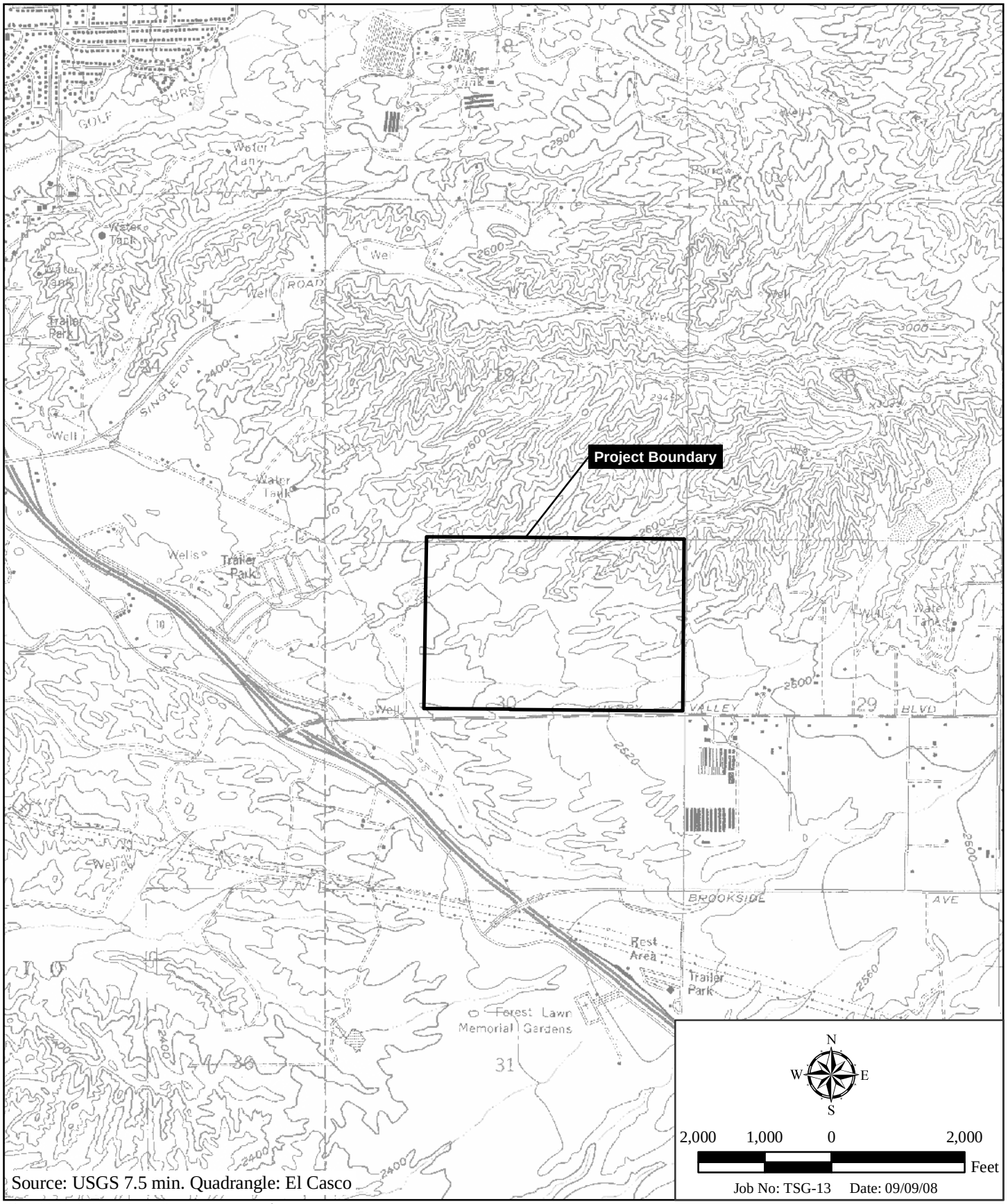
Regional Location Map

I-10 GATEWAY JOB CENTER

HELIX

Figure 1

CVAR_09553



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Project Location Map

I-10 GATEWAY JOB CENTER

HELIX

Figure 2

CVAR_09554



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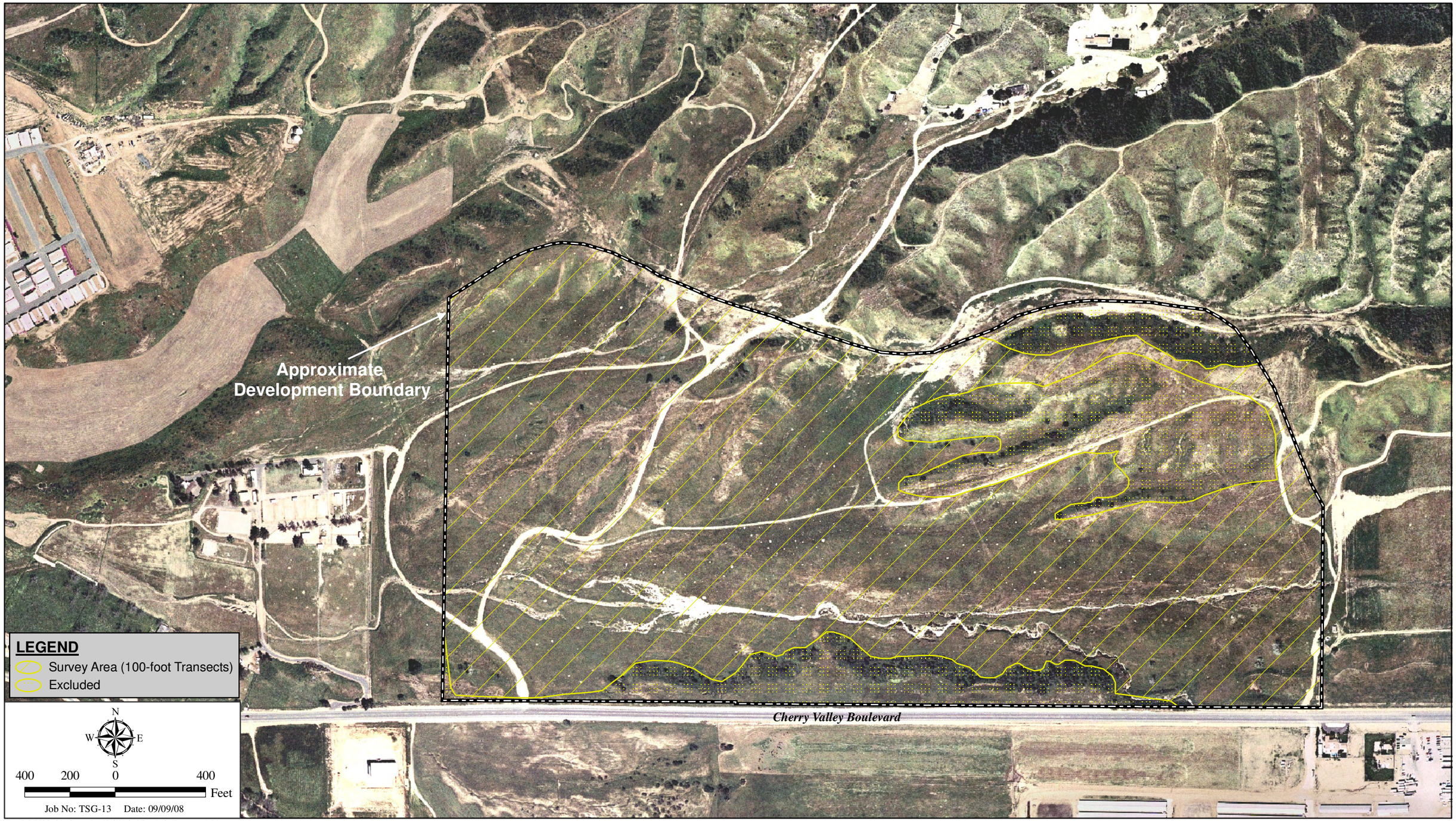
Aerial Photo

I-10 GATEWAY JOB CENTER

HELIX

Figure 3

CVAR_09555



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Aerial Map

I-10 GATEWAY JOB CENTER

HELIX

Figure 4

CVAR_09556



5a. Low potential habitat is visible in foreground, with dense vegetation in background.



5b. View of graded slope that was excluded from survey area. Grassland in foreground and background was included in the survey area.

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Burrowing Owl Survey Photos

I-10 GATEWAY JOB CENTER

HELIX

Figure 5

CVAR_09557

Appendix D:
Cultural Resources

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D.1 - Cultural Resource Assessment

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Phase 1 Cultural Resource Assessment
I-10 Gateway Center
GPA01079, CZ07799, PM6564, PP25337
Community of Cherry Valley, Riverside County, California

El Casco CA, USGS 7.5-minute Topographic Quadrangle Map
Township 2 South, Range 1 West, Section 30
237.05 Acre Survey

Prepared on behalf of:

TSG Cherry Valley, L.P.
C/O The Shopoff Group
2 Park Plaza, Suite 700
Irvine, CA 92614
Direct: 949.417.1396
Fax: 949.417.1399

Contact: Brian Rupp, Director - Asset Management

Prepared for:

Riverside County Planning Department
4080 Lemon Street, Twelfth Floor
Riverside, CA 92502

Ruth Rhoades, 951.955.3025

Prepared by:

Michael Brandman Associates
621 E. Carnegie Drive Suite #100
San Bernardino, CA. 92408
Phone: 909.884.2255, Fax: 909.884.2113

Contact/Author: Michael H. Dice, M.A., RPA
County-Certified Archaeologist #101

Michael Brandman Associates

Fieldwork Conducted By: Michael Dice, M.A., Andrea Stella, and Arabesque Said
Fieldwork Conducted On: September 13, 14, and 27, 2012
Report Date: April 11, 2013

Keywords: Cherry Valley, Negative findings report, Historic-era grazing land

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MANAGEMENT SUMMARY

This report documents a Phase 1 archaeological survey for an approximately 237-acre project site known as the I-10 Gateway Center located near the Town of Cherry Valley, in unincorporated Riverside County, California. All lands within the area proposed for development are private and are under the local jurisdiction of the County of Riverside. The westernmost parcel of 8.79 acres is located in the City of Calimesa but the County will act as the Lead Agency.

Qualified cultural resource staff from Michael Brandman Associates (MBA) have performed this investigation for the proponent The Shopoff Group, Inc., but under the County Memorandum of Understanding (MOU), MBA must write the report acting as the County's agent. The purpose of the study was to determine if cultural resources more than 45 years old were located within the project site, and then develop a strategy to mitigate for impacts to any potentially significant cultural resources that are or could be located on the project site.

The Proponent will be constructing a logistics center consisting of two large warehouse type buildings, hardscaping, landscaping, roadways, parking lots and roadway access points to Cherry Valley Boulevard. Approximately 68 acres are proposed to remain as Open Space.

Assessor's Parcel Numbers (APNs) 407-220-004, 407-220-007, 407-220-008, 407-220-009, 407-220-014, 407-220-016, 407-220-017, 413-270-012, and 413-270-013 constitute the entirety of the project area. These properties are currently vacant. Our research shows that the flatter parts of these parcels were plowed in the 1920s or 1930s for the purposes of dryland farming. Some native vegetation is located on the finger ridges and the steeper hillsides. There are no intact structures on the property.

A cultural resource literature search for the project was conducted on September 12, 2012 by the Author at the Eastern Information Center (EIC), which is located at the University of California, Riverside. A search radius of one mile was used during this effort. The results of the literature search indicated that few cultural resources are known within the search radius, and although the project site was surveyed in 1990, it does not currently contain recorded cultural resources. A lower density of prehistoric resources is expected for this part of the County compared to other areas because the Beaumont Plain is relatively dry.

MBA contacted the Native American Heritage Commission (NAHC) on September 7, 2012 requesting a Sacred Lands File search for traditional cultural properties. The NAHC response, provided to MBA staff on September 10, indicated that no sacred lands or traditional cultural properties are known for the project area. To ensure that Native American concerns are addressed at this stage of the proposed project, letters to each of the eight listed tribal contacts were mailed September 12. To date, one response (from Michael Contreras of the Morongo Band of Mission

Indians) has been received, and Mr. Contreras did not indicate that there were sacred lands issues with this project.

MBA staff archaeologists conducted a survey of the project site on September 13, 14 and 27, 2012. No cultural resources were encountered, a result similar to that of a survey of the property that took place in 1990.

Our experience with plowed fields elsewhere in Riverside County suggests that buried prehistoric sites, historic-era middens, and historic archaeological sites to tend to become exposed to view even through the plow-zone horizon of an abandoned farm. After examining the details of our study carefully, we believe that plowing so damaged the original landscape of the flats that no intact soils exist in the farmed areas to a point about 3 feet below current grade. The finger ridges between the flats were not plowed and many of these exhibit native vegetation, yet none show any sign of cultural resources. Based on the evidence at hand, the potential for impacts to unknown cultural resources during construction of the project is considered "low." For this reason, mitigation monitoring of the project site during construction is not recommended.

SECTION 1: INTRODUCTION

Qualified archaeological staff from Michael Brandman Associates (MBA) has conducted a Phase 1 cultural resource assessment of a set of nine parcels totaling 242.63 acres located west of the community of Cherry Valley, in unincorporated Riverside County, California. MBA has performed this investigation for the Proponent (TSG Cherry Valley, L.P.). The Proponent is entitling these parcels to construct a logistics center. Two of the parcels are located within the jurisdiction of the City of Calimesa but the whole of the project will be processed by the County of Riverside as the Lead Agency following CEQA Guidelines.

Federal, state, and local Agencies have developed laws and regulations designed to protect significant cultural resources that may be affected by projects regulated, funded, or undertaken by the Agency. These laws govern the preservation of historic and archaeological resources of national, state, regional, and local significance. This cultural resource study was also performed in compliance with the California Environmental Quality Act (CEQA) and the County of Riverside Phase 1 Archaeological Survey MOU parameters. Mr. Dice is pre-qualified to perform archaeological surveys on jurisdictional lands within the County of Riverside and is County Archaeologist #101.

This report closely follows the California Office of Historic Preservation (OHP) procedures for cultural resource surveys and the OHP's Archaeological Resource Management Report (ARMR) reporting format for archaeological reports. This report is organized into sections and appendices, which are summarized as follows:

- Section 1 introduces the project, the location, and the cultural resources team.
- Section 2 summarizes cultural setting.
- Section 3 presents the research design and investigative methods.
- Section 4 provides cultural resource survey and records search results.
- Section 5 provides management recommendations.
- Section 6 contains the project certification.
- Section 7 provides the required County of Riverside F-6 Checklist
- Section 8 presents the references cites during this study.
- Appendix A provides personnel qualifications.
- Appendix B presents the regulatory framework.
- Appendix C provides recent photographs of the project area.

1.1 - Project Location

Situated in the northwest portion of the County of Riverside, the project area is located north of Interstate 10 (I-10), west of Beaumont and east of the City of Calimesa (Exhibit 1). The boundaries of the project area can be found on the El Casco, CA. USGS 7.5-minute Topographic Quadrangle

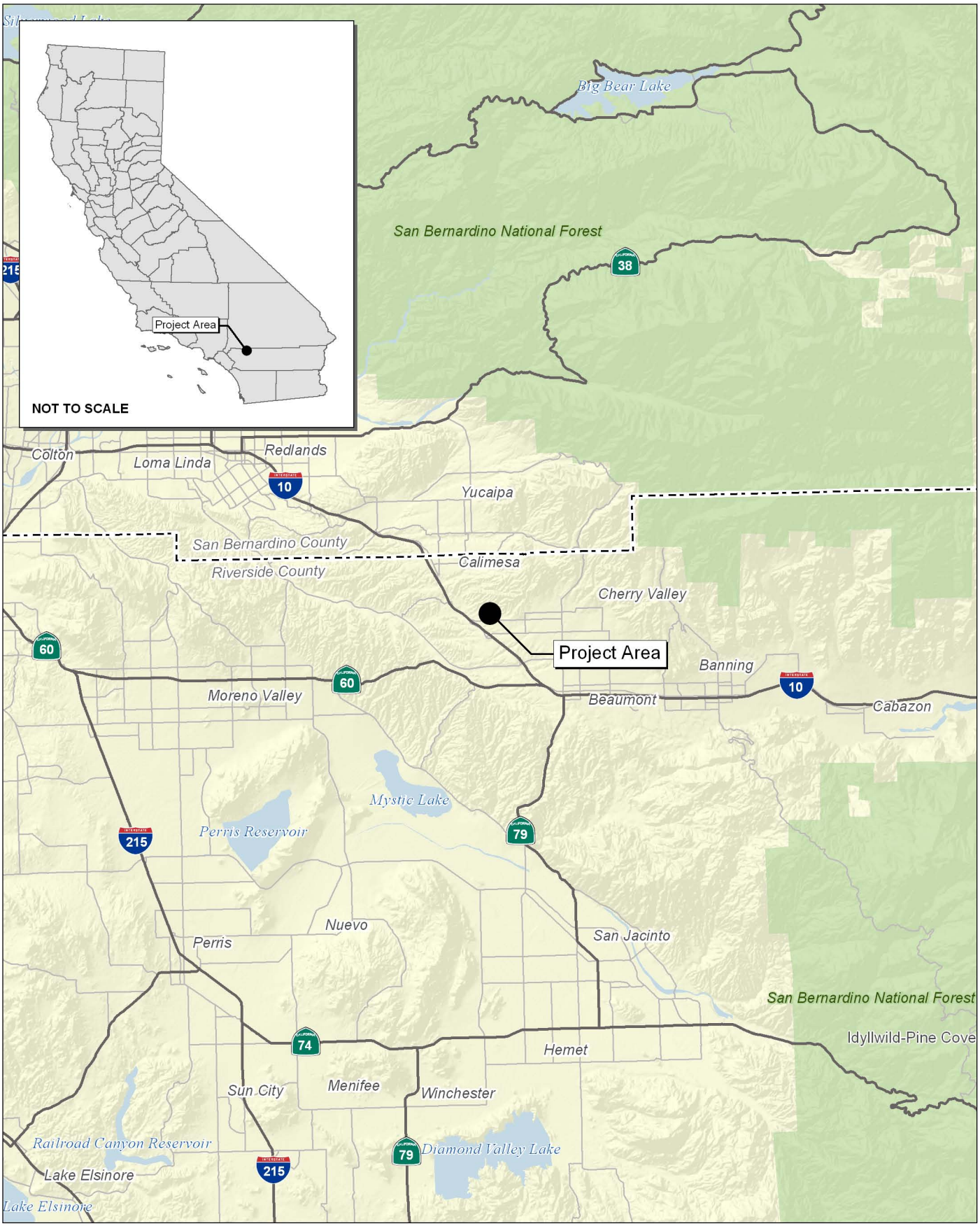
Map. The project is located in Section 30 of Township 2 South - Range 1 West (Exhibit 2). The project area includes nine parcels totaling 242.63 acres, which according to the County of Riverside Assessors website contains the following individual acreages: Assessor's Parcel Number (APN) 407-220-004 (12.82 acres), 407-220-007 (26.73 acres), 407-220-008 (6.24 acres), 407-220-009 (97.89 acres), 407-220-014 (0.12 acres), 407-220-016 (64.41 acres), 408-220-017 (20.05 acres) and in the City of Calimesa APN 413-270-012 (5.58 acres) and APN 413-220-013 (8.79 acres). A modern aerial image of the project site has been provided herein (Exhibit 3).

1.2 - Project Description and Report Purpose

Totaling approximately 230 gross acres, roughly 144 acres are proposed to be developed and the remaining 86 acres is proposed to remain as natural open space. The project consists of two industrial buildings that are proposed to be designed as eligible for Leadership in Energy and Environmental Design (LEED) Certification and will total approximately 2,560,000 square feet (sq ft). Additional development on the project site includes up to 428 dock doors, private streets, natural washes, detention basins/bio swales, landscaping, and a 200-foot drainage setback is planned along Cherry Valley Boulevard. Three access points will be provided off Cherry Valley Boulevard (Exhibit 4).

The structural facilities are planned to house a variety of industrial uses, including some that would be considered "high cube" type wholesale distribution users. Both industrial buildings will total approximately 39 feet in height. Building 2 will contain four offices located at each corner of the proposed building. Building 1 will contain an office on the southwest and southeast corner of the proposed building.

Equipment and commodities to be stored on the property include vehicles, trucks, trailers, and equipment associated with the industrial buildings; products and goods that will be distributed to retailers, wholesalers, or sold directly to consumers; maintenance equipment and machinery; office supplies and equipment; and fuels for vehicles. Vehicle and equipment maintenance to be performed on the property includes routine vehicle maintenance, and maintenance and repair of equipment and machinery for operations.



Source: Census 2000 Data, The CaSIL, MBA GIS 2013.

NORTH

5 2.5 0 5 Miles

Michael Brandman Associates

Exhibit 1
Regional Location Map

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TSG CHERRY VALLEY LP • I-10 GATEWAY CENTER
PHASE I CULTURAL RESOURCE ASSESSMENT
CVAR_09570

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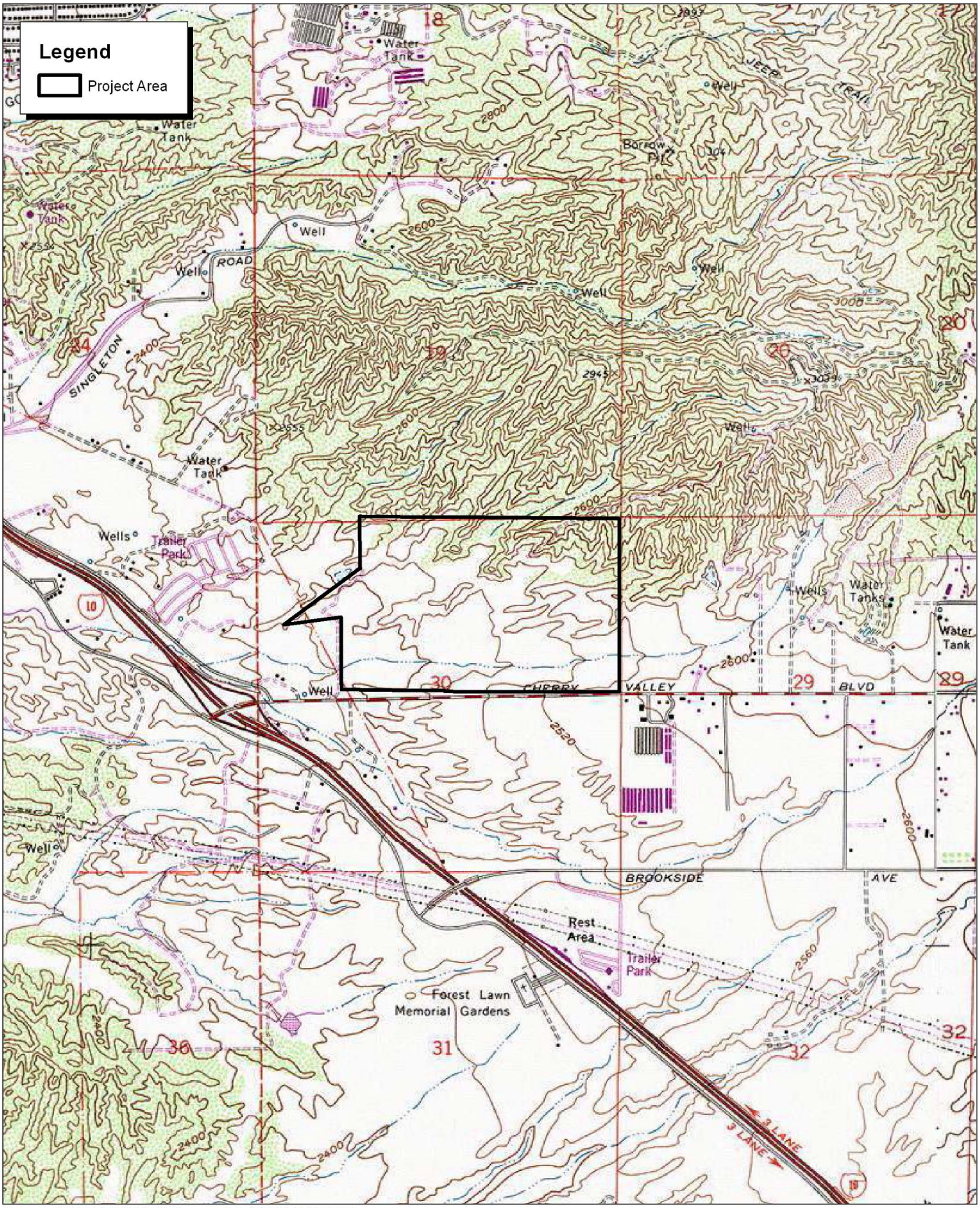

Source: TOPO! USGS El Casco, CA (1976) 7.5' DRG.

NORTH

2,000 1,000 0 2,000 Feet

Michael Brandman Associates

Exhibit 2
Local Vicinity Map
Topographic Base

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Source: ESRI Aerial Imagery.

NORTH

2,000 1,000 0 2,000

Feet

Michael Brandman Associates

Exhibit 3
Local Vicinity Map
Aerial Base

Based on the proposed development plan, the project will not have a formal phasing plan but will develop according to market conditions and infrastructure system connections. The backbone infrastructure will be phased to provide incremental capacities capable of serving the level of development proposed during project buildout.

Attendant utility systems will be graded and installed by phase except for key backbone connections as needed for system operation and integrity. Grading will include over-excavation for utilities. All grading and earthwork activities would be performed in accordance with the general earthwork and grading specifications of the County of Riverside. A review of the proposed site plan and site cross-sections relative to existing grades indicates that development will require manufactured slopes ranging from twenty feet (upslope from Cherry Valley Boulevard) west of the primary access to sixty feet (downslope from Cherry Valley Boulevard)) west of the emergency access point to create usable pads. Finally, grass swales, debris basins, and subsurface sewer/storm water pipelines will be constructed.

1.3 - Environmental Setting

1.3.1 - Topography, Geology, and Soils of the Beaumont Plain

The project area is located within a geological formation known as the Beaumont Plain Fault Zone (Matti et al 1992), and is located about 2 miles west of the low saddle that separates the San Gorgonio Creek water shed and flows into the Coachella Valley from the San Timoteo Creek watershed and flows into the Santa Ana River. The property is located in incised alluvium with surface flows heading toward the southwest and into the headwaters of San Timoteo Canyon. The project site lies between the northwestern portion of the San Jacinto Mountains and the San Timoteo Badlands, and lies along the southern foothills of the San Bernardino Mountains. The Plain is part of a large graben, which has dropped between the two mountain ranges during the last 10 million years and then filled with alluvial sediment.

During the Pliocene (5.33 to 2.58 million years ago [MYA]) and Pleistocene Epochs (2.58 MYA to 12,000 years before present [YBP]), the Los Angeles Basin sank many thousands of feet, while the San Jacinto Mountains rose considerably through compressional forces, and the Perris Block oscillated vertically (Woodford et al 1971). The vertical tectonics are indicated by right-lateral strike-slip faulting on the San Jacinto fault system, creating a broad anticline in the region known as the San Timoteo Anticline (Manson et al 2002) with the graben in the Beaumont Plain dropping as a result of compressional and strike-slip forces. The Banning fault is the primary fault in the San Gorgonio Pass area and the idea that the faults lying between the two mountain ranges were once part of an ancestral San Andreas fault system (aka the Vincent Thrust) has been proposed (Geological Survey Bulletin 845; http://www.data.scec.org/significant/banning.html). This combination of factors led to the deposition of hundreds of feet of alluvium in this region as the graben sunk. This is why no bedrock in the project site was observed during the archaeological survey.

According to Scott (2012), previous geological mapping (also see Rogers 1965, Morton 2004) indicates that the project area encompasses surface exposures of older Pleistocene overlain in arroyos and gullies by a thin veneer of Holocene sediments consisting of alluvium ("Qya5" and Qyf5"). The US Department of Agriculture (USDA) soils website (Knecht 1971) shows the finger ridges termed "terrace escarpments" and as such are unclassified, while the flats are entirely Hanford coarse sandy loam (HcC). These are soils consisting of well-drained alluvial fans derived from granitic material.

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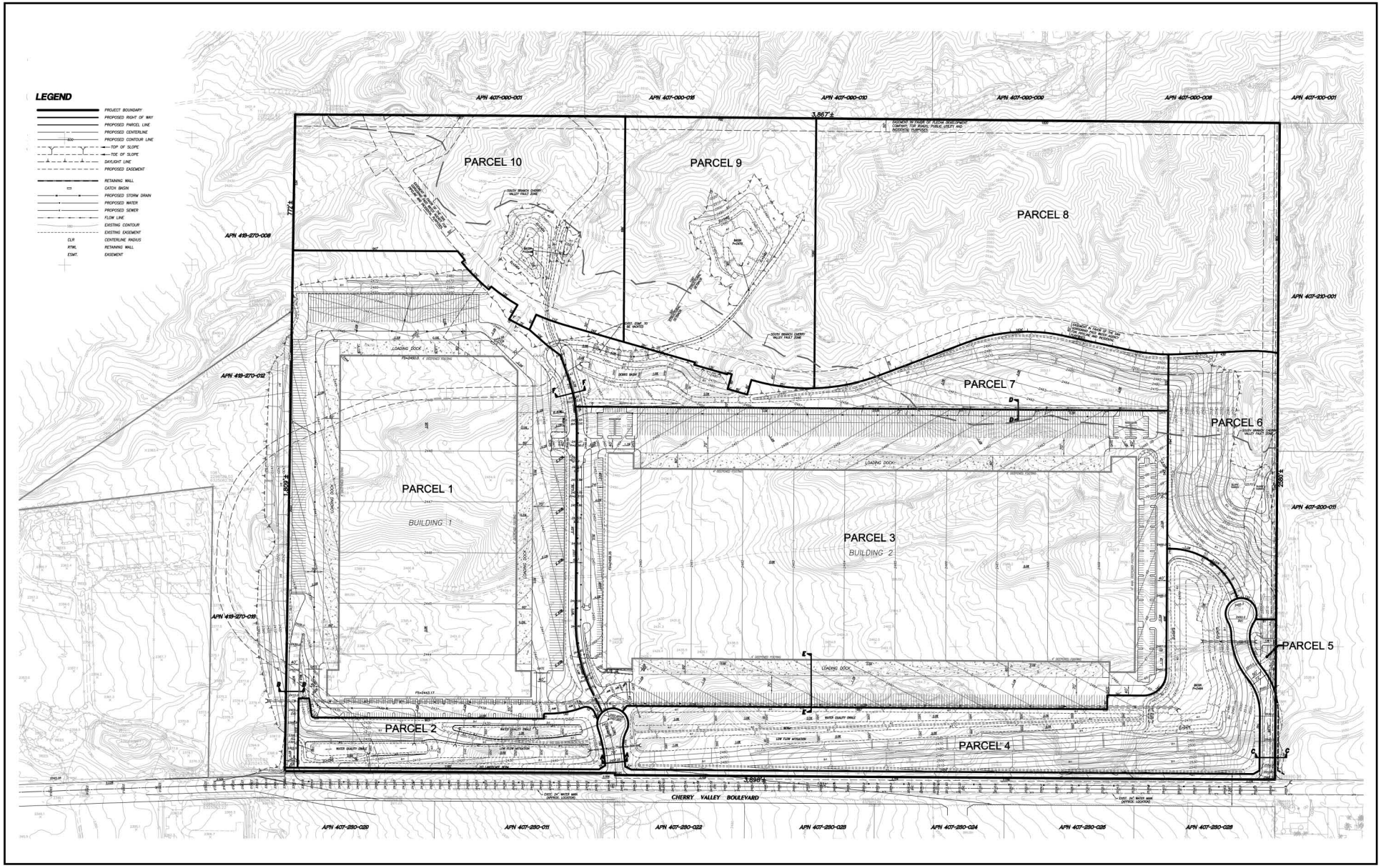

Source: Hunsaker & Associates Inc., October 2012.

NORTH

Michael Brandman Associates

34260005 • 04/2013 | 4_site_plan.cdr

Exhibit 4
Site Plan

TSG CHERRY VALLEY LP • I-10 GATEWAY CENTER
PHASE I CULTURAL RESOURCE ASSESSMENT

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1.3.2 - Vegetation and Wildlife

The entire project area was biologically surveyed by HELIX (2012). Eight vegetation communities were detected by HELIX biologists, the majority of which was non-native grassland (173.1 acres). In order of decreasing size, the project area contains Riversidean-Diegan coastal sage scrub, scrub oak chaparral, Riversidean sage scrub, disturbed habitat and minor amounts of isolated eucalyptus and mulefat habitat. MBA staff observed lizard and small mammal species during the survey. Except for one or two burrows that could have been used by coyotes, no evidence of large mammals on the site was observed.

1.3.3 - Historical Land Use

MBA staff reviewed a series of historic aerial photographs from 1938, 1959, and 1967, both on-line and from aerial photograph collections MBA has developed for previous nearby projects. The earliest photographs suggested that the flattest parts of the project area had been cleared of native vegetation by plowing. The land was not being irrigated at the time and the plowing was probably undertaken to foster the growth of grass for grazing. During this period it may have been possible to grow a dryland hay crop in the spring because of cooler temperatures and higher soil moisture content. The surface aquifer may not yet have been over-pumped at the time (the main groundwater aquifer is now located 500 feet below the surface today, according to the Beaumont-Cherry Valley Water District [http://www.bcvwd.org/recharge.asp]). The small Kehl Canyon watershed may have featured a small dam in Section 20 to the northeast of the project area where an old Kehl Ranch now lies, and this retention basin would have ended all water flows down the main body of the dry channel that crosses the site from east to west.

By 1959, plowing had been extended even further into the small canyons north of the project area leaving finger ridges between each flat spot with dense native vegetation upon them (Exhibit 5). The images show a small gully being formed because of runoff from Cherry Valley Boulevard (aka Woodland Avenue): this has subsequently enlarged and deepened to about 15 feet below the plain. In 1967 the native vegetation on the property seems to have declined (there was no sign of fire on these ridges) and the decline has accelerated to the point where today most of the original native vegetation on the low finger ridges in the project area is nearly gone.

1.4 - Assessment Team

Mr. Dice conducted the records search. MBA archaeologists Michael Dice, M.A., Arabesque Said, and Andrea Stella conducted a pedestrian survey of the project area on September 13 and 14, 2012. Follow-up work was done on the job site on September 27, 2012 by Mr. Dice. Professional qualifications of Michael Dice, M.A. (County of Riverside Archaeologist #101), can be found in Appendix B.

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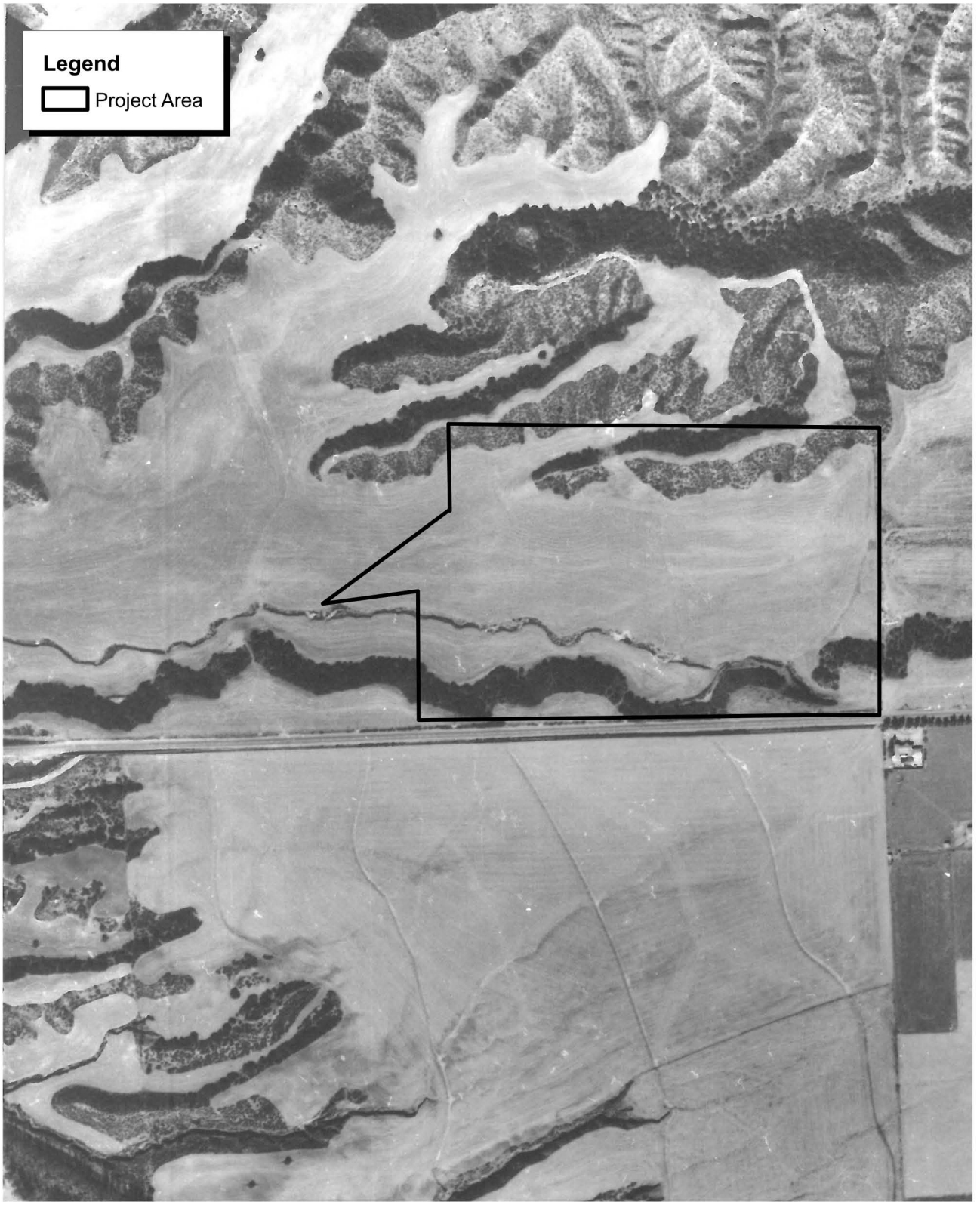

Michael Brandman Associates

Exhibit5
1959 Historic Aerial

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SECTION 2: CULTURAL SETTING

2.1 - Prehistoric Background

The most accepted regional chronology for coastal and the southern coast of southern California is from Wallace's four-part Horizon format (1955), which was later updated and revised by Warren (1968). Created to place temporal structure upon materialistic phases observed during archaeological syntheses, the advantages and weaknesses of southern California chronological sequences are reviewed by Warren (in Moratto 1984), Chartkoff and Chartkoff (1984), and Heizer (ed. 1978). Regional archaeologists generally follow Wallace's (1955) four-part southern California format when discussing the prehistory of Western Riverside County.

2.1.1 - Early Man Period

Spanning the period from approximately 15000 to 6000 B.C., archaeological assemblages attributed to this horizon are characterized by large projectile points and scrapers. The limited data available suggests that prehistoric populations focused on hunting and gathering, moving about the region in small nomadic groups. Technologies associated with ocean resource gathering would have likely been utilized in coastal areas.

2.1.2 - Millingstone Period

Characterized by the appearance of handstones and millingstones, this horizon tentatively dates to between 6000 and 1000 B.C. Assemblages in the early Millingstone Period reflect an emphasis on plant foods and foraging subsistence systems. For inland locales, it has been assumed that exploitation of grass seeds formed a primary subsistence activity. Artifact assemblages include choppers and scraper planes, but there is a general lack of projectile points in excavated assemblages. The appearance of large projectile points in the late portion of the Millingstone Horizon suggests the development of a more diverse economy. The distribution of millingstone sites reflects the theory that aboriginal groups may have followed a modified central-based wandering settlement pattern. In this semi-sedentary pattern, a base camp would have been occupied for a portion of the year, but small population groups seasonally occupied subsidiary camps in order to exploit resources not generally available near the base camp. Sedentism apparently increased in areas possessing an abundance of resources that were available for longer periods. More arid inland regions would have provided a seasonally and aerially dispersed resource base, restricting sedentary occupation.

2.1.3 - Intermediate Period

Dating between 1000 B.C. and 500 A.D., the Intermediate Horizon represents a transitional period. Little is known about the people of this period, especially those of inland southern California. Site assemblages retain many attributes of the Millingstone Horizon. Additionally, Intermediate Horizon sites contain large-stemmed or notched projectile points and portable mortars and pestles. The mortars and pestles suggest that the aboriginal populations may have harvested, processed, and

consumed acorns. Due to a general lack of data, neither the settlement and subsistence systems nor the cultural evolution of this period is well understood. It has been proposed that sedentism increased with the exploitation of storable food resources, such as acorns. The duration and intensity of occupation of base camps increased during this period, especially in the later part of the horizon.

2.1.4 - Late Prehistoric Period

Extending from 500 A.D. to Spanish Contact in 1769 A.D., the Late Prehistoric Horizon reflects an increased sophistication and diversity in technology. Assemblages characteristically contain projectile points, which imply the use of the bow and arrow and many late sites contain pottery. In addition, assemblages include steatite bowls, asphaltum, grave goods, and elaborate shell ornaments. Use of bedrock milling stations was widespread during this period. Increased hunting efficiency and widespread exploitation of acorns provided reliable and storable food resources. Cremation was the preferred method of burial and often times elaborate burial practices with extensive grave goods have been found at certain sites. The date of Uto-Aztecan migration into southern California is uncertain, but some authors have used linguistic extrapolations to suggest that earliest part of the Late Period saw an influx of Shoshonean speakers from the Great Basin (i.e., Kroeber 1925: AD 1-500).

2.2 - Native American Background

The following section discusses the Cahuilla group as the main tribal entity in the San Timoteo-San Jacinto region during the Pre-contact period, with the knowledge that Serrano groups may have also used the area during the Protohistoric period (Bean 1972, James 1969). On May 15, 1876, President Grant established the Morongo and eight other reservations in the area by Executive Order (at the time, these were called “agencies”). The name Morongo stems from the Serrano clan name Maarrenga'. The first official head of the San Gorgonio Agency recognized by the Bureau of Indian Affairs was the hereditary leader of the Maarrenga', known to Americans by his English name, John Morongo. Over time the BIA referred to the tribe as the Morongo Band of Mission Indians.

The Pass Cahuilla, a mountain unit of Cahuilla tribesman related to the Cahuilla of the San Jacintos and the Coachella Valley called the area Maalki. The Cahuillas are Takic-speaking peoples who once resided from the San Bernardino Mountains south into San Diego County. Many, but not all, of the Cahuilla peoples live on reservations: Cahuilla, Agua Caliente, Santa Rosa, Torres-Martinez, Cabezon, Morongo, Los Coyotes, Ramona, and Soboba. Today the Cahuillas number about twenty-four hundred people. Within their language-speaking group, the Cahuillas were divided into about a dozen independent clans containing five hundred to twelve hundred people each. These clans controlled separate territories of several hundred square miles each and maintained their own political authority. Each clan was allied through ritual systems that provided political stability and networks for economic exchange.

Community beliefs were clearly stated in various song cycles (epic poems) and historical accounts that described a clan’s sacred and secular history and provided guidelines for behavior. These beliefs

were reinforced on a regular basis, usually annually, in clan ritual centers where the texts of the song cycles were presented in their entirety-a process requiring several days to complete. The most important parts of these gatherings were the nukil ceremonies, which honored those members of a clan who had died since the last nukil ritual had been performed.

The pottery associated with the Cahuilla has been stylistically and ornamentally compared to that of an ancient Pueblo style, as well as to the Colorado River Indians, the Diegueno, Luiseño, and Mohave (Bean and Lawton 1975; Kroeber and Hooper 1978). It is constructed in coil form, and then shaped with a polishing stone and wooden paddle to be baked or fired in the sun. In many cases, their pottery was incised for decoration (Bean and Lawton 1975; Kroeber and Hooper 1978). Kroeber and Hooper (1978) suggest that the Cahuilla had four definitive pottery forms: an open bowl or dish, a cooking pot, a small-rimmed vessel and a wider opening rimmed vessel; and Bean and Lawton (1975) suggest that ladles, trays, and pipes were also manufactured. Baskets were an important item to the Cahuilla clan and were typically made in a variety of shapes and sizes, but always produced from a coil of mesquite branches, willow, or palm leaves. Grasses were used in the foundation and the only tool used to manufacture these baskets was a needle. These needles were either fashioned from the leg bone of a deer or made from a heavy cactus needle set into a wooden handle (Bean 1978).

Cahuilla homes were constructed with forked posts, which supported wood ceiling beams. These structures were then completely covered in thatch, which was slightly mixed with sand or soil. In some cases, the floor was subterranean and each house was positioned so that a level of privacy was attained (Bean 1978; Kroeber and Hooper 1978). Wilke (1978) notes that the Cahuilla homes were generally hidden in mesquite groves, which effectively obscured them from view. Ceremony and ritual was of great importance to the Cahuilla (Bean 1978). Deep ceremonial ties existed between the Serrano and the Cahuilla, and it is thought that the Desert Cahuilla may have adopted certain ceremonial practices from the Serrano (Strong 1972). Frequently practiced ceremonies included multiple rituals for the mourning of the dead, the eagle dance, summer and winter solstice celebrations and separate boys and girls' initiation rites (Strong 1972). This cultural linkage between the Cahuilla and Serrano is furthered by inferences from Mission baptismal records and Serrano oral tradition.

2.3 - Historic Background

Gunther (1984) notes that in mid-1885 the Cherry Valley Land and Water Company began selling acreage with the admonition that the land was good for raising cherries because, due to the altitude, the winter cold allowed for crops requiring a dormant season. As early as 1853, Powell Weaver (namesake of the Weaver Adobe) was growing fruit trees east of the project site at a slightly lower altitude. Reliable agricultural production required water and transportation, so once the Southern Pacific railroad snaked across the San Gorgonio Pass and into San Timoteo Canyon in the 1870s, small towns and farming land could be developed in the region.

A comprehensive historical review of the Banning-Beaumont area is noted in Chace and Laylander (1980). The following review details information taken from this and other secondary sources (i.e., SRS 1981; de Barros and Farnsworth 1990). In 1824, the San Gabriel Mission established a branch of the Mission at the highest point in the San Gorgonio Pass, along the foothills northwest of Banning. By that time, the area was known as Rancho San Gorgonio. According to the Banning website (Banning 2004), the first American settler to reach the area was a Dr. Isaac Smith in 1853. Smith purchased from a local Californio named Paulino Weaver an undivided one-third interest in Rancho San Gorgonio lands, who had originally obtained them from the Mexican Governor, Pio Pico. Smith brought his wife and seven children to the property to live and built a house known as Smith's Station, which later became Highland Home and subsequently Highland Springs. In 1854, Banning's first permanent landmark, the Gilman Ranch adobe, was constructed. The adobe was used as a stage stop by the Colorado Stage & Express Line, which was founded by Alexander & Co. of Los Angeles in the 1860s. The route ran through the foothills near Cherry Valley, a half-mile north of downtown Banning, then north of Cabazon and Whitewater, before reaching Palm Springs. The City is named in honor of General Phineas T. Banning, who in the mid-1850s freighted over the Mormon trail from Salt Lake to San Bernardino and Los Angeles and whom established the Port at San Pedro plus the first railroad to Los Angeles in 1871.

Homesteading did not occur west of the project site because lands in what is now part of the City of Calimesa were originally part of Santiago Johnson's little San Jacinto y San Gorgonio Tract (Lech 2004), which was sold to Louis Robidoux in April 1845. As noted previously odd-numbered sections were given to the railroads as an enticement to develop grades. Some of the odd-numbered sections inside the San Jacinto y San Gorgonio Tract were given to the Southern Pacific despite the former Rancho claims. The even numbered Sections of tract property made its way into the hands of homesteaders and survived mostly undivided and grazed upon by ranchers into the mid 20th Century. Water is scarce here in the form of natural springs and creeks because the property lies on a divide separating San Gorgonio from the Santa Timoteo-Santa Ana watersheds. This is probably the reason few prehistoric sites have been recorded within a half mile of the project area.

In 1929 US Route 99, a two-lane paved highway originating at the Mexican border at Calexico was created bringing traffic from Los Angeles to Indio. This opened as US60/70/99 (US395 added to in the 1950s) a mile southwest of the project site with the route running along Ramsey Street (Banning) and 6th Street (Beaumont) toward Redlands, with US60 branching off at Beaumont. This served the communities as the main east-west thoroughfare until Interstate 10 was constructed through the area about 1957-1958, replacing the two lane pavement with two lanes in both directions. The old highway was used as a frontage road (Desert Lawn Drive and Calimesa Boulevard) near the project site.

2.4 - Bureau of Land Management General Land Office Records Search

As noted above, the San Gorgonio Pass and San Timoteo Canyon areas were used as travel routes between Arizona and California at least beginning in the 1840s. In spring 1876 a section of Southern Pacific (SP) railroad track was completed between Los Angeles and Indian Wells (Lech 2004) and in that year construction stopped for the summer. At the time the SP operated wood burning locomotives and therefore needed wood, water and other materials to keep running on schedule. This forced the railroad to create stops and spur lines along the track to serve as supply ports, with paid caretakers staffing the larger stations, and local merchantmen for supplies. Because a checkerboard of odd-numbered Sections of public land were given to the railroads as incentive to build the line during that period (i.e., the Railroad Land Grants), persons could homestead the even numbered Sections with a railroad line nearby. Homesteaders eventually purchased railroad property once the railroad gained formal title: the railroads quickly sold these assets off.

MBA conducted an on-line search of the Bureau of Land Management (BLM) General Land Office (GLO) records on September 17, 2012. This search indicates that the North half of the Northeast quarter plus the Northeast quarter of the Northwest quarter (total of 172.6 acres) of Section 30 Township 2 South, Range 1 West was transferred from the federal land office to William L. Malcomb on September 19, 1898 through the Homestead Act (12 Stat. 392). The acreage located due north of the Malcomb property in the foothills was transferred to William Wolford on July 15 1915. Neither Malcomb nor Wolford are mentioned in Holmes' history of Riverside County (1912).

2.5 - Historic Aerial and Historic Map Review

MBA reviewed historical aerials from the Historicaerials.com and the Water Resource Institute at CSUSB websites as part of this study. 1932, 1939, 1959, 1967, and 1978 photographs are available. Our review shows that the project site has never exhibited a homestead or major structure and that the flat sections of the property had been plowed or cleared in 1932 and 1939. In 1959, the property exhibits evidence of very recent plowing and elimination of the center wash channel leading from Kehl Canyon. Vegetation on slopes leading to the flats was thick and the flats had been cleared of vegetation completely. Properties upstream were plowed and probably irrigated, while properties downstream exhibited structures and farming. By 1967, the plowed areas had increased in size but plowing on the flats in that year appears old. Much of the vegetation on the slopes has been reduced in quantity and thickness or was dying. Given that the water table was probably being lowered due to increased development and farming needs, the seeming loss of vegetation appears to be the result of lowering surface moisture. There is no evidence that the property has been used for grazing since the 1960s.

Topographic maps found on the www.historicaerials.com website were reviewed on September 19, 2012. The 1942 Perris, CA 10-minute map and the 1953 El Casco, CA 7.5-minute map showed that the project area lacked any platted structures and that while several wells were placed upstream of the

project site, none were located on the property itself. The existing water well located a few feet east of the project area was not platted as of the 1953 map date. The 1901 Elsinore, CA 125,000 scale quadrangle map also does not reveal any structures but it must be noted that the route through the Beaumont Plain was bypassed by most travel because the railroad traveled through San Timoteo Canyon only. Roads at that time were dirt and no paved highway existed from Calimesa/Yucaipa until the late 1920s.

SECTION 3: RESEARCH PARAMETERS AND METHODS

The primary purpose of a cultural resource pedestrian survey under CEQA Guidelines is to locate and document previously recorded or new cultural resource sites or isolates that are more than 45 years old within a project area, and to determine whether such resources will be or could be impacted by future development of the project. County guidelines associated with Phase I surveys can be downloaded from the Riverside County Transportation & Land Management Agency (TLMA) website. The version of the County guidelines referred to during this research effort was dated January 2010.

The project area must be examined using a block-transect technique, with 15 meter spacing at the maximum following County research guidelines. There were constraints to this procedure because the flats could be divided into one block of area for survey, then the finger ridges and steep hill surveyed as a second block. Any detected sites and isolates identified during the survey must be recorded on Department of Parks and Recreation (DPR) 523 forms and must be evaluated for significance during the environmental compliance process. Following County of Riverside guidelines, recordation and significance evaluation work may be completed during a subsequent archaeological Phase II study, upon authorization from the County archaeologist.

3.1 - Regional/Local Archaeological Regulations

The County of Riverside has created a series of guidelines and task lists for regional archaeologists to follow when completing CEQA-level cultural resources assessments. The County has identified four phases of archaeological assessments and resultant reports:

- Phase I: Initial Survey
- Phase II: Test or Evaluation
- Phase III: Mitigation or Data Recovery
- Phase IV: Monitoring

According to the Riverside County Planning Department Standard Scopes of Work, the Phase I report should consist of initial records, map or literature searches, a Sacred Lands File record check with the Native American Heritage Commission and an initial field inspection. If cultural resources are detected during the Phase I initial field inspection, these must be recorded on DPR 523 forms and must be evaluated for significance during the environmental compliance process. Following County of Riverside guidelines, recordation and significance evaluation work may be completed during a subsequent archaeological Phase II study, upon authorization from the County archaeologist.

A Phase II study is recommended by the County to gather additional information about the detected cultural resources for identification and evaluation purposes. If the results of a Phase II test or evaluation fail to find a resource significant or eligible for listing in the California Register of

Historical Resources, then this Phase II study may constitute sufficient mitigation for a resource. Phase III studies are recommended if a resource would be destroyed in the future or if significant value can be obtained from the resource. These studies generally occur when a resource has been found significant through the Phase II test and evaluation process, and the resource is threatened by impending destruction. A Phase IV report is required to present any information recovered as a result of mitigation monitoring programs, and is intended to ensure compliance with project conditions and to complete the archaeological data available for a specific resource or project area.

When completing these CEQA-level studies, the County has instructed regional archaeologists to adhere to specific rubrics for creating Phased reports. The requirements for a Phase I or initial survey archaeological report are found on the County Planning website and are frequently updated. The current Phase I report outline mirrors the OHP recommended ARMR report format, and includes sections to discuss project area location, current conditions, background history and findings. There are also sections to present research design, methods, records search results, pedestrian survey results, discussion of resources detected and recommendations for additional work, where necessary.

The County additionally requires paperwork regarding notifications to the Planning Department of forthcoming archaeological reports and significance checklists for specific project areas. All phased archaeological reports created for Riverside County review must be certified with the wet signature of a current Riverside County certified archaeologist. For an archaeologist to maintain their registry status, the archaeologist must complete a certification course and maintain a current MOU between the archaeologist or consulting firm and the County.

3.2 - Research Design

Previous research can provide a general basic understanding of cultural resources that might be found within the project area. General topic areas common to southern California prehistory include 1) prehistoric chronology, 2) subsistence strategies, 3) settlement patterning, 4) exchange, and 5) tool technology. Historic topic areas include 1) land use, 2) personal backgrounds, and 3) construction timetables. These general topics are contexts of research are difficult to address at the inventory level of analysis, but do provide a background for making statements about what is seen during an inventory. These topics allow for site type and content to be understood and evaluated within the framework of the local site area as well as in the broader context of the region.

For this reason, the goals of a Phase I survey study are to determine whether cultural resources are located within or near a defined project area, what type of resources are present or could be present, and to predict the chance for future discoveries of sites in the project area if construction-related impacts take place. Research assumptions were based upon the findings of the records search conducted at the EIC.

The research assumptions for the field survey consisted of the following:

1. The probability for detecting prehistoric archaeological sites on the modern ground surface of the former plowed fields appears to be "low" and sites on the unplowed finger ridges "moderate," based upon the number of known prehistoric resources within 1 mile of the project area. We have observed that prehistoric surface sites located on old farmland in California typically cannot be dated unless excavation takes place and buried radiocarbon samples are collected for C-14 dating.
2. The probability for detecting historic-era resources appears to be low, because no structures or the footprints of structures can be observed on aerial photographs and maps.

3.3 - Research Goals

The goal of this study was to determine whether cultural resources are located within the project area, determine whether any existing cultural resources should be considered significant resources, and develop specific mitigation measures that will address potential impacts to existing or potential resources. Thus, this study consisted of six distinct efforts:

1. Request of NAHC Sacred Lands File record search and contact with appropriate tribal groups and individuals.
2. Review of previous cultural resource sites and studies in the region.
3. Examination of archived aerial photographs, topographic maps, and road maps.
4. Evaluation of cultural resource sensitivity.
5. Conduct a block-transect survey of the project area.
6. Development of recommendations associated with potential impacts to existing cultural resources following County and CEQA Guidelines.

3.4 - Sites and Isolates

Prehistoric and historic cultural resource sites can vary in form and function from area to area. Prehistoric and historic cultural resources are defined as three or more items, such as lithics, stone tools, glass, cans, etc., that are not from a single source or material found within a 10-square-meter area. Historic sites that could qualify as significant in California are typically more than 45 years old or have the potential to be more than 45 years old at the time the project will be constructed. These definitions assume that items found in an area with a diversity of materials can represent more than a single activity at a location. Discrete components of a site, also known as loci, may be identified to represent repeated activity, such as milling stations, hearths, or isolated structures.

Recordation of each site and isolate will follow the most recent site recordation manual developed by the State Historic Preservation Office (SHPO) (dated March 1995). Photographs of the features or

individual artifact made during the recordation phase will be intended to show the basic qualities and location of the resource as a whole. Further research may be warranted once the potential impacts to such resources are identified.

3.5 - Record Search

3.5.1 - Information Center Search

The primary purpose of a cultural resource record search is to determine what cultural resources more than 45 years old have been recorded in the project area, and whether such resources will be or could be impacted by development. A records search at the EIC, which is located at the University of California at Riverside, was conducted to determine the existence of previously documented cultural resources in the County. The records search included current inventories of the:

- National Register of Historic Places (NRHP)
- California Register of Historical Resources (CR)
- California Historical Landmarks (CHL)
- California Points of Historical Interest (CPHI)
- California State Historic Resources Inventory (HRI)
- Archival maps for the City and County

3.5.2 - Native American Heritage Commission Record Search

Per County requirements, a request to the NAHC was sent in an effort to determine whether any sacred sites are located near the project area, as listed in their Sacred Lands File. Additional contact for the purpose of tribal comment was made with all appropriate tribal groups and individuals as named by the NAHC. MBA's efforts were associated with fact-finding only, and were not affiliated with formal government-to-government consultations as outlined by Senate Bill (SB) 18, a consultation the Riverside County Archaeologist will typically handle.

As of March 1, 2005, California Government Codes 65092; 65351; 65352; 65352.3; 65352.4; 65352.5 and 65560, formerly known as Senate Bill (SB) 18, require city and county governments to consult with California Native American tribes before individual site-specific, project-level land use decisions are made. In particular, this process applies to General Plan Amendments and adoptions of Specific Plans. The intent of this legislation is to provide all tribes, whether federally recognized or not, an opportunity to consult with local governments for the purpose of preserving and protecting their sacred places. The County of Riverside shall undertake the SB 18 consultations once the project is submitted to County Planning for review because Open Space is being delineated as part of this project.

SECTION 4: RESULTS

4.1 - Information Center Search

A cultural resource literature search was conducted on September 10, 2012 by the Author at the Eastern Information Center (EIC), which is located at the University of California, Riverside. A search radius of one mile around the project perimeter was used during this effort. To identify any historic properties, we examined the current inventories of the NRHP, CR, CHL, and CPHI. In addition, we copied the HRI and certain archival maps for the County to use to determine the existence of previously documented local historical resources.

Glenn (2006) reviewed the project site during preliminary analyses of Tract No. 36093. The Glenn team undertook a records search of the EIC files, then performed an "intuitive" survey of the project site in the Summer of 2006. The report was never submitted to the County because the project halted during the early part of the Recession. Thus, the study by Brown (1990) remains the only official study of the whole of the property.

According to the EIC files, numerous surveys on a parcel-by-parcel basis have taken place near the project area, but all but the Brown survey are located just outside the project area. Few cultural resources have been recorded near the project area (Table 1). Most of these are historic-era artifacts and/or historic features. Only one or two prehistoric resources have been identified since professional surveys began in the mid-1970s and all of these are closer to Beaumont and the headwaters of San Timoteo Canyon.

Table 1: Previously Recorded Cultural Resources

Primary #	Location	Type	>1 mile	>½ mile	>¼ mile	On-site?
P33-4115H	Section 34	Historic foundations and well	●			No
P33-6239	Section 31	Saahatpa marker (CHL marker)	●			No
P33-13717	Section 36	1950 house off Roberts Road		●		No
P33-14868	Section 34	1946 house and outbuildings	●			No
P33-14869	Section 34	Historic refuse		●		No
P33-14870	Section 30	1949-50 house and outbuildings			●	No
P33-15000	Section 36	1920 house	●			No
P33-15002	Section 36	Historic irrigation system and 1870 residence	●			No
P33-17122	Section 29	1938 Lantis property	●			No

4.2 - Native American Heritage Commission Record Search

On September 7, 2012, MBA sent a letter to the NAHC in an effort to determine whether any sacred sites are listed on their Sacred Lands File for this portion of the County of Riverside. Efforts were associated with informal consultation only, and are not affiliated with formal SB 18 consultations. The response from the NAHC was received on September 10, 2012. The NAHC indicated that no Native American cultural resources were known within ½ mile of the project area. To ensure that Native American planning concerns are addressed, letters to each of the eight listed tribal contacts were sent on September 12, 2012. As of the date of this report, one response has been provided this from Michael Contreras of the Morongo Band. Associated documents are attached in Appendix A.

4.3 - Cultural Survey Results

MBA archaeologists Michael Dice, M.A., Arabesque Said, and Andrea Stella surveyed the whole of the project area on September 13 (MD and ASt), September 14 (MD, AS and ASa) and September 27 (MD). Work on the 13th, included survey on the finger ridges and the small valley that runs west to east near the northern edge of the project site. September 14 work saw survey of all of the flats. September 27 saw the Author examine parcel number 413-322-0013 along the western margin of the project site.

Examination of topsoils during this work suggested that plowing had not taken place for at least 20 years in any part of the project site. The primary drainage has been heavily eroded to points about 20 feet deep in the southeast quadrant and vegetation that appears on the ridges in the 1940 to 1960 period has declined. Fire swept through the property perhaps 30 years ago and remnants of the native vegetation burned during that event can still be seen. Exposures of Pleistocene alluvial fan soils crop out at the western edge of the property on the low ridges between the Holocene alluvium. This material has the potential for fossils.

Although prehistoric deposits were expected on the finger ridges and unexpected on the flats due to historical plowing, no cultural resources were observed during the survey. Historic-era resources were not expected because none were observed on the historical aerials or the maps. These data suggest that the potential for impact to buried prehistoric resources should be considered "low," while the potential for impact to historic-era resources should be considered "none."

SECTION 5: SUMMARY AND RECOMMENDATIONS

5.1 - Summary

In accordance with CEQA and County of Riverside Archaeological Guidelines, MBA has assessed the effects of potential future development within the project area. The results of the cultural resource record search indicate that no previously recorded cultural resources are located on the property. The survey showed no cultural resources. Review of the whole of the data suggests that the potential for impacting buried prehistoric cultural resources during project-related earthmoving is "low" and the potential for impacting buried historic-era resources is none. Therefore, mitigation monitoring during project construction is not recommended.

5.1.1 - Accidental Discovery of Human Remains

There is always the small possibility that ground-disturbing activities during construction may uncover previously unknown buried human remains. Should this occur, Federal laws and standards apply including the Native American Graves Protection and Repatriation Act (NAGPRA) and its regulations found in the Code of Federal Regulations 43 CFR 10.

In the event of an accidental discovery or recognition of any human remains, California State Health and Safety Code Section 7050.5 dictates that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to CEQA regulations and Public Resources Code (PRC) Section 5097.98.

5.1.2 - Accidental Discovery of Cultural Resources

It is always possible that ground-disturbing activities during construction will uncover previously unknown, buried cultural resources. In the event that buried cultural resources are discovered during construction, operations shall stop in the immediate vicinity of the find and a qualified archaeologist shall be consulted to determine whether the resource requires further study. The qualified archeologist shall make recommendations to the Lead Agency on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the CEQA Guidelines. Potentially significant cultural resources consist of, but are not limited to stone, bone, fossils, wood, or shell artifacts or features, including hearths, structural remains, or historic dumpsites. Any previously undiscovered resources found during construction within the project area should be recorded on appropriate Department of Parks and Recreation (DPR) forms and evaluated for significance in terms of CEQA criteria.

If the resources are determined to be unique historic resources as defined under Section 15064.5 of the CEQA Guidelines, mitigation measures shall be identified by the monitor and recommended to the Lead Agency. Appropriate mitigation measures for significant resources could include avoidance

or capping, incorporation of the site in green space, parks, or open space, or data recovery excavations of the finds.

No further grading shall occur in the area of the discovery until the Lead Agency approves the measures to protect these resources. Any archaeological artifacts recovered because of mitigation shall be donated to a qualified scientific institution approved by the Lead Agency where they would be afforded long-term preservation to allow future scientific study.

In addition, reasonable efforts to avoid, minimize, or mitigate adverse effects to the property will be taken and the State Historic Preservation Office (SHPO) and Native American tribes with concerns about the property, as well as the Advisory Council on Historic Preservation (ACHP) will be notified within 48 hours in compliance with 36 CFR 800.13(b)(3).

SECTION 6: CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this archaeological report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date: April 12, 2013 Signed: _____

Michael H. Dice, M.A., RPA
County Certified Archaeologist #101
Michael Brandman Associates
San Bernardino, CA

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SECTION 7: COUNTY LEVEL OF SIGNIFICANCE CHECKLIST F-6

APN: #407-220-004, -007, -008, -009, -014, -016, -017 and #413-220-013	Project No: TTM #36093	EA Number:

☐Potentially Significant Impact	☐Less than Significant with Mitigation Incorporated	☐Less than	☒No Impact

(Check the level of significance that applies)

Historic Resources

Would the project:

a) Alter or destroy a historic site? **No Impact.**

b) Cause a substantial adverse change in the significance of a historical resource as defined in California Code of Regulations §15064.5? **No Impact.**

c) Is the resource listed in, or determined to be eligible by the State Resources Commission, for listing in the California Register of Historical Resources (Pub. Res. Code §5024.1)? **No Impact.**

Findings of Fact: **No historic-era resources were detected in the project area and the potential for impacts to such resources is considered "none".**

Proposed Mitigation: **None.**

Monitoring: **None proposed.**

Archaeological Resources

Would the project:

a) Alter or destroy an archaeological site? **No Impact.**

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to California Code of Regulations §15064.5? **No Impact.**

c) Disturb and human remains, including those interred outside of formal cemeteries? **No Impact.**

d) Restrict existing religious or sacred uses within the potential impact area? **No Impact.**

Findings of Fact: **No prehistoric-era resources were detected in the project area and the potential for impacts to such resources is considered "low."**

Proposed Mitigation: **None.**

Monitoring Proposed: **None proposed.**

Prepared By: Michael Dice, M.A. County of Riverside Archaeologist #101. Date: **April 12, 2013.**

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Appendix A:
Native American Sacred Lands Search Records

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STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390
Web Site www.nahc.ca.gov
ds_nahc@pacbell.net

September 10, 2012

Mr. Michael H. Dice, M.A., Senior Archaeologist
Michael Brandman Associates
621 E. Carnegie Drive, Suite 100
San Bernardino, CA 92408

Sent by FAX to:: 909-884-2113
No. of Pages: 4

Re: Sacred Lands File Search and Native American Contacts list for the proposed Sacred Lands File Search and Native American Contacts list for the proposed **"Shopoff-Tract Map 36093 Logistics Project ;"** located on about 250-acres in Cherry Valley; Riverside County, California

Dear Mr. Dice:

The Native American Heritage Commission (NAHC) conducted a Sacred Lands search based on the data provided and **Native American cultural resource sites were not identified** within one-half mile of the project site, the 'area of potential effect' (e.g. APE): you specified in any of the sections specified. Also the absence of archaeological fixtures and other cultural resource items does not preclude their existence at the subsurface level. In addition, please note; the NAHC Sacred Lands Inventory is not exhaustive and does not preclude the discovery of cultural resources during any project groundbreaking activity..

California Public Resources Code §§5097.94 (a) and 5097.96 authorize the NAHC to establish a Sacred Land Inventory to record Native American sacred sites and burial sites. These records are exempt from the provisions of the California Public Records Act pursuant to. California Government Code §6254 (r). The purpose of this code is to protect such sites from vandalism, theft and destruction.

In the 1985 Appellate Court decision (170 Cal App 3rd 604), the court held that the NAHC has jurisdiction and special expertise, as a state agency, over affected Native American resources, impacted by proposed projects including archaeological, places of religious significance to Native Americans and burial sites

The California Environmental Quality Act (CEQA – CA Public Resources Code §§ 21000-21177, amendments effective 3/18/2010) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR) per the CEQA Guidelines defines a significant impact on the environment as 'a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including ...objects of historic or aesthetic significance." In order to comply with this provision, the lead agency is required to assess

whether the project will have an adverse impact on these resources within the 'area of potential effect (APE), and if so, to mitigate that effect. CA Government Code §65040.12(e) defines "environmental justice" provisions and is applicable to the environmental review processes.

Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. Local Native Americans may have knowledge of the religious and cultural significance of the historic properties of the proposed project for the area (e.g. APE). Consultation with Native American communities is also a matter of environmental justice as defined by California Government Code §65040.12(e). We urge consultation with those tribes and interested Native Americans on the list that the NAHC has provided in order to see if your proposed project might impact Native American cultural resources. Lead agencies should consider avoidance as defined in §15370 of the CEQA Guidelines when significant cultural resources as defined by the CEQA Guidelines §15064.5 (b)(c)(f) may be affected by a proposed project. If so, Section 15382 of the CEQA Guidelines defines a significant impact on the environment as "substantial," and Section 2183.2 which requires documentation, data recovery of cultural resources.

The 1992 *Secretary of the Interiors Standards for the Treatment of Historic Properties* were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including cultural landscapes. Also, federal Executive Orders Nos. 11593 (preservation of cultural environment), 13175 (coordination & consultation) and 13007 (Sacred Sites) are helpful, supportive guides for Section 106 consultation. The aforementioned Secretary of the Interior's *Standards* include recommendations for all 'lead agencies' to consider the historic context of proposed projects and to "research" the cultural landscape that might include the 'area of potential effect.'

Partnering with local tribes and interested Native American consulting parties, on the NAHC list, should be conducted in compliance with the requirements of federal NEPA (42 U.S.C 4321-43351) and Section 106 4(f), Section 110 and (k) of the federal NHPA (16 U.S.C. 470 *et seq*), Section 4(f) of the Department of Transportation Act of 1966 (23 CFR 774); 36 CFR Part 800.3 (f) (2) & .5, the President's Council on Environmental Quality (CSQ, 42 U.S.C 4371 *et seq*. and NAGPRA (25 U.S.C. 3001-3013) as appropriate. The 1992 *Secretary of the Interiors Standards for the Treatment of Historic Properties* were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including cultural landscapes. Also, federal Executive Orders Nos. 11593 (preservation of cultural environment), 13175 (coordination & consultation) and 13007 (Sacred Sites) are helpful, supportive guides for Section 106 consultation. The NAHC remains concerned about the limitations and methods employed for NHPA Section 106 Consultation.

Also, California Public Resources Code Section 5097.98, California Government Code §27491 and Health & Safety Code Section 7050.5 provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery', another important reason to have Native American Monitors on board with the project.

To be effective, consultation on specific projects must be the result of an ongoing relationship between Native American tribes and lead agencies, project proponents and their contractors, in the opinion of the NAHC. An excellent way to reinforce the relationship between a project and local tribes is to employ Native American Monitors in all phases of proposed projects including the planning phases.

Confidentiality of "historic properties of religious and cultural significance" may also be protected under Section 304 of he NHPA or at the Secretary of the Interior discretion if not eligible for listing on the National Register of Historic Places. The Secretary may also be advised by the federal Indian Religious Freedom Act (cf. 42 U.S.C., 1996) in issuing a decision on whether or not to disclose items of religious and/or cultural significance identified in or near the APE and possibility threatened by proposed project activity.

If you have any questions about this response to your request, please do not hesitate to contact me at (916) 653-6251.

Sincerely,

Dave Singleton

Attachment: Native American Contact List

Native American Contacts
Riverside County
September 10, 2012

Ramona Band of Cahuilla Mission Indians
Joseph Hamilton, Chairman
P.O. Box 391670 Cahuilla
Anza , CA 92539
admin@ramonatribe.com
(951) 763-4105
(951) 763-4325 Fax

San Manuel Band of Mission Indians
Carla Rodriguez, Chairwoman
26569 Community Center Drive Serrano
Highland , CA 92346
(909) 864-8933
(909) 864-3724 - FAX
(909) 864-3370 Fax

Santa Rosa Band of Mission Indians
John Marcus, Chairman
P.O. Box 391820 Cahuilla
Anza , CA 92539
(951) 659-2700
(951) 659-2228 Fax

Morongo Band of Mission Indians
Michael Contreras, Cultural Heritage Prog.
12700 Pumarra Road Cahuilla
Banning , CA 92220 Serrano
(951) 201-1866 - cell
mcontreras@morongo-nsn.gov
(951) 922-0105 Fax

San Manuel Band of Mission Indians
Ann Brierty, Policy/Cultural Resources Departmen
26569 Community Center. Drive Serrano
Highland , CA 92346
(909) 864-8933, Ext 3250
abrierty@sanmanuel-nsn.gov
(909) 862-5152 Fax

Morongo Band of Mission Indians
Robert Martin, Chairperson
12700 Pumarra Rroad Cahuilla
Banning , CA 92220 Serrano
(951) 849-8807
(951) 755-5200
(951) 922-8146 Fax

Serrano Nation of Mission Indians
Goldie Walker, Chairwoman
P.O. Box 343 Serrano
Patton , CA 92369

(909) 528-9027 or
(909) 528-9032

Ernest H. Siva
Morongo Band of Mission Indians Tribal Elder
9570 Mias Canyon Road Serrano
Banning , CA 92220 Cahuilla
siva@dishmail.net
(951) 849-4676

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable for contacting local Native Americans with regard to cultural resources for the proposed Shopoff-Tract Map 36093 Logistics Project; located on approximately 250-acres in the Cherry Valley; Riverside Country, California for which a Sacred Lands File search and Native American Contacts list were requested.

SAMPLE MAILED

Michael Brandman Associates

Fresno
559.497.0310

Irvine
714.508.4100

Palm Springs
760.322.8847

Sacramento
916.447.1100

San Bernardino
909.884.2255

San Ramon
925.830.2733

September 12, 2012

Ernest Siva, Morongo Tribal Elder
9570 Mias Canyon
Banning, CA 92220

Subject: **Native American Information Request Letter associated with the Tract Map #36093 Logistics Project, Community of Cherry Valley, County of Riverside, California. APN #407-220-004, -007, -008, -009, -014, -016, -017 and a portion of #413-270-013 (USGS *El Casco, CA.* topographic quadrangle)**

Dear Mr. Siva:

Michael Brandman Associates is about to complete a cultural resource survey of the Tentative Tract Map #36093 Logistics Project located in the western portion of the Community of Cherry Valley, California. The project is associated with the planned-for development of a logistics (warehousing) facility on the flatter southern half of the property. The hilly areas will remain Open Space.

This information request letter is **not associated with the SB18 process**, but is a document that shall be included in our cultural resource survey report. CEQA Guidelines and Section 106 of the National Historic Preservation Act of 1966 (NHPA) must consider the effects a project may have on historic properties. The definition of "historic properties" can include properties of traditional religious and cultural significance to Native American groups. To determine whether the proposed project may impact any historic properties, including traditional cultural properties, MBA has reviewed background information and consulted with entities such as the NAHC. The Native American Heritage Commission **did not identify any Native American cultural resource sites** in or within ½ mile of the project area, although we are aware that prehistoric sites do exist nearby.

We wish to ask if you have any information or concerns about this project area, and/or if the proposed project may have an impact on cultural resources that are important to you. Please feel free to contact me at 909.884.2255 ext. 1208 or my cell 714.742.0468 if you have any questions or information, or you may address and mail a response to my attention at the address below.

Sincerely,

Michael H. Dice, M.A., Senior Archaeologist
Michael Brandman Associates
621 E Carnegie Drive, Suite 100
San Bernardino, CA 92408

Enc: USGS *El Casco, CA*. topographic map

sample

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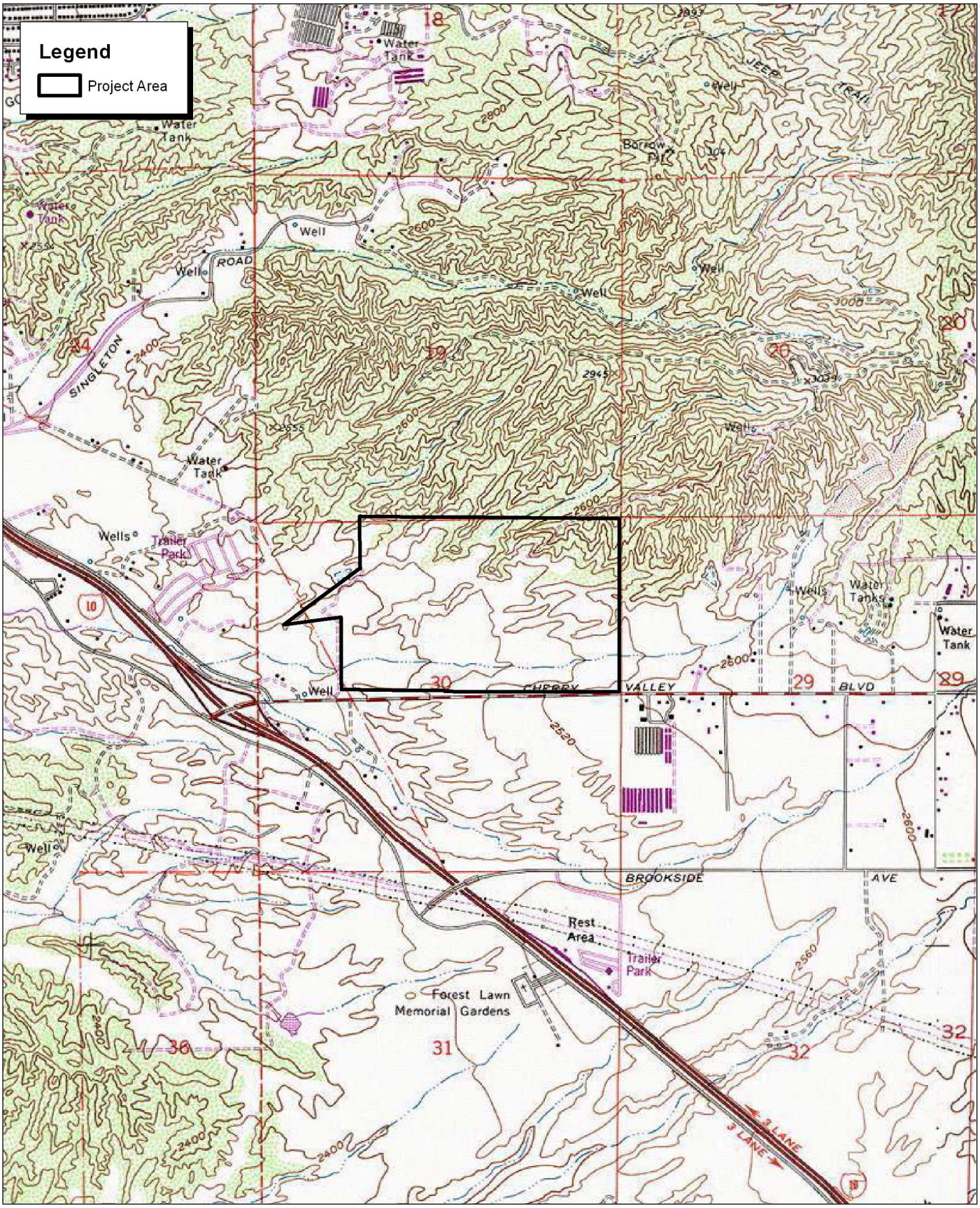

Source: TOPO! USGS El Casco, CA (1976) 7.5' DRG.

NORTH

2,000 1,000 0 2,000 Feet

Michael Brandman Associates

Exhibit 2
Local Vicinity Map
Topographic Base

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Michael Dice - RE: project sacred lands search recently sent

From: Mike Contreras <MContreras@morongo-nsn.gov>
To: Michael Dice <MDice@brandman.com>
Date: 9/19/2012 2:20 PM
Subject: RE: project sacred lands search recently sent

Yes, thank you. this would be Tract Map #36093, correct?

The Morongo Band will offer a response of "no known concerns" on this project. However we do ask to be immediately notified in the event of any inadvertent discoveries. Should any resources of cultural significance be uncovered during any grading or trenching, a plan of action should follow with the tribe's involvement. We do appreciate your efforts and respect for our cultural properties. For immediate contact my cell phone number is **951-201-1866**

Thank you!

MICHAEL CONTRERAS JR.
MORONGO BAND OF MISSION INDIANS
CULTURAL HERITAGE PROGRAM COORDINATOR
12700 PUMARRA ROAD
BANNING, CA. 92220
951-755-5025 OFFICE
951-572-6004 FAX
MCONTRERAS@MORONGO-NSN.GOV

From: Michael Dice [mailto:MDice@brandman.com]
Sent: Wednesday, September 19, 2012 1:27 PM
To: Mike Contreras
Subject: project sacred lands search recently sent

michael: MBA staff sent you a letter regarding a proposed project off cherry valley boulevard near I-10 last week. make sure to respond directly to me via letter faxed or mailed here. there are no known cultural resources on this property but I would appreciate a response.

thanks! :)

-michael dice

Michael H. Dice, M.A., R.P.A.
Cultural Resource Manager

First Carbon Solutions - Michael Brandman Associates
909-884-2255 (office)
714-742-0468 (cell)



Appendix B:
Personnel Qualifications

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CORPORATE RESUME

Michael H. Dice, MA, RPA

Cultural Resource Manager

Overview

- 25+ years experience in Cultural Resource Management
- Master's degree, Anthropology – Arizona State University, Tempe. 1993
- Bachelor's degree, Anthropology – Washington State University, Pullman. 1986
- Registered Professional Archaeologist (RPA 2000)
- County-Certified Archaeologist in Riverside County (#101), the County of Orange, and the County of San Diego.

Michael H. Dice, MA, RPA, has more than 25 years experience performing record searches, archaeological surveys, archaeological site testing projects, and data collection projects on private and public lands in the Southwestern United States. He has authored or co-authored more than 200 Cultural Resources Inventory Reports required for CEQA and/or NEPA level documents. Approximately 30 of these have taken place under County of Riverside jurisdiction. His management experience within CRM involves producing proposals, hiring and managing field and office cultural resource personnel, writing draft and final reports to various Clients and Lead Agencies, and managing costs effectively. Michael has extensive experience with California Native American Tribes, having provided direct consultation and coordination with the Agua Caliente Band, Gabrielino tribal officials, Juaneño tribal officials, the Morongo Band, the Serrano Band, and the Temecula Band of Luiseno Indians (Pechanga).

Project Specific Archaeological Experience 2008-2012: Southern California Desert Areas

Cultural Resource Assessment of The Salton Sea Solar Project, Riverside County, CA. *Reese-Chambers Systems Consultants Inc.* (2009-2010)

Mr. Dice led an archaeological survey and protohistoric ceramic scatter assessment on approximately 480 acres just north of the Salton Sea in the County of Riverside. The purpose of the study was to evaluate seemingly vacant property as part of an analysis for potential impacts during construction of a new solar panel complex. Two sites were identified and will have to be Phase III collected prior to construction. Consultations with local Tribal Authorities took place. Accepted by the County, construction of the complex will probably begin in the winter 2011 and Mr. Dice expects to lead the cultural resource compliance team.

Cultural Resource Assessment of The Felicity Project, Imperial County, CA. *Reese-Chambers Systems Consultants Inc. Somis, CA. (*2010-2011)

Mr. Dice led an archaeological survey on approximately 400 acres located just north of the tiny community of Felicity in the County of Imperial. The purpose of the study was to evaluate seemingly vacant property as part of an analysis for potential impacts during construction of a new solar panel complex. Consultations with local Tribal Authorities took place. The report was submitted to the County in 2011 as part of an IS/MND package.

Cultural Resource Assessment of The Kings Solar I Project, Kings and Kern County, CA. *KingsSolar LLC, Pasadena, CA.* (2010)

Mr. Dice led an archaeological survey on approximately 400 acres located just north of the tiny community of Winterhaven in the County of Imperial. The purpose of the study was to evaluate seemingly vacant property as part of an analysis for potential impacts during construction of a new solar panel complex. Consultations with local Tribal Authorities took place. The report was submitted to the County in 2011 as part of a IS/MND package.

Cultural Resource Assessment of The Kings Solar II Project, Kings County, CA. ***GROW Holdings, Inc, Los Angeles, CA.*** **(2011-2012)**

Mr. Dice led an archaeological survey on approximately 2200 acres located about 10 miles southeast of Kettleman City in the County of Kings. The purpose of the study was to evaluate a set of cattle ranch parcels as part of an analysis for potential impacts during construction of a new solar panel complex. Consultations with local Tribal Authorities took place. The research is ongoing and is planned to be submitted as part of an EIR to the County of Kings in 2013.

Cultural Resource Assessment of The Indigo I and Indigo II Solar Project, Community of Desert Center, Riverside Kings County, CA. ***Tetra Tech EC., Irvine, CA.*** **(2012 and Project pending)**

Mr. Dice led an archaeological survey on approximately 2000 acres of former jojoba farm property north of the small community of Desert Center, Ca. The purpose of the study was to evaluate abandoned agricultural land as part of an analysis for potential impacts for future construction of a new solar panel complex. Consultations with local Tribal Authorities took place. The research is ongoing and is planned to be submitted as part of an EIR to the County of Riverside in late 2012.

Phase 1 Cultural Resource Assessment of the Badlands Landfill and Lamb Canyon Landfill Expansion Projects, Riverside County, California. ***Riverside County Waste Management Department*** **(2010)**

Mr. Dice led an archaeological survey on a total of 1600 acres adjacent to the existing Badlands Landfill and the Lamb Canyon Landfill in the County of Riverside. The purpose of the study was to evaluate adjacent property as part of an analysis for potential impacts during expansion of the Landfills. Several new resources were detected and recorded during the study. While RCWMD will not construct the expansion for several decades, all known cultural sites will be avoided when land development takes place in the site areas. Consultations with local Tribal Authorities took place and the reports shall support future EIR's

Cultural Resource Assessment, Phase II Historical evaluation and Phase IV Monitoring for the Sketchers Industrial Park Project, City of Moreno Valley, California. ***Highland-Fairview Operating Partners, LLC*** **(2005-2011)**

Mr. Dice led a Phase 1 survey of the Sketchers property in addition to other properties controlled by the Client in 2004, headed a team of cultural professionals performing historic building evaluations, then headed up a field crew of monitors during the earth-moving phase of complex construction in 2010. Wholly seen through by Mr. Dice, several historic era buildings were examined. Consultations with local Tribal Authorities took place and construction of the complex was recently completed.

Cultural Resource Assessment, Phase II Historical and Prehistoric Significance Evaluations for the World Logistics Center Specific Plan, City of Moreno Valley, California. ***Highland-Fairview Operating Partners, LLC*** **(2004-2012)**

A project that has spanned nearly 10 years, Mr. Dice had led a Phase 1 survey of the project area in many stages between 2005 and 2011, headed a team of cultural professionals performing prehistoric site evaluations and historic archaeological evaluations, which has been molded into a report for a program-level EIR. The report has been submitted to the EIR author and is expected to be approved by the City in the fall of 2012.

Project Specific Historical Architecture Experience 2008-2012.

Historic Building Evaluation of the Whitney Building **To Be Completed Summer 2012**
City of La Verne, CA.

MBA has been contracted to evaluate a structure originally built in 1925 for significance at the State (CEQA) level of analysis. The City of La Verne is considering a proposal to build new residential structures near the Whitney Building and it is unknown whether or not the structure is eligible for listing on the National, State or Local registers. We have established that the building is in fact eligible for the National Register, and we are currently defining how the structure may or may not be indirectly impacted by the proposed structure.

Historic Structure Evaluation of the Whitney Building **To Be Completed Fall 2012**
City of Los Angeles, CA.

MBA has been contracted to evaluate a set of small residential structures and an apartment complex built in the 1920's. The City of Los Angeles is considering a proposal to build new residential structures on the property. Current results, which shall support an IS/MND, are pending.

Historic Building Evaluation of the San Gorgonio Inn **Completed Summer 2010**
City of Banning, CA.

MBA has been contracted to evaluate a structure originally built in 1884 and rebuilt in 1930 for significance at the State (CEQA) level of analysis. The City is proposing to demolish the structure and the report will supported an EIR written by Ernest Perea of Romo Planning Group Inc., Covina. Mr. Dice performed a historic background assessment and developed a thematic context with which the structure could be evaluated against.

Historic Building Evaluation of the F&M Artesia Branch Bank **Completed December 2009**
City of Long Beach, CA.

MBA was contracted to evaluate a structure built in 1961 for significance at the State (CEQA) and City of Long Beach Historic Property level of analysis. The City had proposed to demolish the structure complex and our technical report supported an IS/MND written in City Format for the proponent, Jeffrey Tartaglino of Palm Desert Development. Mr. Dice performed a historic background assessment and developed a thematic context with which the structure could be evaluated against. Because the structure was found significant at the local level of analysis, the City required a photographic assay of the building: this was incorporated into the document. The City will likely allow the removal of the building through demolition.

Historic Building Evaluation of the Premiere Lanes Bowling Alley **Completed November 2009**
City of Santa Fe Springs, CA.

MBA was contracted to evaluate a structure built in 1960-61 for significance at the State (CEQA) level of analysis. The City had proposed to demolish the structure complex and our technical report supported an EIR written by Sandra Bauer of Bauer Consulting Inc., Irvine, CA. Mr. Dice performed a historic background assessment and developed a thematic context with which the structure could be evaluated against. The City will allow the removal of the building through demolition but save signage associated with the structure.

Historic Building Survey, Washington Boulevard Redevelopment **Completed Spring 2009**
City of Santa Fe Springs, CA.

MBA was contracted to conduct a historic building survey for a project area located in the City of Santa Fe Springs, County of Los Angeles. The Washington Boulevard Redevelopment project area is

located in the City of Santa Fe Springs side of Washington Boulevard, and is bisected by Sorensen Avenue. The purpose of the study was to identify those properties more than 45 year old that may be demolished during planned Redevelopment in the next 25 years. A program-level historic context was developed and existing properties preliminarily assessed against that historic context. The results showed that more 100 individual properties more than 45 years old were located in and near the project area. The evaluation of the historic context and existing properties will allow the City, for the first time, to recommend that the significance of old buildings be considered when undertaking redevelopment in the City limits.

Historic Building Survey, Consolidated Redevelopment **Completed Fall 2008**
City of Santa Fe Springs, CA.

MBA was contracted to conduct a historic building survey for a project area located in the City of Santa Fe Springs, County of Los Angeles. The Consolidated Redevelopment Project Area is located near Gateway Plaza at the intersection of Telegraph Road and Painter Avenue west of Carmenita Road. The purpose of the study was to identify those properties more than 45 year old that may be demolished during planned Redevelopment in the next 25 years. A program-level historic context was developed and existing properties preliminarily assessed against that historic context. The results showed that more 40 individual properties more than 45 years old were located in and near the project area.

Historic Resource Assessment and Phase II Recommendation **Completed 2006**
The Alfa Leisure Property, City of Chino, CA.

This study was a CEQA and NEPA-compliant assessment of the old Chino Sugar Mill, including an historic building survey and photographic assay. The results of the study showed that the structure was a locally significant structure but could not be saved within a reasonable monetary expenditure as the structure was completely unstable. Recommended that a photographic assay and additional historic analysis be undertaken before the structure would be allowed to be demolished.

ASR/HPSR for the Santa Ana Art Wall Project **Completed 2005**
OCTA Tracks/Santa Ana Depot at Santiago Street, City of Santa Ana, CA.

Served as Senior Project Archaeologist to perform an ASR/HRER/HPSR package for the City of Santa Ana for its Caltrans District 12 submission. Construction of the Art Wall was funded by, in part, by the Federal Highway Administration (FHWA). The project was not considered an undertaking exempt from federal cultural resource compliance as governed by Caltrans-FHWA Programmatic Agreement (PA) associated with Section 106 of the National Historic Preservation Act (36 CFR §800). The APE was established in consultation with Cheryl Sinopoli of District 12. Once the APE had been approved by Rail HQ, several unrecorded historic properties were evaluated. Work progressed with Caltrans staff guidance in a reasonable and responsive fashion. Our historic architectural specialist and co-author, Christeen Taniguchi assisted in developing the report. The project allowed interaction between MBA, Caltrans and SHPO, with successful results.

Professional Affiliations

- Member, California Historical Society
- Member, National Trust for Historic Preservation
- Member, Registry of Professional Archaeologists

Appendix C:
Site Photographs Taken During Survey

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Typical view of an east-west finger ridge in the central portion of the project area. These ridges have not been ploughed and exhibit original soil strata, but all will be avoided by project-related construction.



View north along the easternmost parcel showing hills in relation to flats. These hillsides were generally too steep to survey safely, but will not be impacted during construction.

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View east in the central portion of the project site. The flats to the right were ploughed or chained using heavy machinery as recently as the 1970s; the integrity of the topsoils on these flats is destroyed.



Deep gully located in the project site, view west. In some places, this gully was 15 feet deep and has been carved during flash floods. The groundwater table in this area has dropped substantially since the 1950s, which has exacerbated the gully problem. The gully is dangerous, but where possible the sides of the gullies in the project site were inspected for cultural strata.

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D.2 - Paleontological Resources Assessment

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Paleontological Resources Assessment
I-10 Gateway Center
GPA 01079: CZ007799; PM36564; PP25337
Community of Cherry Valley, Riverside County, California

El Casco CA, USGS 7.5-minute Topographic Quadrangle Map
Township 2 South, Range 1 West, Section 30
237.05-Acre Survey

Prepared on behalf of:

TSG-Cherry Valley L.P.
2 Park Plaza, Suite 700
Irvine, CA 92614
Direct: 949.231.5068
Fax: 949.417.1399

Contact: Brian Rupp, Director - Asset Management

Prepared for:

The County of Riverside Planning Department
4080 Lemon Street
Twelfth Floor
Riverside, CA 92502

Prepared by:

Michael Brandman Associates
621 E. Carnegie Drive Suite #100
San Bernardino, CA 92408
909.884.2255 - Fax 714.508.4110

Contact/Author: Kenneth J. Lord, Ph.D., RPA
Director of Natural Cultural Resources

Michael Brandman Associates

April 9, 2013

Paleontology, Pleistocene alluvial deposits, Cherry Valley
USGS El Casco, CA. 7.5' Topographic Quadrangle Map

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SECTION 1: INTRODUCTION

At the request of TSG-Cherry Valley L.P., Michael Brandman Associates (MBA) conducted a paleontological resource assessment on a project site totaling approximately 237 acres. The project site is known as the I-10 Gateway Center located near the Town of Cherry Valley, in unincorporated Riverside County, California. All lands within the area proposed for development are private and are under the local jurisdiction of the County of Riverside. The westernmost parcel of 8.79 acres is located in the City of Calimesa but the County will act as the Lead Agency.

Assessor's Parcel Numbers (APN) 407-220-004, 407-220-007, 407-220-008, 407-220-009, 407-220-014, 407-220-016, 407-220-017, 413-270-012, and 413-270-013 constitute the entirety of the project area. These properties are currently vacant. The flatter parts of these parcels were plowed in the 1920s or 1930s for the purposes of dryland farming. Some native vegetation remains on the finger ridges and the steeper hillsides.

This report is organized into sections and appendices, which are summarized as follows:

- Section 1 reviews the goals of this study.
- Section 2 summarizes the environmental setting.
- Section 3 provides paleontological records search results.
- Section 4 summarizes the project and provides management recommendations.
- Section 5 presents a reference list.
- Section 6 contains the project certification.
- Appendix A provides personnel qualifications.
- Appendix B provides required paleontological resource compliance documents.

MBA Director of Natural Resources, Kenneth J. Lord, Ph.D. requested a paleontological records check on September 10, 2012. The response was received on October 31, 2012, from Eric Scott, Curator of Paleontology at the San Bernardino County Museum (SBCM) in Redlands, California. Mr. Scott undertook a literature review and records search of the paleontology of the study area. All records search materials are on file at the MBA corporate office in Irvine, California. The project site was visited by Dr. Lord on September 13, 2012 and archaeological fieldwork took place on the site on September 13, 14, and 27, 2012 by a crew of three. No exposed fossils were encountered in any of the field survey efforts.

1.1 - Resource Assessment Goals

The goal of this study is to determine whether paleontological resources are located within the project area, what type of resources are present, and what type of resources could be present. Once this information is determined, the study will assess the significance of those resources, in order to

develop specific mitigation measures that will address potential impacts to such resources, once development begins. Thus, this study consisted of four distinct efforts:

1. Paleontological records search conducted by Eric Scott at the SBCM.
2. Paleontological Resources Assessment, including an analysis of the records search, to assess the types of resources that might be encountered and to place those resources within the context of established chronologies.
3. Evaluation of paleontological resource sensitivity.
4. Development of recommendations associated with mitigation monitoring and/or impacts to existing paleontological resources following California Environmental Quality Act (CEQA) Guidelines.

SECTION 2: ENVIRONMENTAL SETTING

2.1 - Project Location and Description

Situated in the northwest portion of the County of Riverside, the project area is located north of Interstate 10 (I-10), west of Beaumont and east of the City of Calimesa (Exhibit 1). The boundaries of the project area can be found on the El Casco, CA USGS 7.5-minute Topographic Quadrangle Map. The project is located in Section 30 of Township 2 South - Range 1 West (Exhibit 2). The project area includes nine parcels totaling 242.63 acres, which according to the County of Riverside Assessors website contains the following individual acreages for the following APNs

1. 407-220-004 (12.82 acres)
2. 407-220-007 (26.73 acres)
3. 407-220-008 (6.24 acres)
4. 407-220-009 (97.89 acres)
5. 407-220-014 (0.12 acres)
6. 407-220-016 (64.41 acres)
7. 408-220-017 (20.05 acres)
8. 413-270-012 (5.58 acres) in the City of Calimesa
9. 413-270-013 (8.79 acres) in the City of Calimesa

A modern aerial image of the project area has been provided herein (Exhibit 3).

The project site totals approximately 230 gross acres. Approximately 144 acres are proposed to be developed as a logistics center and the remaining 86 acres is proposed to remain as natural open space. The project consists of two (2) industrial buildings that are proposed to be designed as eligible for Leadership in Energy and Environmental Design (LEED) Certification and will total approximately 2,560,000 square feet (sq ft). Additional development on the project site includes up to 428 dock doors, private streets, natural washes, detention basins/bio swales, landscaping, a 200-foot drainage setback is planned along Cherry Valley Boulevard. Three access points will be provided off Cherry Valley Boulevard.

The structural facilities are planned to house a variety of industrial uses, including some that would be considered “high cube” type wholesale distribution users. Both industrial buildings will total approximately 39 feet in height. Building 2 will contain four offices located at each corner of the proposed building. Building 1 will contain an office on the southwest and southeast corner of the proposed building.

Equipment and commodities to be stored on the property include vehicles, trucks, trailers, and equipment associated with the industrial buildings; products and goods that will be distributed to retailers, wholesalers, or sold directly to consumers; maintenance equipment and machinery; office

supplies and equipment; and fuels for vehicles. Vehicle and equipment maintenance to be performed on the property includes routine vehicle maintenance, and maintenance and repair of equipment and machinery for operations.

Based on the proposed development plan, the project will not have a formal phasing plan but will develop according to market conditions and infrastructure system connections. The backbone infrastructure will be phased to provide incremental capacities capable of serving the level of development proposed during project buildout.

2.1.1 - Land Use

The project area is a large series of vacant parcels, parallel to Cherry Valley Boulevard. There is some abandoned agricultural development across Cherry Valley Boulevard with little other development, immediately adjacent.

2.2 - Environmental Setting

2.2.1 - Topography, Geology, and Soils of the Beaumont Plain

The project area is located within a geological formation known as the Beaumont Plain Fault Zone (Matti et al. 1992), and is located about two miles west of the low saddle that separates the San Gorgonio Creek watershed that flows into the Coachella Valley from the San Timoteo Creek watershed that flows into the Santa Ana River. The property is located in incised alluvium with surface flows heading toward the southwest and into the headwaters of San Timoteo Canyon. The project site lies between the northwestern portion of the San Jacinto Mountains and the San Timoteo Badlands, and lies along the southern foothills of the San Bernardino Mountains. The Plain is part of a large rift valley (graben), which has dropped between the two mountain ranges during the last 10 million years and then filled with alluvial sediment over the Pliocene/Pleistocene Epochs (Exhibit 4).

> During the Pliocene (5.33 to 2.58 million years ago [MYA]) and Pleistocene Epochs (2.58 MYA to 12,000 years before present [YBP]), the Los Angeles Basin sank many thousands of feet, while the San Jacinto Mountains rose considerably through compressional forces, and the Perris Block oscillated vertically (Woodford et al 1971). The Banning fault is the primary fault in the San Gorgonio Pass area and the idea that the faults lying between the two mountain ranges were once part of an ancestral San Andreas fault system (aka the *Vincent Thrust*) has been proposed (US Geological Survey Bulletin 845; http://www.data.scec.org/significant/banning.html). This combination of factors led to the deposition of hundreds of feet of alluvium in this region as the graben sank. This is why no bedrock in the project site was observed during the archaeological survey.

According to Scott (2012), the previous geological mapping (Rogers 1965, Morton 1999) indicates that the project area encompasses surface exposures of older Pleistocene deposits overlain in arroyos and gullies by a thin veneer of Holocene sediments consisting of alluvium (QA). Dibblee (2003)

maps the area as alluvial sand, gravel and clay on the flatter areas covered by residual soil (QA) with northeast to southwest trending ridges composed of alluvial gravel and sand intermixed with granitic and gneissic detritus from the San Bernardino Mountains at lower elevations (Qoa) and the San Timoteo Formation at higher elevations (QTsg) (Exhibit 5 and Exhibit 6).

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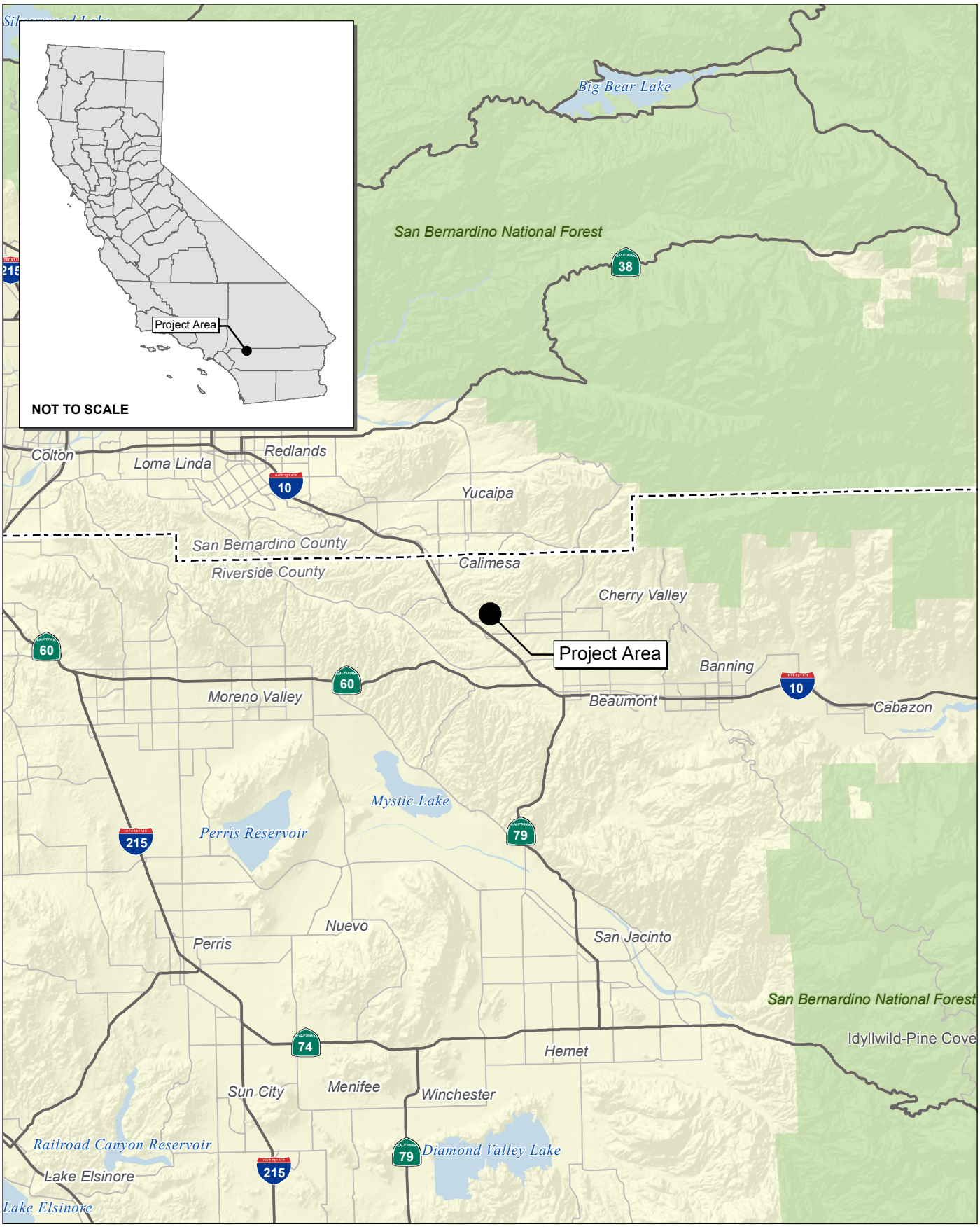

Source: Census 2000 Data, The CaSIL, MBA GIS 2013.

Michael Brandman Associates

NORTH

5 2.5 0 5 Miles

Exhibit 1
Regional Location Map

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TSG-CHERRY VALLEY L.P. • I-10 GATEWAY CENTER
PALEONTOLOGICAL RESOURCES ASSESSMENT
CVAR_09640

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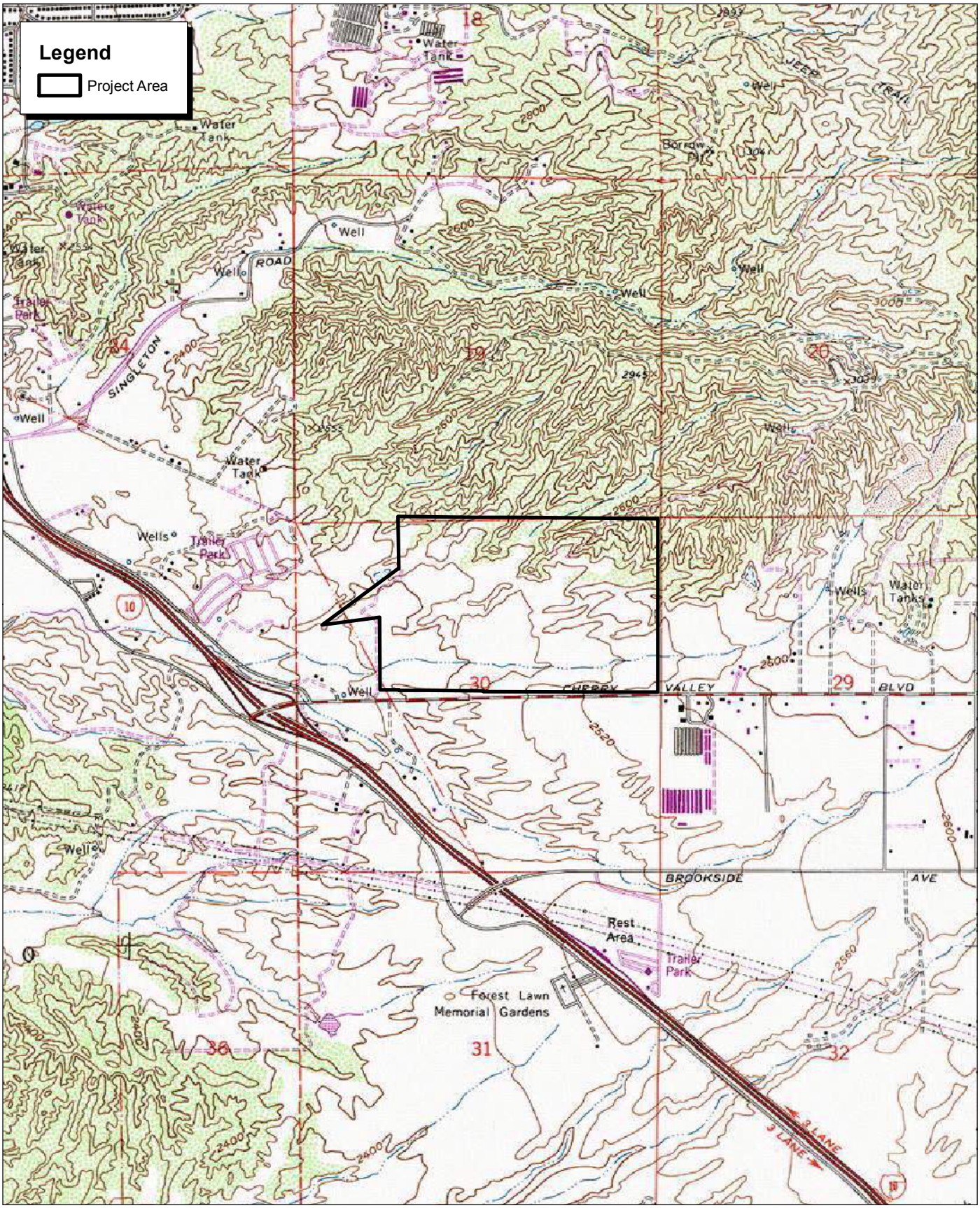

Source: TOPO! USGS El Casco, CA (1976) 7.5' DRG.

2,000 1,000 0 2,000 Feet

NORTH

Michael Brandman Associates

Exhibit 2
Local Vicinity Map
Topographic Base

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Source: ESRI Aerial Imagery.

NORTH

2,000 1,000 0 2,000

Feet

Michael Brandman Associates

Exhibit 3
Local Vicinity Map
Aerial Base

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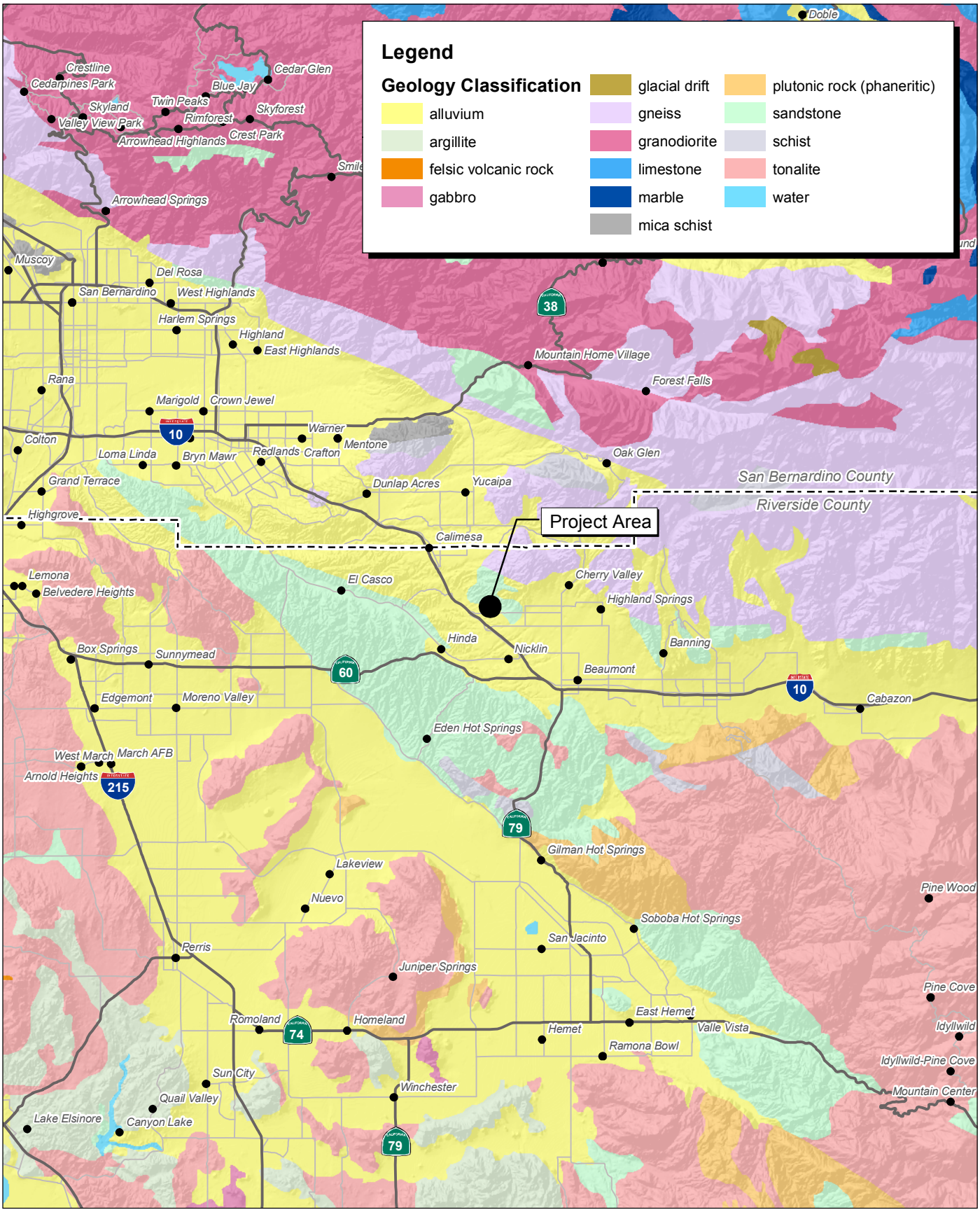

Source: Census 2000 Data, The CaSIL, MBA GIS 2013.

Michael Brandman Associates

NORTH

5 2.5 0 5

Miles

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Exhibit 4
Regional Geology

TSG-CHERRY VALLEY L.P. • I-10 GATEWAY CENTER
PALEONTOLOGICAL RESOURCES ASSESSMENT

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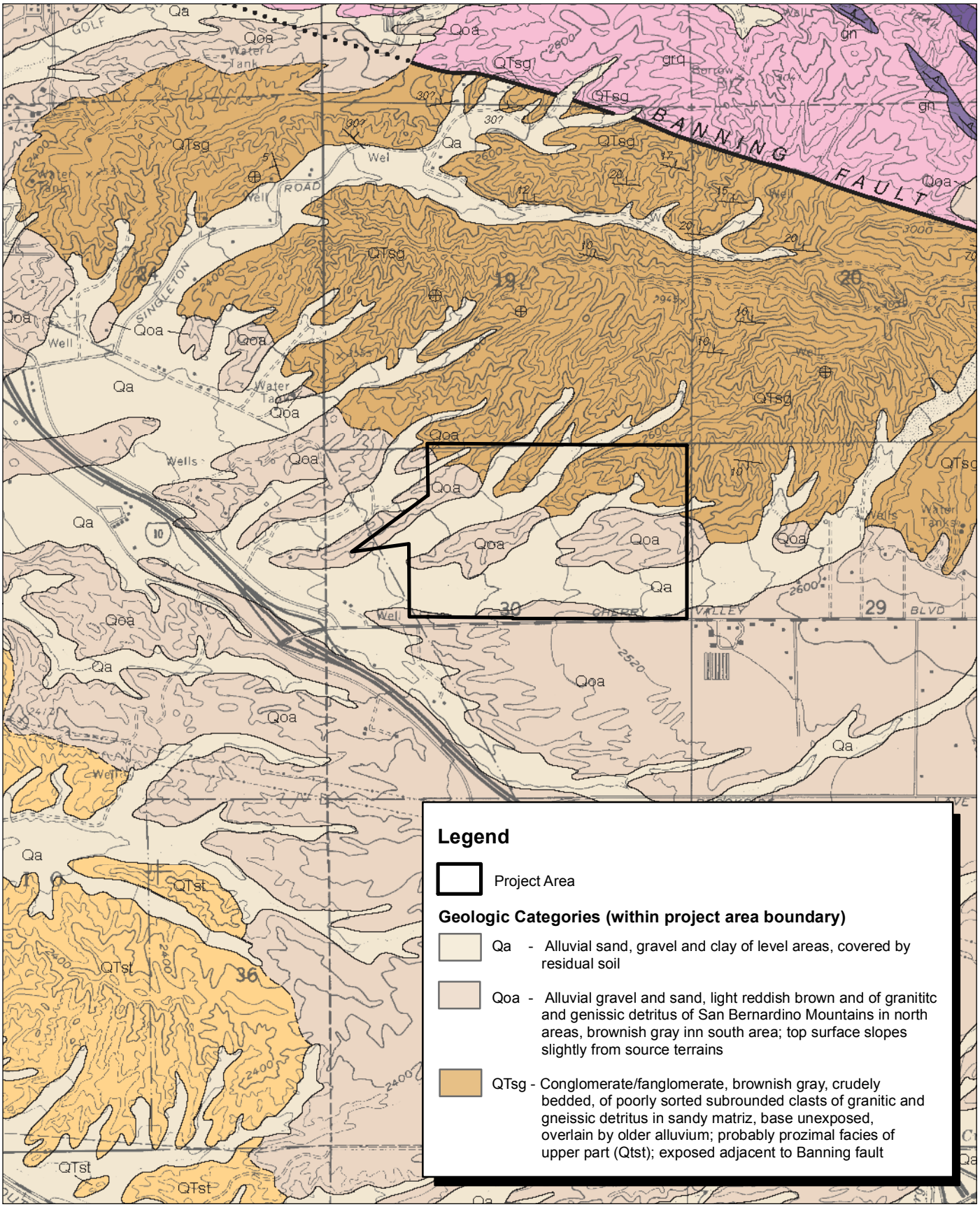

Source: Geologic Map of the El Casco Quadrangle by Thomas W. Dibblee, Jr. (2003).

NORTH

2,000 1,000 0 2,000

Feet

Michael Brandman Associates

Exhibit 5
Local Geology Map

34260005 • 04/2013 | 5_local_geology.mxd

TSG-CHERRY VALLEY L.P. • I-10 GATEWAY CENTER
PALEONTOLOGICAL RESOURCES ASSESSMENT

CVAR_09648

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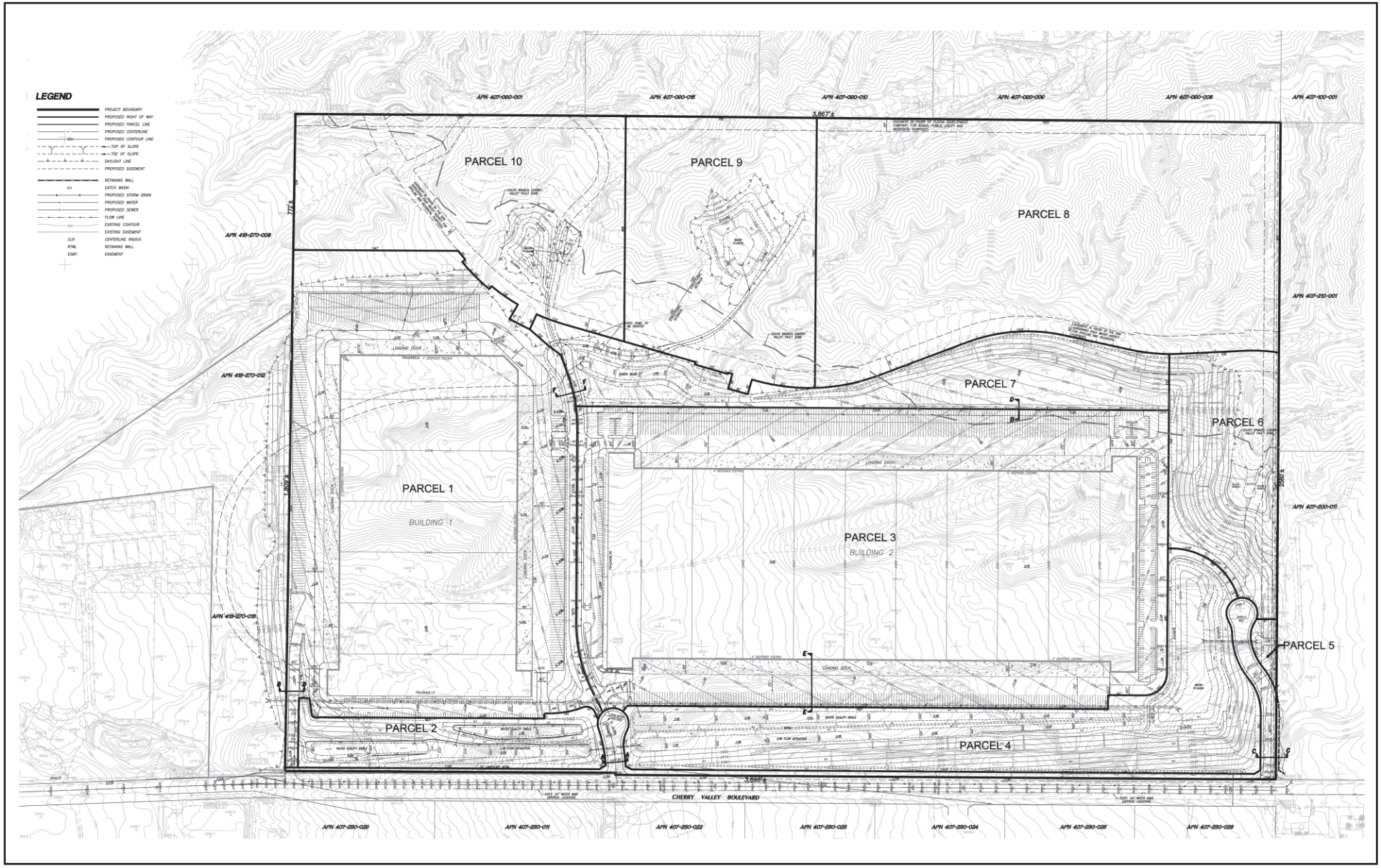

Source: Hunsaker & Associates Inc., October 2012.

NORTH

Michael Brandman Associates

34260005 • 04/2013 | 6_site_plan.cdr

Exhibit 6
Site Plan

TSG-CHERRY VALLEY L.P. • I-10 GATEWAY CENTER
PALEONTOLOGICAL RESOURCES ASSESSMENT

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SECTION 3: RESEARCH RESULTS

MBA Director of Natural Resources, Kenneth J. Lord, Ph.D., requested a paleontological records check on September 10, 2012. The response was received on October 31, 2012, from Eric Scott, Curator of Paleontology at the San Bernardino County Museum. Mr. Scott undertook a literature review and records search of the paleontology of the study area (Appendix B). The paleontological review showed that the project area is situated entirely upon surface exposures of Pleistocene older alluvium with a thin veneer of Holocene or recent alluvium. These deposits have a high potential to contain significant nonrenewable paleontological resources, and they are assigned a high paleontological sensitivity. Excavations into older Pleistocene alluvial sediments throughout the Inland Empire have previously yielded significant fossils of extinct plants and animals from the "Ice Age," including mammoths, mastodons, ground sloths, dire wolves, short-faced bears, saber-toothed cats, large and small horses, large and small camels, and bison (Jefferson 1991; Reynolds and Reynolds 1991; Woodburne 1991; Springer and Scott 1998; Scott 2010; and Springer et al. 1998 and 1999, 2007) as well as fossilized plant remains (Reynolds and Reynolds 1991; Anderson et al. 2002).

A search of the Regional Paleontologic Locality Inventory (RPLI) at the SBCM indicates that no paleontologic resource localities are recorded within the boundaries of the project area or within 1 mile in any direction (Scott 2012).

Review of sensitivity maps and reports obtained from the Riverside County Land Information System (RCLIS) search (Appendix B), indicate that the project area has a high paleontologic sensitivity designation of "A." This sensitivity designation, presumably, is based upon the Pleistocene age of the project area soils and their high paleontologic sensitivity when they exhibit a fine-grained lithology conducive to the preservation of fossil resources. The categorization of High Sensitivity A suggests that significant fossil remains could be encountered at or near the surface as well as at depth if conditions are conducive for fossil preservation.

In summary, the results of the paleontological records check obtained from the SBCM, the sensitivity maps, and text from RCLIS indicate that the project area has a determination of high paleontologic sensitivity at or slightly below the modern ground surface. Therefore, MBA recommends a monitoring program to mitigate impacts to potentially significant paleontological resources beginning at the modern ground surface in areas that have not been subjected to plowing in the past. If detailed geologic borings are available, the specific depths of the highly sensitive areas could be refined. These research findings were confirmed in the field in September 2012 when Dr. Lord conducted a brief field visit (September 13, 2012) in conjunction with a detailed archaeological survey conducted by a crew of three on September 13, 14, and 27, 2012. The crew was briefed on potential areas to examine with a focus on the north-south ridges along the northern margins of the site.

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SECTION 4: SUMMARY AND RECOMMENDATIONS

The primary purpose of the paleontological analysis is to determine the potential for impacts to significant, nonrenewable paleontological resources in the project area. MBA has concluded that the project area has a high probability of containing paleontological resources potentially at the surface along the ridge margins of the project site. Therefore, MBA recommends a monitoring program to mitigate impacts to paleontologic resources. Many of the ridges that have Qoa and QTsg deposits are expected to be outside of the development footprint and monitoring may be limited.

Table 1: Recommended Paleontological Resource Mitigation Measures

Mitigation No.	Mitigation Text
PR-1	MBA recommends full-time monitoring of excavation activities except in the flatter areas where extensive plowing has churned deposits up to depths of 2 feet. Paleontologic monitors should be equipped to salvage fossils, as they are unearthed, to avoid construction delays, and to remove samples of sediments likely to contain the remains of small fossil invertebrates and vertebrates. Monitors must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. If the principal paleontologist determines that the sediments present within the subsurface have low potential to contain paleontologic resources and low paleontologic sensitivity, then the full-time monitoring program should cease and a program of periodic monitoring should occur.
PR-2	Preparation of recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Preparation and stabilization of all recovered fossils are essential to fully mitigate adverse impacts to the resources.
PR-3	Identification and curation of specimens into an established, accredited museum repository with permanent retrievable paleontologic storage. These procedures are also essential steps in effective paleontologic mitigation and CEQA compliance. The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontologic resources is not complete until such curation into an established museum repository has been fully completed and documented.
PR-4	Preparation of a report of findings with an appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into an established, accredited museum repository, will signify completion of the program to mitigate impacts to paleontologic resources.

draft

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SECTION 5: REFERENCES

Anderson, R.S., M.J. Power, S.J. Smith, K.B. Springer and E. Scott, 2002. "Paleoecology of a Middle Wisconsin deposit from southern California." Quaternary Research 58(3): 310-317.

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Reynolds, S.F.B. and R.L. Reynolds, 1991. The Pleistocene beneath our feet: near-surface Pleistocene fossils in inland southern California basins, in Inland Southern California: the last 70 million years, M.O. Woodburne, S.F.B. Reynolds and D.P. Whistler, eds. Redlands, San Bernardino County Museum Special Publications 38(3&4), p 41-43.

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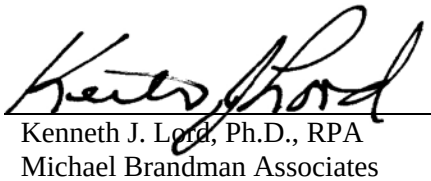
Woodburne, M. O. 1991. The Cajon Valley, in Inland Southern California: the last 70 million years. M. O. Woodburne, R. E. Reynolds, and D. P. Whistler, eds. Redlands, San Bernardino County Museum Special Publication 38 (3 & 4), p. 41-43.

SECTION 6: CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this paleontological report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date: April 9, 2013 Signed: 

Kenneth J. Lord, Ph.D., RPA
Michael Brandman Associates
Irvine, CA

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Appendix A:
Personnel Qualifications

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Kenneth J. Lord, Ph. D., RPA

Director, Natural/Cultural Resources

Education
Ph.D., Archaeology/Vertebrate Paleontology, University of Texas, Austin

B.A., Anthropology, University of Pittsburgh

Professional Affiliations
Association of Environmental Professionals

Registry of Professional Archaeologists

Experience Summary

Dr. Lord has over twenty eight years of professional experience in environmental consulting, cultural resources management and environmental assessment of major transmission and development projects. In this capacity, he has managed multi disciplinary teams preparing ElSs and EIRs that have been used by the FERC, US Army Corps of Engineers and State of California agencies in licensing pipeline projects in California and the western United States. He has also been involved in management of the construction/ environmental compliance monitoring associated with a variety of development projects. Other experience includes assignments as project manager or deputy project manager for a variety of state and federal projects. His experience encompasses the reconnaissance, feasibility, and environmental impact aspects of a variety of project types. He is knowledgeable about California county environmental documentation procedures and regulations, as well as other federal and state environmental laws, regulations, and guidelines. He has prepared and supervised the preparation of EIRs, EISs and Biological Assessments in accordance with NEPA and CEQA rules and regulations.

As Director of MBA's Natural and Cultural Resources Departments, Dr. Lord oversees the operations and staff responsible for performing all cultural , historical and paleontological resource studies and field work, providing quality assurance and control, and performs the more complex and sensitive natural resource planning, cultural and paleontologic studies and related client services.

Recent Project Experience

Paleontologic Reports

Paleontological Resources Assessment UP Homes TTM 34287, Perris, Riverside County, California. Project Manager and author of a paleontological assessment of 7.14 acres in the City of Perris. A field investigation was completed and a records search determined that the property had the potential to contain significant Pleistocene-aged fossils at depth. Mitigation recommendations were prepared for the project site.

Paleontologic Monitoring and Reports

Spring Mountain Ranch Cultural and Paleontological Resources Monitoring, Highgrove, Riverside County. Project Manager for an extensive mitigation monitoring program for both cultural resources and paleontological resources in the Highgrove area of unincorporated Riverside County. Approximately 785 acres were monitored for both cultural resources and paleontological resources. Mark Roeder of PaleoEnvironmental Associates conducted the original field examination of the property with the Project Manager. Excavations occurred to depths of 60 feet and no paleontological resources were encountered. A summary report on the paleontological efforts were submitted to the applicant and are on file with MBA.

Granite Homes Garbani Road Project – Paleontological Monitoring, Menifee, Riverside County. Project Manager and part-time monitor for an approximately 38 acre project that required paleontological monitoring on specific areas of a project site with the potential to contain Pleistocene fossils. Monitoring occurred over a 2 month period, with a total of 19 days of monitoring. No suitable geological deposits were encountered on the project site.

Phase I Cultural Resources with Paleontologic Component

Kona Road III Project Cultural Resources Survey, French Valley Area. Project Manager for a Phase I cultural resources survey and paleontological review of a 4.65-acre property in the French Valley Area of unincorporated Riverside County, California, for John Laing Homes.

Newport Road Project Cultural Resources Assessment, Menifee Area. Project Manager for a Phase I cultural resources assessment and paleontological records review in Menifee Area, County of Riverside, California, for Granite Equities, LLC.

Taylor-Woodrow Ivy House Project Cultural Resources Assessment, Murrieta. Project Manager for a Phase I cultural resources assessment and paleontological records review in Murrieta, Riverside County, California, for Taylor Woodrow Homes.

Phase I Cultural Resources Survey Report for Watson Land Company, near Euclid and Bickmore Avenue, Chino, County of San Bernardino, California. Project Manager and author of report of a 60 acre parcel in Chino. Extensive paleontological recommendations were made and follow-up surveys and field visits were made at appropriate disturbance depths to check for potential paleontologic resources. This project is on-going.

Cultural Resources Survey Report, San Jacinto. Project Manager for a Phase I cultural resources survey report and paleontological records review for tentative tract 33862 in San Jacinto, County of Riverside, California, for JD Pierce Company.

Pigeon Pass Property Cultural Resources Assessment, Moreno Valley. Project Manager for a Phase I cultural resources assessment and paleontological records review of 37.8-acres in Moreno Valley, Riverside County, California, for Pacific Land Company.

Cultural Resources Assessment, French Valley. Project Manager for a Phase I cultural resources assessment and paleontological records review of Tract 34150 in French Valley, County of Riverside, California, for Granite Equities, LLC.

Menifee Farms Project Cultural Resources Assessment, Menifee Valley. Project Manager for a Phase I cultural resources assessment, Phase II archaeological test and paleontological records review of a 26.14-acre property in Menifee Valley, Riverside County, California for Granite Equities, LLC.

Palmdale Business Center Project Cultural Resources Assessment, City of Palmdale. Project Manager for a Phase I cultural resources survey and paleontological records review for tentative tract 47193 in the City of Palmdale, Los Angeles County, California for Palmdale Business Center, LP.

Victoria 316 Project Cultural Resources Assessment, Victorville. Project Manager for a Phase I cultural resources survey and paleontological records review for tentative tract numbers 17341 and 17356 in Victorville, San Bernardino County, California for Pulte Homes. Prepared a site-specific paleontologic monitoring plan for the project site.

Van Daele Homes Victorville Acres Project Cultural Resources Survey, City of Victorville. Project Manager for a Phase I cultural resources survey and paleontological records review for tentative tract 16847 in the City of Victorville, San Bernardino County, California for Victorville Acres, LLC. Prepared a site-specific paleontologic monitoring plan for the project site.

Van Daele Homes Foxfire Ranch Cultural Resource Survey, City of Victorville. Project Manager for a Phase I cultural resources survey and paleontological records review, including sensitivity statements on the paleontology of the 65-acre property at tentative tract 16574 (including parcel 3094-131-02) in the City of Victorville, San Bernardino County, California for Victorville Acres, LLC. Prepared a site-specific paleontologic monitoring plan for the project site.

Selected Publications

1984 The Zooarchaeology of Hinds Cave (41VV456). Anthropology Research Laboratory, Texas A & M

1979 Meadowcroft Rock Shelter: Retrospect 1977. J. M. Adovasio, J.D. Gunn, J. Donahue, R. Stuckenrath, J. Guilday, and K. Lord, authors. North American Archaeologist, l(l).

1977 Faunal Remains of Meadowcroft Rock Shelter. In Meadowcroft Rock Shelter: Retrospect 1976. J. M. Adovasio, J.D. Gunn, J. Donahue, R. Stuckenrath, authors. Pennsylvania Archaeologist, 47(2-3).

References

Eric Scott , Curator of Paleontology – San Bernardino County Museum escott@sbcm.sbcounty.gov

E. Bruce Lander, Ph.D. PaleoEnvironmental Associates paleo@earthlink.net

Ernest Lundelius, Ph.D., Professor Emeritus, Department of Geological Sciences University of Texas at Austin erniel@mail.utexas.edu

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Appendix B:
Paleontological Records Search

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B-1: Paleontological Request Letter

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Michael Brandman Associates

Fresno
559.497.0310

Irvine
714.508.4100

Palm Springs
760.322.8847

Sacramento
916.447.1100

San Bernardino
909.884.2255

San Ramon
925.830.2733

September 10, 2012

Eric Scott
San Bernardino County Museum, Division of Geological Sciences
2024 Orange Tree Lane
Redlands, CA 92374

VIA EMAIL: escott@sbcm.co.san-bernardino.ca.us

Subject: **Request for a Paleontological Resources Records Search for the I-10 Gateway Job Center, Unincorporated Riverside County near Cherry Valley, California. (USGS El Casco, CA. quad)**

Dear Eric:

I am in need of a paleontological records search on approximately 228 acres in Riverside County, north of I-10 between Calimesa and Cherry Valley. Information on the location is provided below and by the attached map. The location is on the El Casco USGS quadrangle in the north half of Section 30; T2S; R1W: T4S.

Once the results have been determined, please send the results by email to klord@brandman.com, and mail MBA a hard copy to the address below. If you have any more questions or need to speak with me, please feel free to call me at 714.508.4100 ext 1035. Thank you for your time and effort.

Sincerely,

Kenneth J. Lord, Ph.D., RPA
Director of Natural and Cultural Resources
Michael Brandman Associates
220 Commerce, Suite 200
Irvine, CA. 92602

Enclosures: Record Search Map and County Paleo Assessment

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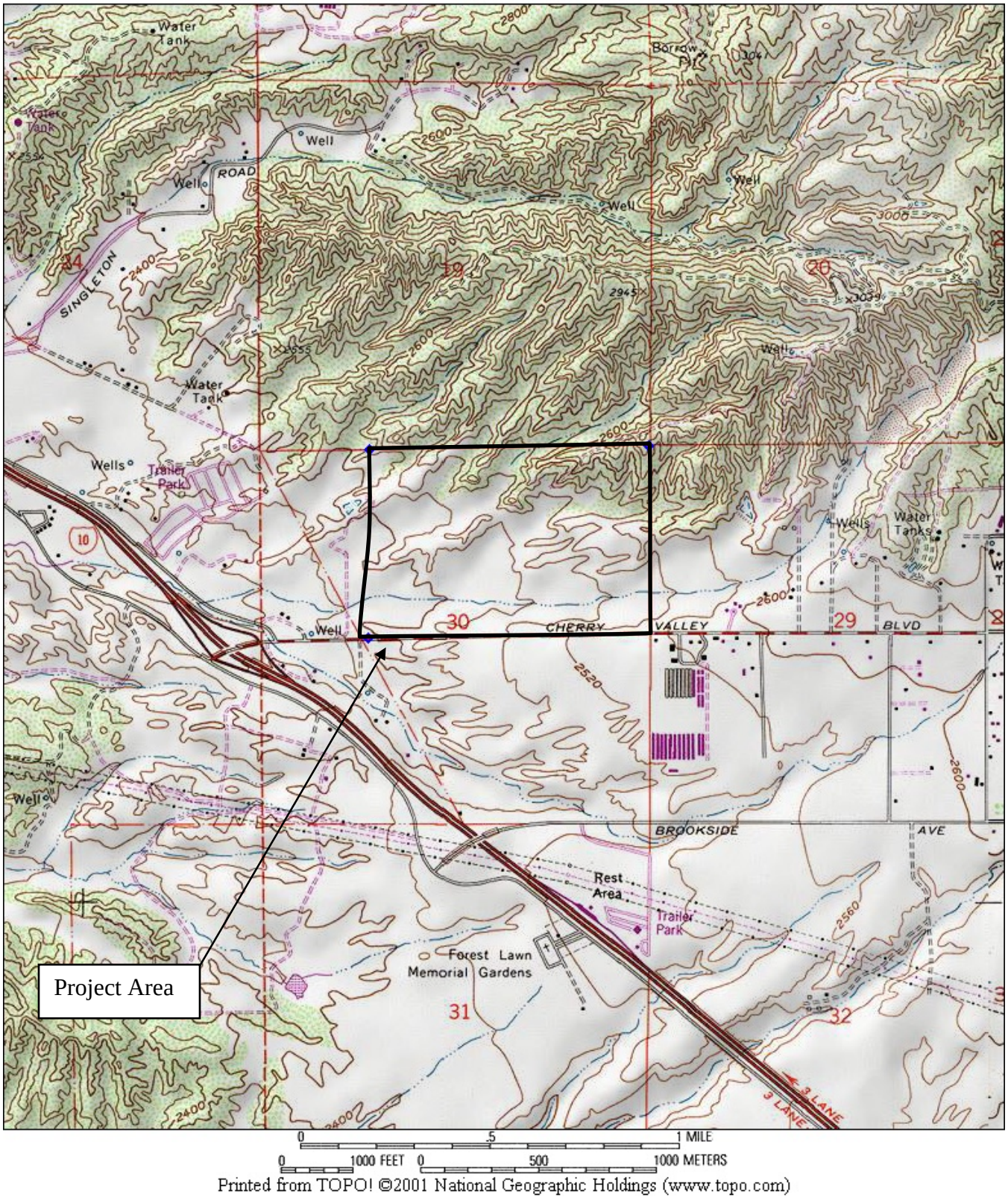
MBA project #3426.0005.0 - USGS El Casco, CA. 7.5' topographic map



Source: Topo! @National Geographic Holdings.

Exhibit 1
Location of Project
Shopoff Parcel Map 36093 • Cultural Resource Survey

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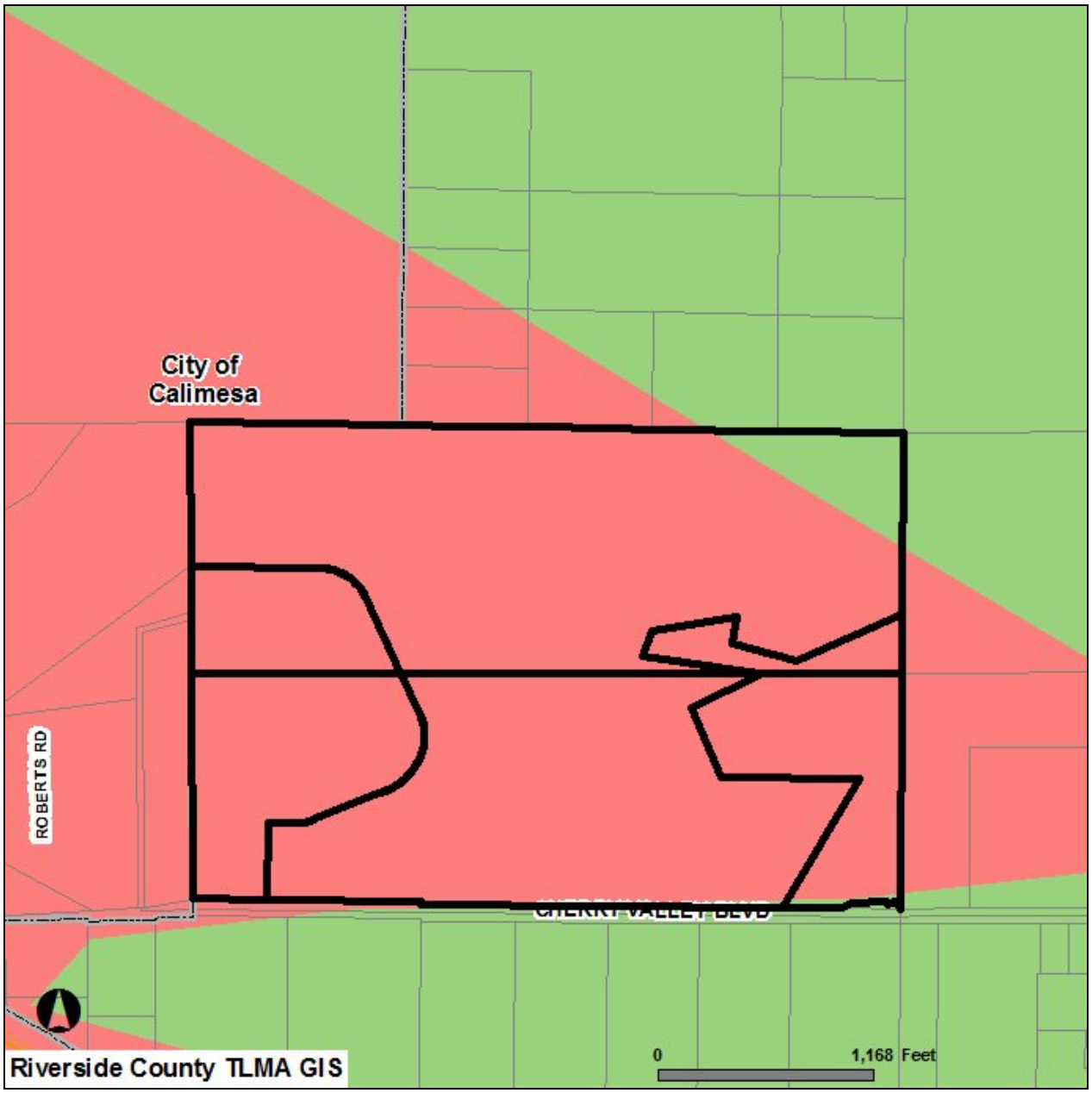

Selected parcel(s):
407-220-004 407-220-007 407-220-008 407-220-009 407-220-016 407-220-017

PALEONTOLOGICAL SENSITIVITY

- SELECTED PARCEL
- PARCELS
- INTERSTATES
- HIGH POTENTIAL/SENSITIVITY (HIGH A)
- HIGHWAYS
- UNDETERMINED POTENTIAL
- CITY

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B-2: Paleontology Review from the San Bernardino County Museum

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30 October 2012

Michael Brandman Associates
attn: Kenneth J. Lord, Ph.D., Director of Natural and Cultural Resources
220 Commerce, Suite #200
Irvine, CA 92602

re: **PALEONTOLOGY LITERATURE AND RECORDS REVIEW, I-10 GATEWAY JOB CENTER, CHERRY VALLEY REGION, RIVERSIDE COUNTY, CALIFORNIA**

Dear Dr. Lord,

The Division of Geological Sciences of the San Bernardino County Museum (SBCM) has completed a literature review and records search for the above-named property in the Cherry Valley area of Riverside County, California. The study area is located in the northern half of section 30, Township 2 South, Range 1 West, San Bernardino Base and Meridian, as seen on the El Casco, California 7.5' United States Geological Survey topographic quadrangle map (1967 edition, photorevised 1979).

Previous geologic mapping (Rogers, 1965) indicates that the proposed project property is located primarily upon surface exposures of Pleistocene older alluvium, overlain over portions of the property by a thin sedimentary veneer of Holocene or recent alluvium. The Holocene sediments are too geologically young to have potential to contain significant fossil resources, and so are assigned low paleontologic sensitivity. In contrast, surface and subsurface Pleistocene sediments have high potential to contain fossil resources, and so are assigned high paleontologic sensitivity. Older Pleistocene alluvial sediments elsewhere throughout the Inland Empire have frequently been reported to yield significant fossils of extinct animals and plants from the "Ice Ages" (Jefferson, 1991; Reynolds and Reynolds, 1991; Anderson and others, 2002; Springer and others, 2009, 2010; Scott, 2010). Vertebrate fossils recovered from these Pleistocene sediments represent extinct taxa including mammoths, mastodons, ground sloths, dire wolves, short-faced bears, sabre-toothed cats, large and small horses, large and small camels, and bison (Jefferson, 1991; Reynolds and Reynolds, 1991; Anderson and others, 2002; Springer and others, 2009, 2010; Scott, 2010).

For this review, I conducted a search of the Regional Paleontologic Locality Inventory (RPLI) at the SBCM. The results of this search indicate that no previously-known paleontologic resource localities are recorded by the SBCM from the study area, nor from within at least one mile in any direction. The nearest recorded paleontologic resource localities, located >3 miles to the west, southwest and south, are recorded from surface and subsurface exposures of the fossiliferous San Timoteo Formation, and so have little relevance to the paleontologic sensitivity of the Pleistocene alluvial sediments present within the boundaries of the land tracts under consideration herein.

Recommendations

The results of the literature review and the check of the RPLI at the SBCM demonstrate that excavation in conjunction with development has high potential to adversely impact significant nonrenewable paleontologic resources present within the boundaries of the proposed study area. A qualified vertebrate paleontologist must be retained to develop a program to mitigate impacts to such resources. This mitigation program should be consistent with the provisions of the California Environmental Quality Act (Scott and Springer, 2003), as well as with regulations currently implemented by the County of Riverside. This program should include, but not be limited to:

1. Monitoring of excavation in areas identified as likely to contain paleontologic resources by a qualified paleontologic monitor. Areas requiring monitoring include all previously-undisturbed Pleistocene older alluvial sediments present, at the surface or at depth, within the boundaries of the property. Paleontologic monitors should be equipped to salvage fossils as they are unearthed, to avoid construction delays, and to remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. Monitors must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens. Monitoring may be reduced or eliminated if the potentially-fossiliferous units described herein are determined upon exposure and examination by qualified paleontologic personnel to have low potential to contain fossil resources.

2. Preparation of recovered specimens to a point of identification and permanent preservation, including washing of sediments to recover small invertebrates and vertebrates. Preparation and stabilization of all recovered fossils are essential in order to fully mitigate adverse impacts to the resources (Scott and others, 2004).

3. Identification and curation of specimens into an established, accredited museum repository with permanent retrievable paleontologic storage. These procedures are also essential steps in effective paleontologic mitigation (Scott and others, 2004) and CEQA compliance (Scott and Springer, 2003). The paleontologist must have a written repository agreement in hand prior to the initiation of mitigation activities. Mitigation of adverse impacts to significant paleontologic resources is not complete until such curation into an established, accredited museum repository has been fully completed and documented.

4. Preparation of a report of findings with an appended itemized inventory of specimens. The report and inventory, when submitted to the appropriate Lead Agency along with confirmation of the curation of recovered specimens into an established, accredited museum repository, would signify completion of the program to mitigate impacts to paleontologic resources.

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Please do not hesitate to contact us with any further questions you may have.

Sincerely,

Eric Scott, Curator of Paleontology
Division of Geological Sciences
San Bernardino County Museum

B-3: Riverside County Land Information System Map and Text

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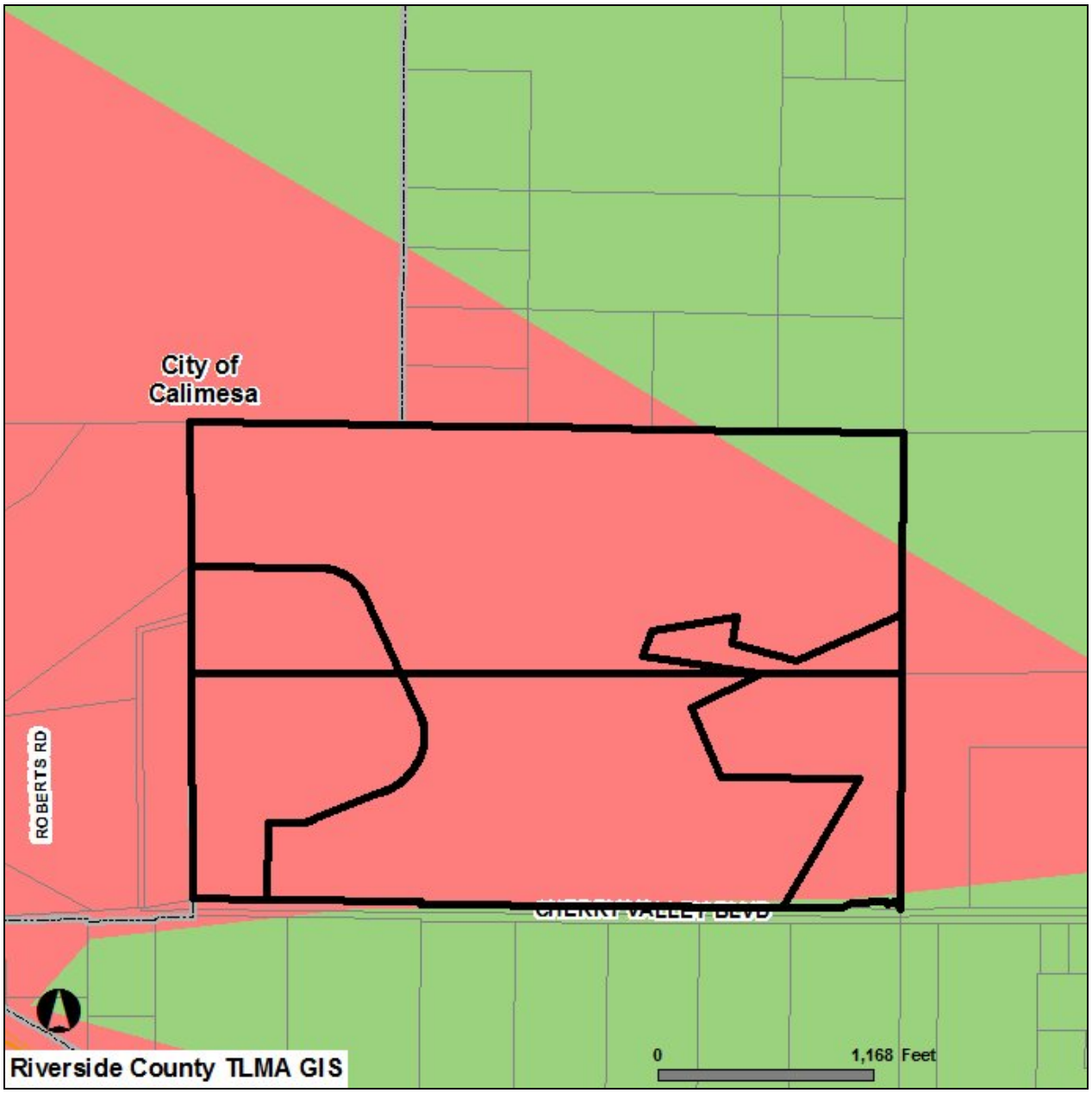

Selected parcel(s):
407-220-004 407-220-007 407-220-008 407-220-009 407-220-016 407-220-017

PALEONTOLOGICAL SENSITIVITY

SELECTED PARCEL
PARCELS
INTERSTATES
HIGH POTENTIAL/SENSITIVITY (HIGH A)
HIGHWAYS
UNDETERMINED POTENTIAL
CITY

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Appendix E:
Geology and Soils

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E.1 - Grading Plan Review January 2013

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GINTER & ASSOCIATES, INC.
27631 DURAZNO
MISSION VIEJO, CA 92692
OFC (949) 581-2363 CELL (714) 478-1167

TSG Cherry Valley, L.P.
2 Park Plaza, Suite 700
Irvine, CA 92614

January 7, 2013

Project # 105-03

Attn: Mr. Brian Rupp
Project Manager

Subject: **Grading Plan Review,**
Parcel Map No, 36093
I-10 Gateway Job Center, Cherry Valley Area,
County of Riverside, California

References: See attached List of References

Dear Mr. Rupp:

Please find enclosed our review of the grading plan for your proposed I-10 Gateway Job Center in the Cherry Valley area of the County of Riverside, California. This report will be suitable for submission to the reviewing agency, the County of Riverside Planning Department and other parties, for budgeting purposes, earthwork volume calculations and other needs.

We appreciate the opportunity to provide our services to you and if you have any questions or require additional information, please contact the undersigned.

Respectfully submitted,
GINTER & ASSOCIATES, INC.

By:
Dave Ginter, P.G., C.E.G.
Principal Engineering Geologist/President

105-03
1/7/13

GRADING PLAN REVIEW, PARCEL MAP No. 36093
I-10 GATEWAY JOB CENTER, CHERRY VALLEY AREA
COUNTY OF RIVERSIDE, CALIFORNIA



Prepared for:
TSG Cherry Valley, L.P.
2 Park Plaza, suite 700
Irvine, ca 92614

Prepared by:
Ginter & Associates, Inc.
27631 Durazno
Mission Viejo, CA 92692

Project # 105-03 *January 7, 2013*

CVAR_09690

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CVAR_09692

1.0 Introduction

This report has been prepared by Ginter & Associates, Inc. (G&A) to provide a grading plan review of the Parcel Map No. 36093 prepared by Hunsaker & Associates, Inc. at a scale of 1"=100' dated 12/08/08 and is known as the I-10 Gateway Job Center. The geologic and geotechnical conditions of the site, as well as recommendations for grading and foundation design, are presented herein as guidelines for construction of the project.

In order to provide a comprehensive presentation of the data, this report contains data from previous subsurface investigations by C.H.J. Inc., (8/3/05 and 8/15/05) as well as Neblett & Associates, Inc.'s (N&A) fault investigation report (9/22/08). This report has amalgamated all geologic and geotechnical engineering data, as well as the laboratory data, as contained herein on the geotechnical maps, cross-sections and Appendix I through VII.

1.1 Site Description

The site has an irregular rectangular shape consisting of 230 acres, approximately 160 acres scheduled for development, in the Timoteo Badlands near the western portion of the San Gorgonio Pass and the southern flank of the San Bernardino Mountains. It is located just east of the Interstate 10 on the north side of Cherry Valley Boulevard. The site is accessible via unpaved, graded roads (Figure 1).

The Northern half of the site is characterized by badlands topography with narrow ridgelines, steep flanks and narrow valleys trending northeast-southwest.

The southern half is relatively flat with subdued ridgelines in the north trending west-southwest and merging into a flat alluvial plain trending east-west.

Vegetation consists predominately of native grasses with sage scrub and occasional scrub oak in the north. The southern portion of the site appears to have been cultivated for agriculture in the past.

A water line and fiber optic cable transverse the northern portion of the site in an east-west trend with several utility vaults. Some cuts, fills and roadways are associated with this easement.

1.2 Proposed Development

The I-10 Gateway Job Center consists predominately of two buildings – Building 1 covers 1,577,400 sq. ft. and building 2 covers 930,060 sq. ft. A parking lot is planned for these buildings. A landscape soft-bottom drainage channel and detention basin are planned along Cherry Valley Boulevard. Two debris basins are also proposed in the northwest portion of the site within two main tributary draws.

All slopes are proposed at ratio of 2:1 (horizontal to vertical) or flatter with the highest cut slope in the range of 110ft. and the highest fill slope at 75 ft.+ located along the eastern perimeter.

1.3 Summary of Previous Investigations

C.H.J. Inc. performed a site specific subsurface investigation of faulting with a report dated Aug. 3, 2005. They utilized aerial photo lineament analyses, geologic field mapping, excavation of 5 trenches totaling 2,215 lineal feet from 15 to 21 ft. deep and 4 slope cuts totaling 2,600 lineal ft. The results of this investigation identified two fault splays associated with the Cherry Valley Fault Zone trending northwest to southeast across the site. They determined the southern branch of the two faults to be inactive. The age of activity of the north branch could not be determined.

C.H.J. Inc. provided a geotechnical investigation report dated Aug. 15, 2005 that evaluated the geotechnical conditions at the subject site and provide geotechnical recommendations for design and construction of the proposed development (Aug. 15, 2005). This investigation included 35 hollow stem auger borings, 33 cone penetrometer tests (CPT's), and laboratory analyses.

It is noteworthy that immediately east of the subject site, Leighton Consulting, Inc. (2004) and Leighton and Associates, Inc. (2006) performed geotechnical and fault investigations for the Danny Thomas portion of the Sunny-Cal Egg Ranch Project. G&A has reviewed these reports due to their proximity and similarities in faulting and geologic materials.

N&A performed a supplemental fault investigation and presented the findings in their report dated September 22, 2008. N&A utilized the data from C.H.J.'s Subsurface Investigation of Faulting report, enhanced the data base with additional fault trenches and geologic mapping, and further delineated the South Branch of the Cherry Valley

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Fault. As a result of this investigation, the developer positioned the buildings and other critical structures outside the setback zone for the South Branch of the Cherry Valley Fault within the subject site.

G&A recently completed a report dated October 23, 2012, titled "Infiltration Rate Evaluation for the I-10 Gateway Center" to determine the feasibility of the proposed infiltration basins.

2.0 Geomorphic Setting

In order to supplement the subsurface investigation by C.H.J. Inc., N&A excavated 4 additional hollow-stem auger borings ranging in depth from 58.5 ft. to 71.5 ft. Continuous logs of the borings were recorded during drilling by a staff geologist from this firm. Relatively undisturbed samples were obtained by driving a split-spoon ring sampler at selected levels. The number of blows required to advance the sampler a total of 18 inches in 6 inch increments were recorded on the boring logs. Undisturbed as well as bulk samples of typical soil types were noted on the logs and returned to the laboratory in sealed containers for testing and evaluation. The boring logs are included in Appendix II.

The reviewer is referred to N&A's Supplemental Fault Investigation report (9/22/08) for details of the fault trenches. N&A also provided a grading review report on the site dated 4/3/09. They excavated 4 hollowstem borings from 58-76 ft. in depth.

G&A excavated 4 pits approximately 25 ft. in depth and a hollowstem boring to 46 ft. in the proposed infiltration basins to determine rates of infiltration.

3.0 Geologic Setting

3.1 Regional Geologic Setting

The site is located near the boundary of the northeastern Peninsular Ranges and the southeastern Transverse Ranges consisting of the San Jacinto Mountains and the San Bernardino Mountains respectively. The northeastern Peninsular Ranges are part of the Southern California Batholith which is comprised of Paleozoic to Mesozoic age igneous, metasedimentary and metavolcanic rock types overlain un-conformably by non-marine clastic sediments of late Tertiary and Quaternary age.

The northwesterly trend of elongate ranges and valleys of this portion of the province are terminated abruptly by the general east-west grain of the Transverse Ranges.

The southeastern portion of the Transverse Ranges contain the San Bernardino Mountains which have been uplifted along the San Andreas and Banning Faults on the south and along several steeply dipping reverse faults on the north.

The subject site is situated at the juncture of the Transverse Range and the Peninsular Range in the western end of the San Gorgonio Pass Area. (Figure 2). In this area, the Mojave Desert segment and the Coachella Valley segment of the San Andreas Fault Zone step left from each other and this fault zone becomes a complex combination of strike-slip faults and thrust and tear faults that include the Banning Fault and the San Gorgonio Valley Fault Zone. The Cherry Valley Fault Zone of the subject area is considered a western extension of the San Gorgonio Pass Fault Zone (Matti and Morton (1993).

The site is also located in the "Badlands" area of relatively low hills southeast of Calimesa characterized by narrow ridge lines and steep-walled flanks comprised predominately of the San Timoteo Formation within the Peninsular Ranges province (Figure 3). This Plio-Pleistocene age sedimentary unit consists of fluviatile sandstones, and gravels with minor lacustrine siltstones. The floor and edges of the San Gorgonio Pass trough consist of dissected old alluvial terrace deposits and younger alluvial sands and gravels. These units are present in the southern portion of the subject site.

3.2 Regional Tectonic Setting:

The tectonic setting of southern California is dominated by the northwest-trending San Andreas Fault and its sister faults which have a right-lateral movement pattern between the North American Plate and the Pacific Plate. Local compression and/or extension as a result of the translational motion along this plate boundary has formed left-lateral, reverse, normal and blind thrust faults.

3.2.1 San Andreas Fault:

The main strand of the San Andreas Fault in southern California has been divided into two segments – the Mojave Desert segment separating the San Bernardino Mountains from the San Gabriel Mountains, and the Coachella Valley segment separating the Peninsular Ranges from the San Bernardino Mountains (Matti and Morton, 1993). The main strand deflects west in the San Gorgonio Pass area where the fault zone becomes

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more complex and does not have a clean, currently active, throughgoing fault break but is a combination of older strike-slip faults and newer thrust and tear faults (Treiman, 1994). The Banning and San Gorgonio Pass Faults – including the Cherry Valley Fault Zone, are part of this complex fault system in the San Gorgonio Pass area.

The Coachella Valley segment splits into two principal strands as it approaches the San Bernardino Mountains. The most northern has been designated as the North Branch of the San Andreas Fault by Diblee (1975), the Mission Creek Fault by Allen (1957), and the Coachella Valley Segment of the San Andreas Fault by Matti et al. (1992). This strand merges to the northwest into the Mill Creek and Mission Creek Faults (Figure 2). The southern strand of the Coachella Valley segment is designated as the South Branch of the San Andreas Fault by Dibblee (1975), the Banning Fault by Allen (1957), and the Coachella Valley segment of the Banning Fault by Matti et al. (1992). Upon its approach into the San Gorgonio Pass it veers westward (Figure 2).

3.2.2 San Gorgonio Pass Fault Zone:

This zone is characterized by discontinuous reverse and thrust faults and associated tear faults (Treiman, 1994) generally located at the base of the San Bernardino Mountains (Figure 2). The San Gorgonio Pass Fault Zone includes, from the west to east, the Cherry Valley Fault Zone, a fault along the toe of the Banning Bench, and a northeast-trending segment crossing the lower part of the Millard Canyon Fan.

The Cherry Valley Fault Zone in the subject site's vicinity has been mapped by Matti and Morton (1974-91) as two traces. This fault zone has been mapped by various workers predominately as two sub-parallel faults which merge to the east to form one trace near the eastern property boundary (Figure 2) and then veers northeast, displacing remnants of a mid –to-late Pleistocene fan (Treiman, 1994).

East of the subject site, the Cherry Valley Fault becomes the San Gorgonio Pass Fault Zone and is characterized as a sinuous trace forming several discontinuous scarps on the older fan mid-Pleistocene fan surfaces (Matti and Morton, 1993), Farther east, the faults step southward from the range from forming the Highland Springs scarp and the toe of the Banning Bench. Matti et al. (1993) infer northwest-trending, right-lateral tear faults in this area. (Figure 2). This fault zone continues northeast as a thrust fault where it eventually merges with the Banning Fault near Gorgonio Canyon.

3.2.3 Banning Fault:

The Banning Fault is considered an ancestral trace of the San Andreas Fault (Allen, 1957;

Matti et al., 1992) which has been inferred from the Indio Hills to the San Jacinto Fault (Figure 2). During late Cenozoic time the Banning Fault was principally a right-lateral fault, but it has since responded mainly to compressional tectonics in Gorgonio Pass and continuing as a strikeslip fault only to the east (Matti and Morton 1993).

This fault is located approximately ¼ mile north of the subject site where it consists of a prominent high-angle trace which separates Pleistocene San Timoteo Formation on the south from granitic rock to the north (Figure 3). Displacement in this area is indicated as a strike-slip by Matti et al. (1992).

East of Cabazon, the Banning Fault represents a branch of the Coachella Valley segment of the San Andreas Fault and is considered active.

3.2.4 Mill Creek Fault:

This branch of the San Andreas Fault (the "North Branch" of Diblee, 1964) is a major structural boundary of basement rock types separating predominately granitic rocks along the northeast side from predominately gneissic rocks on the southwest side. The Mill Creek Fault is located approximately 10 miles north of the subject (Figure 2). Matti et al. (1993) believe that this strand is no longer an active part of the San Andreas Fault Zone, although it may have been locally reactivated by dip-slip movement.

3.2.5 Beaumont Plain Fault Zone:

Matti et al. (1993) identified four north-northwest trending normal faults which terminate near the southeast corner of the subject site (Figure 2). They are considered an extensional zone of faults irregularly expressed as scarps in mid-Pleistocene and older surfaces and are considered inactive (Treiman, 1994).

3.2.6 San Jacinto Fault:

The San Jacinto Fault is located approximately 6 miles southwest of the site (Figure 2) and consists of a system of northwest-trending, right-lateral, strike-slip faults. This fault traverses rocks of Peninsular Ranges type and the alluviated San Bernardino Valley before entering the southeastern San Gabriel Mountains (Figure 2). There the fault splays into several sub-parallel strands that traverse rocks of Peninsular Ranges type and San Gabriel Mountains type (Matti and Morton, 1993).

The San Jacinto Fault is the closest known active fault to the site and is considered the most influential with respect to ground shaking and rupture. More large historic

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earthquakes have occurred on the San Jacinto Fault than any other fault in Southern California (Working Group on California Earthquake Probabilities, 1988).

3.2.7 Historical Seismicity:

A large earthquake ruptured the northern reaches of the San Bernardino segment of the San Andreas Fault on December 8, 1812 which has been inferred by Jacoby et al. (1987) using dendrochronological evidence, and by fault trenching by Fumal et al. (1993) at Wrightwood. This event may have ruptured into the San Bernardino Valley (Fumal, 1993).

Another major event known as the great 1857 Fort Tejon earthquake ruptured the Mojave segment of the San Andreas Fault. In 1948, a magnitude 6.5 earthquake ruptured the Coachella Valley segment of the San Andreas Fault in the Desert Hot Springs area.

An earthquake of magnitude 5.9 occurred on July 8, 1986, 10 km. northwest of North Palm Springs. Kahle and others (1987) indicated the epicenter near the Mission Creek fault with most of the associated surface faulting occurring along the Banning Fault with minor ruptures along Mission Creek and Garnet Hill Faults.

The Working Group of California Earthquake Probabilities (1988) indicate 7 magnitude 6.0 or greater earthquakes occurring on the San Jacinto Fault since 1899. Two of these include the magnitude 6.5 earthquake near Lytle Creek in 1899 and 6.2 magnitude event in Loma Linda in 1923.

Figure 2 (from Matti et al. 1992) presents the modern tectonic regime illustrating relations between faults and crustal blocks in the vicinity of the south-central Transverse Ranges.

3.3 Site Geology:

The main geologic units within the site include the Plio-Pleistocene San Timoteo formation in the northeast, and old alluvium of an old dissected alluvial fan in the southwest, with young alluvium along the valley floors. Structurally, the site is dominated by two splays of the Cherry Valley Fault – the North Branch and the South Branch which transect the site in a northwest to southeast trend (Figure 4). The South Branch generally places the San Timoteo Formation in fault contact with the older alluvium, except in the southeast where it juxtaposes older alluvial units against one another.

In some of our fault trenches, the old alluvium can be separated into a younger and older unit. These have not been differentiated on the geologic map (Figure 4).

Colluvium is the loose heterogeneous, and incoherent mass of soil material and rock fragments deposited by sheetwash, or slow continuous downslope creep collecting at the base of gentle slopes and hillslides. Colluvium mantles the slope of the site but is generally less than 2 ft. in thickness and therefore has not been delineated on Figure 4.

Undocumented artificial fill is present as backfill for the fault trenches of former investigations as well as this investigation. Artificial fill is also present with and in the vicinity of the San Gorgonio Pass Water Agency Pipeline easement that transgresses the northern portion of the site. Some of our fault trenches indicate that past agricultural activities and trenching have spilled fill along the edges of the flat-topped ridges in the southern half of the site.

The geologic units mapped at the site are discussed below in order from youngest to oldest.

3.3.1 Undocumented Fill (afu):

This unit has been delineated as shown on Figure 4. Where observed, this unit consists of a heterogeneous mixture of pebbly sand, silty sand, sandy silt, and coarse sand with cobbles and an occasional boulder. In addition to the minor undocumented fills within the fault trenches, spill fills associated with the former investigator's slope cuts are evident downslope. Historic aerial photo analyses and trenching have revealed that an east-west trending ridge located near the eastern property boundary has been cut and "flat-topped" for agricultural purposes. This grading occurred near CHJ Trench "T-4" and extends westerly to the ridge terminus, west of Neblett Trench NT-2. In addition, a significant undocumented canyon fill was placed southsoutheast of NT-5. This fill was likely placed concurrently with aforementioned ridge-top cut using the spoils generated from same.

3.3.2 Younger Alluvium (Qya):

Younger alluvial units outcrop in the active drainages which generally trend southerly to southwesterly onsite. The materials were only exposed in one of the Fault study trenches (NT-4, at its westerly end)). In NT-4, these younger alluvial materials consisted of silty sands and lesser gravelly sands. Local outcrops within active drainages reveal a highly variable lithology for this unit, which is consistent with the deposition of finer materials during relatively quiescent periods and very coarse materials during periodic storm events.

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3.3.3 Older Alluvium (Qoa):

Older alluvial units onsite consist of reddish brown clayey sands and yellowish brown silty sands. Both units have frequent gravel and gravelly sand lenses. The reddish brown clayey sands are highly oxidized and re-mineralized, suggesting a significant difference in age. In the fault trenches, where these units could be differentiated, they have been denoted as Qoa1 and Qoa2. These units are usually massive to poorly-bedded with localized well-bedded gravels. Where bedded, the units displayed horizontal or near horizontal bedding except where proximal to faulting, where dips of up to 45 degrees were observed.

3.3.4 San Timoteo Formation (Qtst):

The San Timoteo Formation is located primarily northeast of the South Branch of the Cherry Valley Fault (Figure 4) and consists predominately of cobble-boulder conglomerate with minor inter-bedded fine to medium sandstones. The conglomerate matrix is generally moderately to well-cemented and the inter-bedded sandstones are relatively thin compared to the thick massive conglomerates. Clasts are moderately weathered to decomposed and consist of granodiorite, greenstone, quartzite and monzogranite from the adjacent Transverse Ranges. The unit is generally matrix supported with localized clast supported lenses, and is massive to poorly-bedded.

Structurally, beds dip at shallow angles to the southwest except near the North Branch of the Cherry Valley Fault and other faults in the northeast portion of the site where beds dip nearly vertical.

These fluviatile sediments were deposited during the Pliocene and Pleistocene time when the depositional basin was subsiding, uplift of the San Bernardino and San Jacinto Mountains was occurring, and movements within the San Andreas and San Jacinto fault systems was taking place (Morton & Matti, 1993).

3.4 Site Faults:

Two main faults, the north and south branches of the Cherry Valley Fault Zone (CVFZ) have been mapped onsite. Though these two main breaks help define the zone, lineaments and geomorphic evidence suggest a zone of faulting and deformation associated with the CVFZ that may be as wide as 500-700 feet.

North Branch CVFZ

The North Branch has been exposed onsite in one trench by CHJ (T-1B) and two CHJ road cuts (SC-2 and SC-4). The north branch is characterized by steeply dipping (near vertical) faulting that is located roughly 200-300 feet north-northeast of, and roughly parallel to, the South Branch. The fault generally juxtaposes massive conglomeratic sandstone units within the San Timoteo Formation making relative offset difficult to determine. This fault was not trenched due to its location, over 200 feet north of the conceptual development footprint.

South Branch CVFZ

This fault has been exposed in CHJ trenches (T-1B, T-2, T-3, T-4) and road cuts (SC-1, SC-2 and SC-3) and in Neblett Trenches (NT-2, NT-3A, NT-5, NT-6) and in road cut RC-1. It is characterized by a northwest to east-west trending, north dipping reverse fault. Dips are low to moderate angle (10-45 degrees). Drag folding along the main rupture observed and logged by both CHJ and N&A indicate reverse/thrust kinematics. Relative offsets were not measurable in exposures and trenches but are significant, as the fault juxtaposes older San Timoteo (Plio- Pleistocene) over relatively younger alluvial units. Significant changes in stratigraphy, topography, geomorphology, and streamflow direction, are present along the entire mapped trace of this fault. This fault was the central focus of the Supplemental Fault Investigation (9/22/08), due to its potential effect on the conceptual development footprint.

4.0 Activity of Faulting:

During the fault investigation, N&A did not attempt to age-date the South Branch of the Cherry Valley fault or the North Branch of the Cherry Valley fault. The fault investigation concentrated on refining the location and attitude of the South Branch of the Cherry Valley fault in order to position future structures outside the restricted use zone at final grades. No unbroken datable soil horizons or other unbroken pre-holocene units were exposed in any of the N&A excavations. In addition, no carbon or datable materials were encountered in any of the excavations.

It is our opinion that there is no direct evidence to designate the South Branch and North Branch of the Cherry Valley fault, and any possible faults northeast (within the property limit) of the South Branch of the Cherry Valley fault, as inactive. In addition, there is relatively strong geomorphic and topographic evidence that indicate that the Cherry Valley Fault Zone is potentially active. Consequently, N&A has delineated a setback for the South Branch and "Recommended Restricted Use Zone" from the South Branch extending to the north and northeast property line as shown on Figure 4. No evidence of faulting was observed southerly of the South Branch CVFZ in any of the excavations.

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Based on the results of N&A's fault investigation (9/22/08) using aerial photo lineament analyses, fault trenching, geologic field mapping, observation of exposed roadcuts, and review of previous fault investigations by others, N&A has successfully located the South Branch of the CVFZ onsite (Figure 4). These analyses have resulted in a structural setback zone located 50 feet south of, and 100 feet to the north of the South Branch. We have also established a Restricted Use Zone (RUZ) located north and northeast of the South Branch to the north and northeast property boundary (Figure 4). If habitable structures are proposed for this area, a thorough fault investigation comparable to that previously completed, will be required.

5.0 Laboratory Analyses:

C.H.J. Inc. (8/15/05) provided a laboratory test program that included the following:

- Field moisture content determinations on all samples returned to the laboratory (results on borings logs Appendix IV)
- Field dry densities on all undisturbed ring samples (results on boring logs Appendix IV)
- Optimum moisture content – maximum dry density relationships for typical soil types to determine relative compaction and re-compaction characteristics.
- Direct shear tests on selected undisturbed samples to provide shear strength parameters for bearing capacity, earth pressure, and slope stability evaluations.
- Full-cycle consolidation testing on selected undisturbed samples for evaluation of potential hydro-consolidation.
- Sieve equivalent and R-value tests for criteria for preliminary pavement design recommendations.
- Chemical/corrosivity.

This data is presented in Appendix V of this report.

To supplement C.H.J Inc.'s laboratory test results, N&A performed the following tests:

- Field moisture content determinations on selected samples returned to the laboratory (results on borings logs Appendix II)
- Field dry densities on selected undisturbed ring samples (results on boring logs Appendix II)
- Optimum moisture content – maximum dry density relationships for selected bulk samples
- Direct shear tests on remolded samples
- Consolidation testing on selected undisturbed samples
- Grain size analyses on selected samples
- Soluble salfate content tests on selected bulk samples
- Expansion index tests on selected samples

This data is presented in Appendix V of this report.

6.0 Groundwater:

Groundwater was not encountered in any of the borings excavated onsite to a maximum depth of 71 feet. Two groundwater wells previously used for irrigation are located in the western portion of the site as shown on Figure 4.

Recent measurements of the groundwater in these wells indicate the depth to groundwater to be approximately 198 to 223 ft. below ground surface. Measurements taken by the San Gorgonio Pass Water Agency for these wells from 1963 to 2005 indicate the depth to groundwater from 150 ft. (1963) to 200 ft. (2005) below ground surface.

Based on these measurements of the regional aquifer and the absence of noted perched water in the borings, groundwater is not expected to be a constraint to the proposed development.

If the existing water wells are not to be utilized for on-site usage (i.e. irrigation), then they must be abandoned in accordance with the state and local agencies.

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7.0 Geologic/Seismic Considerations for EIR:

7.1 Regional Faulting and Seismicity:

G&A has provided a Probablistic Seismic Hazard Analysis for peak ground acceleration and CBC Seismic design parameters using the Earthquake Ground Motion parameters Computer Program Version 5.0.9 revised 10/06/08 USGS in Appendix I.

The site's location in Southern California is in a geologically complex area with numerous fault systems including strike-slip, oblique, thrust and normal faults. The site can be expected to be subject to seismic hazards of varying degree, depending on the proximity and earthquake potential of nearby active faults and the local geologic and topographic conditions.

The site is not located within an Alquist-Priolo Earthquake Fault Zone (CGS, 2000). However, the southern portion of the site is located within a County of Riverside designated Earthquake Fault Zone, based on the Riverside County GIS Fault Zone Map. N&A conducted a Supplemental Fault Investigation (2008) delineated the South Branch of the Cherry Valley Fault Zone and concurred with C.H.J. Inc. location of the North Branch of the Cherry Valley Fault Zone. These two faults are shown on Figure 4 and only the South Branch impacts the proposed development. N&A determined there is no direct evidence that the South Branch, including the North Branch, located northeast of the South Branch, are inactive. As a result N&A has delineated a structural setback zone for the South Branch of the Cherry Valley Fault and a restricted use zone for the area northeast of the South Branch as shown on Figure 4.

N&A has designated the South Branch of the Cherry Valley Fault as potentially active which may be subject to relatively small movements at depth due to sympathetic movement from regional faults and earthquakes. Seismic hazards include primary rupturing of rock and soil materials along active fault traces, and secondary hazards resulting from strong ground shaking. G&A is in agreement with N&A's findings and designations regarding the aforementioned.

7.2 Ground Rupture:

Based on our potentially active designation for the South Branch of the Cherry Valley Fault, and a lack of evidence for the surface faulting in this area from observations by Kahle and others (1987) from a magnitude 5.9 earthquake on July 8, 1986 approximately 10km. northwest of North Palm Springs (epicenter near Mission Creek Fault), the potential for surface rupture of the

South Branch of the Cherry Valley Fault that affects the proposed development is considered remote.

7.3 Ground Shaking:

The Peak Horizontal Ground Acceleration (PHGA) for the site was estimated using USGS data (2008) based on currently available earthquake and fault information (Appendix I). Based on this information, the PHGA with a 10 percent probability of being exceeded in 50 years is estimated to be approximately 0.61g.

7.4 Liquefaction:

The majority of liquefaction hazards are associated with un-compacted, saturated or nearly saturated, non-cohesive sandy and silty soils (Martin and Lew, 1999; CDMG SP117, 1997). Based upon field mapping and the subsurface exploration, the older alluvium consists of unsaturated clayey to silty sands with frequent gravel and gravelly sand lenses; the younger alluvium consists of unsaturated silty sands and lesser gravelly sands; and the San Timoteo Formation (bedrock) consists of unsaturated cobble-boulder conglomerate with minor fine to medium grained sandstones. The removals of the upper portions of the younger alluvium will generate fills consisting of similar materials to attain proposed grades.

In view of the absence of perched groundwater and the 200-300 ft. depth of the regional groundwater, the potential for liquefaction is considered low.

7.5 Hydroconsolidation:

A significant portion of the site is mantled by young alluvium (Qya). Laboratory testing and SPT data by this firm and others indicates the younger alluvium to be on the order of 20ft. in depth and is in a loose to medium dense state and relatively dry.

Although the regional groundwater is at 200ft. to 300ft. below ground surface and can be ruled out as a potential source for hydrocollapse, shallow perched groundwater from landscape irrigation may saturate some areas and result in hydroconsolidation. C.H.J. evaluated the potential hydroconsolidation of the loose soils with testing on selected samples. Their results indicate a mild to high potential of hydroconsolidation.

Mitigation of this potential hazard will involve complete removal of the younger alluvium (Qya) approximately 20ft. in depth and replacement with compacted engineered fill to the design

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grades. Minimizing the irrigation by planting drought-resistant vegetation will also benefit. It is also noteworthy that, based upon the proposed plan, a minimal surface area will be exposed to receive irrigation and/or rainfall since the majority of the site will direct water from the large buildings, parking lots and driveways to the storm drain system. The proposed drained stabilization fill prisms and fill slopes will also reduce the hydroconsolidation potential.

7.6 Settlement:

Some settlements are expected to occur due to seismic activity (ground shaking), loading from compacted fill placement, and loading from proposed structures.

Due to the removal of the younger alluvium (Qya) and replacement with compacted fill seismically induced settlement caused by groundshaking is expected to be generally uniform.

The area loading from compacted fill placement will cause settlement due to the compressibility of the fill materials and will include immediate (elastic) and long-term (primary and secondary) settlements. The magnitude of fill settlements would depend on the thickness and the compressibility characteristics of compacted fill and the underlying older alluvium (Qoa). The elastic component of fill settlement will be immediate and will be complete upon placement of fill. The primary and secondary fill settlements are time-dependent and will occur over a long period.

We propose positioning settlement monuments at strategic locations in the deeper fill areas as shown on Figure 4. These will be monitored on a regular basis until the primary settlement has stabilized.

7.7 Landslides:

No landslides or other evidence of gross slope instability were observed during our investigations onsite and no landslides are denoted on the published geologic maps and aerial photographs reviewed within and adjacent to the site.

Stability of slopes within the San Timoteo Formation is generally considered moderate to locally poor. The proposed cut slope north of Building 2 will expose San Timoteo Formation bedrock which will likely reveal day-lighted bedding conditions, and a small area of non-engineered fill which will require removal and replacement with compacted engineered fill is located in the cut slope east of Building 2. As a result, we propose a stabilization fill prism for this cut slope as shown on Figure 4 and cross-sections 1-1' and 3-3'. During construction, these conditions will be observed and additional recommendations will be provided, as appropriate.

7.8 Erosion/Debris Flows:

Loose surficial soils mantle the natural slopes within the proposed sphere of development which are prone to erosion resulting in shallow surficial failures and debris flow. Also, two relatively broad drainage channels that trend southwesterly towards the western portion of the development site, and an east-west to southwest trending drainage channel in the northeast portion of the site, have the potential for water surface flows and debris flows.

The project civil engineering group – Hunsaker & Associates, Inc. has designed two debris basins for the two drainages in the northwest portion of the site. A protective berm is located along the top of the north perimeter cut slope north of Building 2 and 1 as shown on Figure 4 and Cross-Section 2. Brow ditches and interceptor swales have also been incorporated by Hunsaker & Associates to control surface drainage. The installation of these designed devices to protect the slopes and control surface drainage will help mitigate the potential erosion and debris flow during storm events.

The slopes should be planted as soon as possible upon completion of grading with drought-resistant plants to help mitigate surficial erosion.

7.9 Slope Stability:

Global and surficial slope stability analyses were performed to evaluate the stability of the largest engineered fill slope and the largest cut slope in older alluvium. Detailed slope stability analyses are presented in Appendix VI. The results of the stability analyses indicate that the proposed slopes will provide factors of safety greater than 1.5 and 1.1 under static and pseudo-static conditions, respectively, conforming to the County of Riverside standards and are acceptable as planned. Similarly, the factors of safety for the surficial stability conditions also meet the required minimum safety factor of 1.5.

8.0 Shrinkage:

The source of the fill materials for grading operations include younger alluvium (Qya), older alluvium (Qoa), and San Timoteo bedrock formation (Tst) which will shrink when excavated and re-compacted. We estimate the following earth volume changes will occur during grading:

Younger Alluvium (Qya) Approximately 15-20% shrinkage

Older Alluvium (Qao) Approximately 10-15% shrinkage

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San Timoteo Formation (Tst) Approximately 5% shrinkage

The designated project Civil Engineer should incorporate these shrinkage factors when balancing the earthwork volumes.

9.0 Infiltration Rate:

The results of double ring infiltrometer test performed in locations IF-1 through IF-4 are summarized in the following table:

Test Location	No of Trials Performed Until Steady State	Time Interval	Volume of Water Needed in Inner Ring in Each Trial at Steady State	Infiltration Rate (in./hr)
IF-1	18	5 mins (0.0833 hr)	14 $in.^3$	1.5 in./hr
IF-2	16	5 mins (0.0833 hr)	28 $in.^3$	3.0 in./hr
IF-3	16	5 mins (0.0833 hr)	23 $in.^3$	2.4 in./hr
IF-4	20	5 mins (0.0833 hr)	11.5 $in.^3$	1.2 in./hr

The results of the well permeameter test results at the steady state (number of total trials performed until steady state percolations is 16) are as follows:

Hole diameter = 8 inches

Total hole depth = 46 feet (552 inches)

Initial water depth at steady state = 36 feet (432 inches)

Final Water depth at steady state = 37.55 feet (450.6 inches)

Time interval Δt = 10 minutes

In order to calculate the infiltration rate as described in Section 5.4, the above data should be reduced as below:

r = 4 inches

H_{ave} = [(552-432) + (552-450.6)]/2 = 110.7 inches

ΔH = 450.6-432 = 18.6 inches

Calculated Infiltration Rate $I_t = \Delta H (60r)/ \Delta t(r + 2 H_{ave})$

I_t =(18.6 in) (60 min/hr) (4 in)/ (10 min) ((4 in) + 2 (110.7 in))

I_t = 2.0 in./hr

10.0 Recommendations and Conclusions

10.1 General:

Based on the results of our investigation, engineering analyses and evaluations, combined with our professional experience and judgment, it is our opinion that, from a geologic and geotechnical engineering standpoint, the site is considered suitable for the proposed development. The planned commercial buildings can be supported on conventional spread and continuous footings, provided the recommendations presented herein are incorporated into the design and implemented during construction.

Preliminary geotechnical recommendations for site grading and foundation design and construction are presented below. As grading and foundation plans are completed, they should be forwarded to our office for review to verify conformance with the intent of these recommendations, and to enable us to provide additional/revised recommendations, as appropriate.

10.2 Site Grading

10.2.1 Site Clearing and Preparations:

a) Precautions should be taken during the performance of all work and at all times, to protect the work site, particularly excavated areas, from flooding, ponding and inundation due to poor or improper temporary surface drainage. During periods of impending inclement weather, temporary provisions should be made to adequately direct surface drainage away from all sources and off the work site and also provide adequate pumps and sumps to handle any flow into the excavations.

b) All site preparation as indicated below should be made under the periodic observation of the Project Geotechnical Engineer or Project Geologist.

c) Prior to the start of the grading and earthwork operations, all excess vegetation, surface trash, debris and other deleterious materials should be removed and wasted away from the site.

10.2.2 Remedial Grading:

a) Overexcavation:

In cut areas where the building foundations transgress older alluvium (Qoa) or San Timoteo Formation (Tst), we recommend a 10 ft. deep overexcavation and replacement with compacted engineered fill. The width of the overexcavation should extend a minimum of 5ft. beyond the edge of the footings. This 10ft. deep overexcavation will also apply to the interior footings for columns, etc. The remaining slab areas will require a 5 ft. minimum deep overexcavation.

The younger alluvium (Qya) will require a complete removal and replacement with engineered fill to the proposed grades. In general, the depth of removal is approximately 20 ft. from existing ground surface. Deeper removals may be required in localized areas. The project geologist should be present during these removals to observe and approve the subgrade.

b) Stabilization Fill

Where loose, unsuitable soils are anticipated to be exposed in cut slopes, stabilization fills will be required. These stabilization fill prisms will be drained in accordance with the grading details (Appendix VII) and have keyway dimensions from 20' x 2' x 3' (width, to depth, heel depth) to 40' x 2' x 3'. Stabilization fills are also required for fill over cut conditions in slope areas.

c) Fill Placement

After approval of the overexcavations discussed above, the exposed bottoms should be surveyed by the Project Civil Engineer. Prior to placement of any compacted engineered fill materials, the excavation bottom should be scarified to a minimum depth of six(6) inches, moisture conditioned to approximately 2 percentage points above optimum

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moisture content, and then rolled and compacted to at least 90 percent relative compaction (ASTM : D1157) with suitable compaction equipment. The Project Geotechnical Engineer or Project Geologist should evaluate and approve the acceptability of the compacted excavation bottom prior to placement of the new fill materials.

10.2.3 Fill Materials:

a) The excavated on-site soils may be used as compacted fill. The fill materials to be used as compacted engineered fill should be free of organics, debris, deleterious materials, and rocks over 6 inches maximum dimension, and must be approved by the Project Geotechnical Engineer or Project Geologist prior to use.

b) Import soils, if required, should be evaluated by the Project Geotechnical Engineer for suitability prior to delivery. Import soils should be free of trash, debris or other objectionable materials. All import fill should have engineering characteristics similar to the on-site soils.

c) Plans and specifications should indicate that the grading contractor shall notify the Project Geotechnical Engineer not less than 72 hours in advance of the location of any soils proposed for import. Each proposed import source shall be sampled, tested and approved prior to delivery of soils for use on the site.

10.2.4 Fill Placement, Moisture Conditioning, and Compaction:

a) Approved on-site or imported soils, should be spread in thin loose lifts (not exceeding six inches in thickness), moisture conditioned to approximately 2 percentage points above the optimum moisture contents, and each lift rolled and compacted to minimum 90 percent of the applicable laboratory maximum dry density (ASTM: D 1557), until the desired grades are achieved. No jetting or flooding is allowed.

b) Compacted fill areas not meeting the specified relative compaction should be moisture conditioned, as appropriate, and re-compacted, until the required compaction is achieved.

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10.2.5 Earthwork Observations and Testing:

a) The site preparation, over-excavation, and earthwork should be performed under the observation and testing by a representative of the Project Geotechnical Engineer or Project Geologist.

b) The fill should be tested at the time of placement to verify that the required compaction is achieved.

c) The fill compaction should be determined in the field by the Sand Cone Method (ASTM: D 1556) or Nuclear Gauge Method (ASTM: D 2216), or other test method approved by the Project Geotechnical Engineer.

d) During grading, an adequate number of field density tests should be performed using approved test procedures in order to determine compliance of earthwork to the project requirements. The frequency of field density testing should be in accordance with the recommendations of the Project Geotechnical Engineer and must comply with the minimum requirements of the City of Riverside.

e) Quality control testing performed to determine the acceptability of the fill compaction should be based on the laboratory maximum dry density and optimum moisture content determined in accordance with ASTM: D 1557 test procedure.

f) Any surface or subsurface obstructions, or questionable materials encountered during grading should be brought immediately to the attention of the Project Geotechnical Engineer. Deeper excavations may be required, should unsuitable soils be encountered locally, as determined by the Project Geotechnical Engineer and/or Project Geologist.

10.3 Temporary Excavations:

The backcuts for the stabilization fills subjacent to Cherry Valley Boulevard should be excavated in appropriate increments to be determined in the field by the project engineering geologist to minimize backcut failures and time of exposure.

Temporary excavations exposing younger alluvium (Qya) deeper than 4 feet should be sloped no steeper than 1H:1V or shored in accordance with Cal OSHA requirements.

Our office should review soil conditions exposed during excavations to verify acceptability of temporary slopes. Final temporary backcut slope design will be dependant upon the soil

conditions encountered, construction procedures and schedule. Temporary backcuts should not be left open for extended periods of time.

10.4 Foundation Design:

The planned commercial structures may be supported on conventional continuous and spread footings bearing on compacted engineered fill.

At the time of this report preparation, foundation details and loads were not available. These should be reviewed during the precise grading plan review to confirm the geotechnical recommendations provided herein and to develop supplemental recommendations, if required. The preliminary geotechnical design criteria applicable to the subject development are summarized below:

Allowable Bearing Pressure (1) = 1,500 psf

Minimum Footing Depth (2) = 24 inches

Minimum Footing Width = Per 1997 U.B.C.

Passive Soil Pressure (3) = 250 psf/ft., subject to a maximum of 2,000 psf

Friction Coefficient = 0.35 (ultimate)

Minimum Footing Reinforcement = Four No. 4 bars, 2 each at top and bottom

(1) The above value may be increased 250 lbs./sq.ft. for each additional foot exceeding the minimum embedment depth and/or width, subject to a maximum of 2,500 psf. Allowable bearing pressures may be increased by one-third for short term loading due to wind or seismic forces.

(2) Footing depth is below lowest adjacent soil grade.

(3) Passive soil pressure value is for level soil conditions adjacent to footings.

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General Remarks

a) Foundation details such as concrete strength, reinforcements, etc. should be established by the Project Structural Engineer, considering the soil expansion potential and loading and service conditions. The reinforcements shown should be considered as minimum requirements. The footings should be adequately reinforced based on structural design considerations and/or Code requirements.

b) Isolated column footings should be tied together by grade beams in at least two (2) orthogonal directions.

c) Foundation excavations should be observed and approved by the Project Geotechnical Engineer prior to the placement of reinforcement or concrete. Forming of footing excavations may be required. Excavations should be free of slough and debris and thoroughly moisture conditioned prior to placing concrete.

d) Excavated materials from footings and utility trenches should not be placed in slab-on-grade areas unless properly compacted and tested.

10.5 Settlements

Fill Settlement:

The area loading from compacted fill placement will cause settlement due to the compressibility of the fill materials and underlying alluvium. The magnitude of settlements would depend on the thickness and the compressibility characteristics of compacted fill and underlying stratum. Preliminary settlement evaluation based on the compressibility characteristics of the compacted fill indicate that the total fill settlement (during and post-grading) for fill depths generally less than 40 feet or less would be small. We propose positioning settlement monuments at strategic locations in the deeper fill areas as shown on Figure 4. These will be monitored on a regular basis until the primary settlement has stabilized before those areas released for construction.

Structure Settlement:

For purpose of settlement evaluation, it is assumed that the structural loading would be typical for one-story, tilt-up or wood-frame-type construction (column and wall loads not exceeding 100 kips and 3 kips/lineal foot, respectively).

Total static settlements of continuous and spread footings supporting the above typical structural loading and designed in accordance with the above recommendations are not

anticipated to exceed one inch. Differential settlements between similarly loaded column footings and for continuous footings over a distance of 30 feet are not expected to exceed ¾-inch.

10.6 Floor Slab-on-Grade:

The compacted engineered fill underling the site generally consists of clayey and silty sands with low soil expansion potential.

Structural and/or construction loading considerations will govern slab design and should be evaluated by the Project Structural Engineer.

In areas where a moisture sensitive floor covering will be used, the floor slab-on-grade should be underlain by a moisture/water vapor retarder, as recommended in Section 7.6 below.

Recommended criteria for slab-on grade are shown below:

Concrete Floor Slabs

Concrete floor slabs should be 5 inches thick (minimum) and should be reinforced with No. 3 bars at 18 inches on center, each way at mid height. No. 3 bars at 18 inches on center should be provided connecting floor slabs to footings. In order to minimize migration of moisture up the concrete slab from soil subgrade and damage to floor coverings, a moisture barrier/water vapor retarder recommended beneath floor slabs as discussed hereinafter.

Driveway

Driveway concrete slabs should be 5 inches thick (minimum) with No. 3 bars at 18 inches on center, each way at mid-height. The slab may be placed directly on properly prepared sub-grade. No moisture barrier is required under driveway slabs.

Exterior Flatwork

Exterior concrete flatwork (e.g. sidewalks, walkways) should be 4 inches thick (minimum), with No. 3 bars at 24 inches on center, each way at mid-height and placed on properly prepared sub-grade. Hardscape areas within two feet of the descending slopes should include a thickened edge deepened to provide a minimum five (5) feet horizontal setback between the bottom outside face of the thickened edge and slope face.

Sub-grade Pre-saturation

Prior to concrete placement, the soil sub-grade should be thoroughly wetted to about 12 inches in depth at a moisture condition of about 2 to 3 percentage points above the optimum moisture content.

General

Interior floor slabs and exterior concrete flatwork, including driveway, should be properly designed for the construction and service loading conditions, potential settlements and soil expansion. The structural details, such as slab thickness, concrete strength, reinforcing criteria, joint spacing, etc. should be established by the Project Structural Engineer. The recommended minimum reinforcements for concrete slabs provided above are intended for preliminary design only. More restrictive criteria as dictated by structural design or regulatory requirements shall govern.

10.7 Moisture/Water Vapor Mitigation for Concrete Slab-on-Grade:

In order to reduce the potential for moisture/water vapor migration up through the slab and possibly affecting floor covering, a moisture/vapor retarder is recommended under concrete floor slab-on-grade. The moisture barrier should be properly installed, lapped and sealed in accordance with the manufacturer's specifications. Punctures and rips should be repaired prior to placement of sand.

As a minimum, this moisture/water vapor retarder should consist of 10-mil thick polyethylene ("Visqueen"), lapped and sealed, and placed mid-height within a 4-inch coarse sand layer. This moisture/water vapor retarder should be installed in accordance with manufacturer's specifications.

The following recommendations are based on the tentative guidelines by the American Concrete Institute (ACI, April 2001) to reduce the potential moisture/water vapor intrusion in concrete slab-on-grade. Based on our review of available literature, it appears that the ACI procedure would be more effective to help reduce potential moisture/water vapor migration up through concrete slab-on-grade.

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Recommendations based on the ACI guidelines are presented below:

- The moisture/water vapor retarder should consist of high strength polyethylene membrane and should meet or exceed the ASTM: E-1745-97 Class C material requirements for water vapor permeance, tensile strength and puncture resistance. The vapor retarder should consist of "Moistop Plus" (Fortifiber Building Products Systems) or "Vapor Block" VB 15 (Americover, Inc.), or approved equal. The vapor retarder should be underlain by a capillary break comprised of minimum 4 inches thick pea gravel layer. The gravel layer should be placed and compacted on approved soil sub-grade.
- The membrane should be placed on approved gravel layer and properly lapped and sealed. Membranes intersecting utility pipes, sewer lines, ducts or drains must be properly wrapped around the penetrations and sealed. All punctures and rips in the membrane should be repaired prior to placement of concrete, following manufacturer's recommendations. The vapor retarder should be installed in general accordance with the procedures outlined in ASTM: E-1643, and in conformance with the installation procedures recommended by the manufacturer.
- To minimize slab curling, a low slump concrete (low shrinkage mix design) should be used for the slab construction, as determined by the Project Structural Engineer.

The moisture/water vapor protection for concrete slab-on-grade should be selected based on cost and construction considerations, and considering potential future problems resulting from improper and uncontrolled landscape irrigation practices. Regardless of the moisture/water vapor retarder option selected, it should be emphasized that proper control of irrigation and landscape water adjacent to the structure is of paramount importance.

10.8 Depressed Loading Dock Retaining Walls

Presented below are recommended criteria for the design and construction of planned depressed loading dock retaining walls:

A. Retaining wall footings should be supported on approved engineered fill.

B. The wall footings may be designed based on a maximum allowable soil pressure of 1,500 psf. For retaining walls, the recommended minimum footing depth is 2 feet below the lowest adjacent soil grade.

C. For level soil conditions in front of wall, a passive earth pressure value of 250 psf/ft may be used in the design of footings. A friction coefficient of 0.35 (ultimate) may also be used between the base of footing and supporting soils.

D. Continuous footings should be designed to accommodate potential total and differential settlements on the order of 1 inch and 3/4-inch in 30 feet horizontal distance, respectively.

E. Retaining walls should be adequately designed to resist the lateral soil pressures and the anticipated construction loadings and service conditions. The earth pressure acting on retaining walls depends primarily on the allowable wall movement, type of backfill materials, backfill slopes, wall inclination, surcharges, and any hydrostatic pressure. The following minimum lateral earth pressures are recommended for vertical walls with level backfill, no hydrostatic pressure and no surcharge:

Wall Condition	Lateral Earth Pressure (Equivalent Fluid Pressure) (pcf)
Active	40
At Rest	60

The above values are applicable to non-expansive, granular backfill (sands) placed between the wall stem and an imaginary plane rising at 45 degrees from below the edge (heel) of the wall footings, compacted to minimum 90 percent relative compaction (ASTM: D1557) at 1 to 2 percentage points wet of optimum moisture conditions.

F. The surcharge effect of anticipated adjacent loads on the wall backfill (e.g., traffic, footings) should be included in the wall design. If the wall is free to deflect, additional lateral pressure equal to 33 percent of the maximum surcharge load located within a distance equal to the height of the wall should be used in design.

G. The wall design should include water-proofing (where appropriate) and weep holes or back-drains for relieving possible hydrostatic pressure. The back-drain should consist of perforated Schedule 40 PVC pipe, minimum 4-inch diameter, embedded in minimum 3 cft/ft of gravel and enveloped in MIRAFI 140 geofabric or approved equal. The drain pipe should be installed at a minimum gradient of 1 percent and should discharge into suitable outlet.

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H. No backfill should be placed against concrete until minimum design strengths are attained, as determined by concrete compression tests.

I. Retaining wall backfill should be mechanically compacted to minimum 90 percent relative compaction (ASTM: D 1557). No ponding, jetting or flooding, should be permitted.

J. In order to reduce the potential surface water migration into the backfill material, the uppermost two (2) feet of backfill material should consist of onsite clayey soils, compacted to at least 90 percent relative compaction (ASTM: D1557) at approximately 3 percentage points wet of optimum moisture conditions.

K. Retaining wall plans and details should be provided to our office for review, when available, in order to verify the applicability of the preliminary recommendations presented herein, and to enable our office to provide additional/revised recommendations, as appropriate.

10.9 Seismic Design Considerations:

The site, as is all of southern California, is within a zone of seismic activity. Strong ground motion from an earthquake generated along active faults should therefore be anticipated at this site. The proposed development should be designed and constructed to the prevailing seismic design standards. Seismic design should be based on current and applicable CBC requirements as appropriate. The CBC seismic design parameters using earthquake ground motion parameters computer program version 5.0.9 revised 10/6/08 USGS are presented in Appendix IV.

10.10 Expansive Soils:

In general, the site sub-grade soils are granular with very low soil expansion potential. Specialized construction procedures to specifically resist expansive soil forces are not anticipated at this time. Additional evaluation of soils for expansion potential should be conducted by the geotechnical engineer during the grading operations.

10.11 Soil Corrosion:

C.H.J. Inc. (Aug. 2005) selected samples of material and delivered them to M.J. Schiff & Associates, Inc. for soil corrosivity tests. Laboratory testing consisted of pH, resistivity, and

major soluble salts commonly found in soils. The results of the laboratory test performed by M.J. Schiff & Associates, Inc. are enclosed in Appendix V.

These tests were performed in order to screen the site for potentially corrosive soils. Although C.H.J. Inc. acknowledges that they do not practice corrosion engineering, they considered the values from the soil tested are considered mildly corrosive to ferrous metals at the site. No specific corrosion control measures, such as coating of the pipe with non-corrosive material or alternative non-metallic pipe material, are considered to be necessary.

C.H.J. Inc. indicates the results of soluble sulfate testing indicate a "negligible" anticipated exposure to sulfate attack, as indicated in the enclosed test results (Appendix VI). Based on the criteria from Table 4.3.4 of the American Concrete Institute (ACI) Manual of Concrete Practice (2000), no special measures, such as specific cement types, water-cement ratios, etc. will be needed for this "negligible" exposure to sulfate attack.

The Soluble chloride content of the soil was not determined to be at levels high enough to be of concern with respect to corrosion of reinforcing steel. The results should be considered in combination with the soluble chloride content of the hardened concrete in determining the effect of chloride on the corrosion of reinforcing steel.

Additional soil corrosion testing of exposed foundation materials should be performed during or near completion of site grading.

11.0 Utility Trench Backfill:

Bedding material should consist of on-site sandy or imported materials exhibiting a San Equivalent (S.E.) value of 30 or greater.

The on-site soils are considered suitable for trench backfill, provided they are free of organic materials and oversize rocks.

Backfill of all exterior and interior trenches should be placed in thin lifts not exceeding 4 inches and mechanically compacted to achieve a relative compaction of not less than 90% based on ASTM: D1157. Care should be taken not to damage utility lines.

Utility trenches should not be located within the influence of footings. This is defined as a zone located below the footing and a line sloping at an inclination of 1:1 (horizontal to vertical) outward from the outside edge of footings. If utility lines are located within the zone of footings, the backfill should be

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compacted to a minimum 95 percent relative compaction or slurry backfilled (minimum 1-1/2 sack cemented sand mix.

To reduce potential water migration into building sub-grade through the granular bedding/shading layer and/trench backfill, utility trenches should be backfilled with the onsite finer grained materials or sand-cement slurry for minimum 3 feet length at their entry points.

Trenches in fill soils and alluvial deposits greater than 4 feet in depth should be shored or sloped back as required by the local regulatory agency, the state of California Division of Industrial Safety Construction Safety Orders, and Federal OSHA requirements.

12.0 Asphalt Concrete Pavement:

Preliminary asphalt concrete pavement sections for the planned commercial/industrial development were developed utilizing the Cal Trans Method of Design and the Structural Section Design Guide for California Cities and Counties.

The following recommended pavement sections were computed assuming an "R" value of 30 for site soils compacted as sub-grade material, and assumed traffic indices. The actual "R" value will depend on the soil conditions exposed at the planned street sub-grade elevations.

During rough grading, "R" value testing should be performed on the pavement sub-grade soils to confirm the pavement design basis. Further analysis and evaluation are necessary, if the design traffic index and the sub-grade "R" value are different from those used in our analyses.

Pavement Utilization	Traffic Index	Asphalt Pavement Section (inches)		
		AC	AB	Total
Circulation Driveways	7.0	4.0	10.0	14.0
Parking Areas	5.0	3.0	6.0	9.0

Note: AC = Asphalt Concrete, AB = Aggregate Base

Aggregate base should consist of crushed aggregate base (CAB) or crushed miscellaneous base (CMB) and should comply with the specifications outlined in the "Standard Specifications for Public Works Construction", ("Green Book"). The base material should be compacted to minimum 95 percent of the maximum laboratory density, determined in accordance with ASTM: D-1557.

The soil sub-grade should be compacted to minimum 90 percent relative compaction. The subgrade soils should exhibit a firm and unyielding surface, in addition to the recommended minimum compaction. Final compaction and testing of pavement sub-grade should be performed just prior to placement of aggregate base.

13.0 Site Drainage:

All roof and surface drainage should be directed away from structures and their appurtenances and slope s to approved drainage facilities. Ponding of water should be avoided. For graded soil areas, a minimum gradient of 2 percent away from structures should be maintained.

The recommended drainage patterns should be established at the time of fine grading and maintained throughout the life of the structure or, if altered, should be replaced with a properly designed area drain system.

Irrigation activities at the site should be monitored and controlled to prevent overwatering. Planter areas adjacent to structures should be avoided. If utilized, such planters should include measures to contain irrigation water and prevent moisture migration into walls and under foundations and slabs-on-grade.

14.0 Landscape, Irrigation and Maintenance:

General guidelines for landscape, irrigation and maintenance are shown below:

A. Landscape planting should consist of appropriate drought resistant vegetation as recommended by the Landscape Architect. Landscaping should be completed as soon as possible and properly maintained.
B. Proper irrigation and maintenance and repair of installed irrigation systems are essential to minimize ground saturation. Leaks should be repaired immediately. Sprinklers should be adjusted to provide maximum coverage with a minimum of water usage and overlap. Over-watering with consequent excessive runoff and ground saturation must be avoided.
C. If automatic sprinkler systems are installed, their use must be adjusted to account for natural rainfall conditions.
D. All drainage devices that have been installed must be maintained and cleaned.

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15.0 Plan Review, Observations, and Testing:

Ginter & Associates, Inc. should be provided with precise grading and foundation plans, when available, for our review to evaluate the preliminary recommendations presented herein and to develop additional/revised recommendations, as appropriate.

Field observation and testing during precise and remedial grading must be performed by a representative of this firm to verify conformance of the earthwork to the requirements of the regulating agencies, the project specifications, and the recommendations presented in this report. Any earthwork performed in connection with the subject project without the full knowledge of, and not under the direct observation of this firm, will render the recommendations of this report invalid.

16.0 Limitations:

This report has been prepared for the exclusive use of TSG Cherry Valley, L.P. and its design consultants relative to the design and construction of the proposed project. This report is not intended for other parties, and it may not contain sufficient information for other purposes.

The Owner or Owner Representative should make sure that the information and preliminary recommendations presented in this report are brought to the attention of the Project Architect and Project Engineer and incorporated into the project plans.

The findings contained in this report are based upon our evaluation and interpretation of the information obtained from limited borings and/or test pits and the results of the laboratory testing and engineering analysis. The opinions and recommendations provided were based on the assumption that the geotechnical conditions, which exist across the site, are similar to those observed in the test excavations. The condition and characteristics of the sub-surface materials at locations and depths other than those excavated and observed may be different and no representations are made as to their quality and engineering properties. Should any conditions encountered during construction differ from those described herein, this office should be contacted immediately for evaluation of the actual conditions and for appropriate recommendations prior to continuation of work.

The findings and recommendations presented herein were obtained in accordance with currently accepted professional engineering principles and practices in the field of geologic and geotechnical engineering and reflect our best professional judgment. We make no other warranty, either express or implied.

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We thank you for the opportunity to provide our services for your project and look forward to working with you and the project team during site grading, design and construction. If you have any questions or require additional information, please contact the undersigned.

{Signatures on following page}

Respectfully submitted,
GINTER & ASSOCIATES, INC.

By: _____
Dave Ginter R.G., C.E.G.
Principal Engineering Geologist/President



By: _____
Vela "Ganesh" Ganeshwara, P.E., G.E.
Consulting Geotechnical Engineer



Distribution:
TSG Cherry Valley, LP (2)
County of Orange (2)
Hunsaker Irvine, Inc. (1)
File (1)

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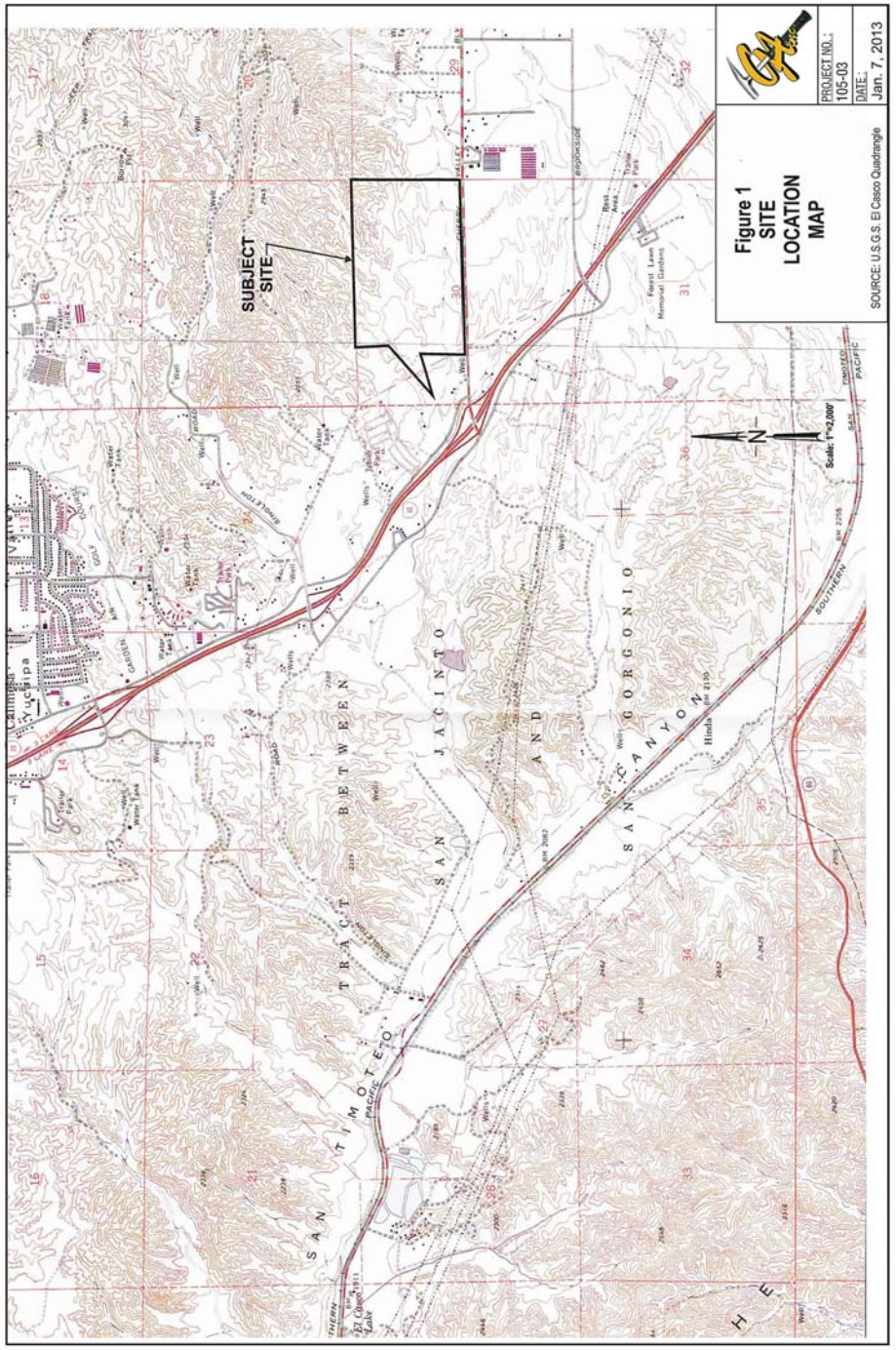


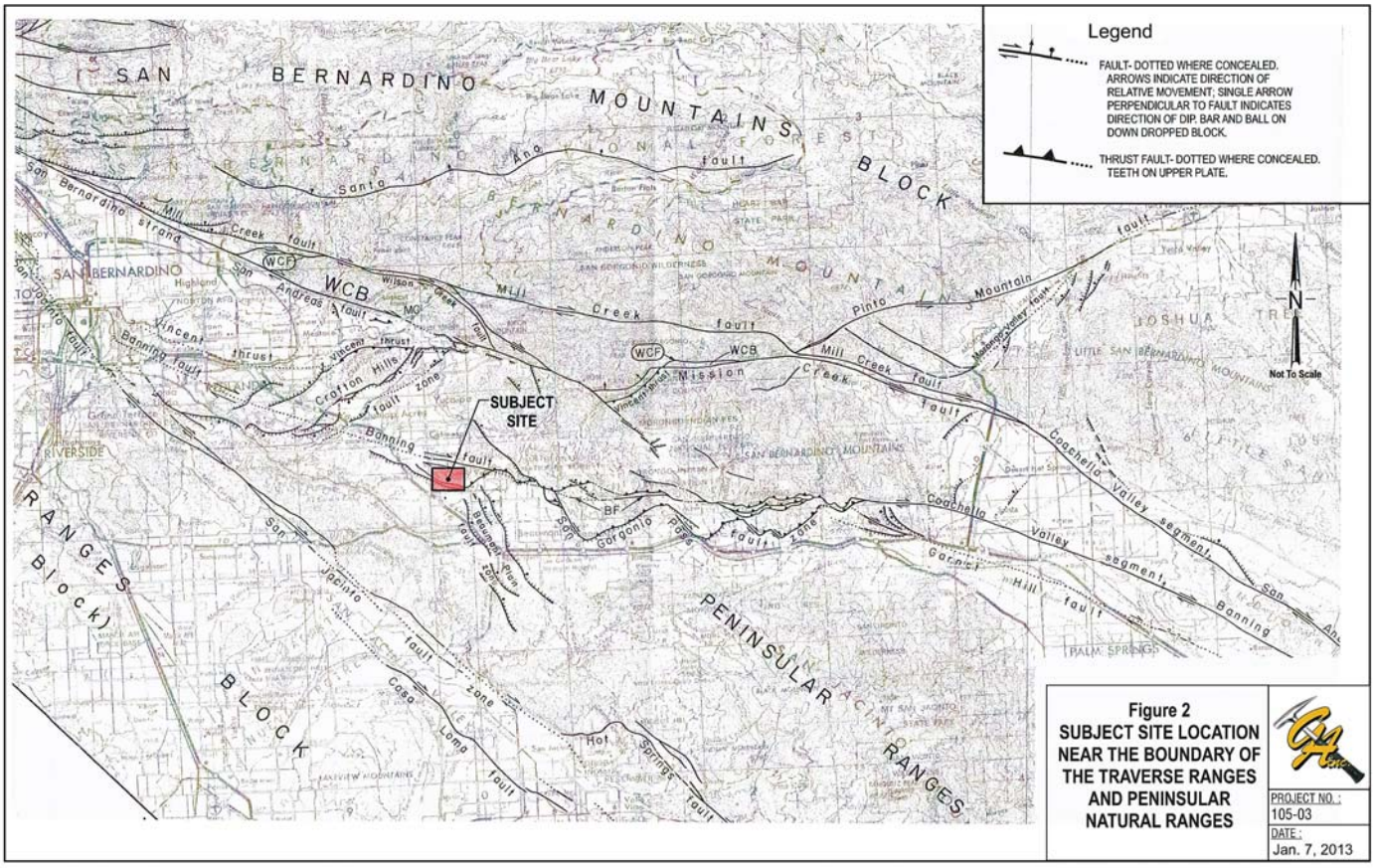


Figure 2
SUBJECT SITE LOCATION NEAR THE BOUNDARY OF THE TRAVERSE RANGES AND PENINSULAR NATURAL RANGES

PROJECT NO.: 105-03
DATE: Jan. 7, 2013

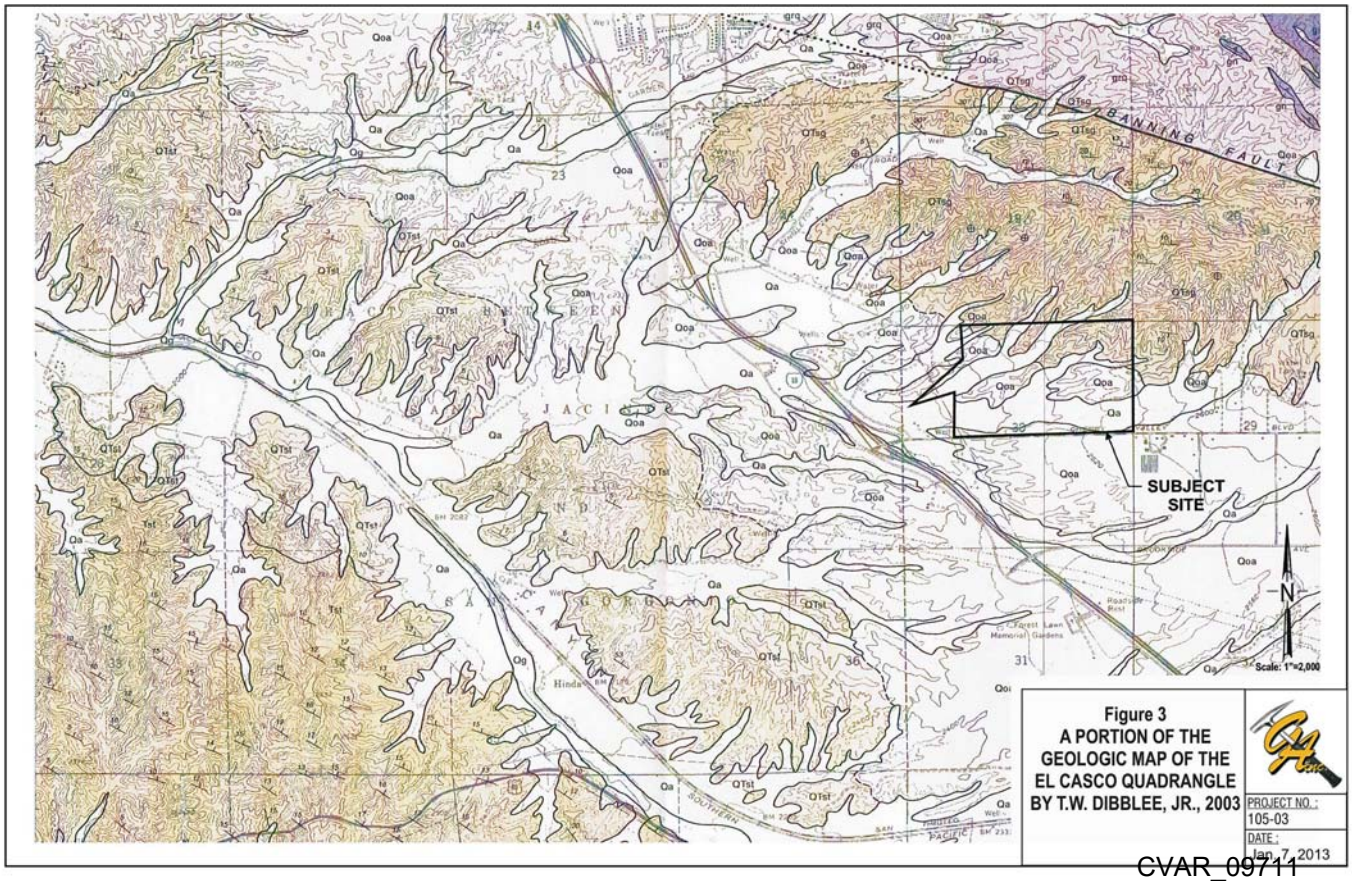


Figure 3
A PORTION OF THE GEOLOGIC MAP OF THE EL CASCO QUADRANGLE BY T.W. DIBBLEE, JR., 2003

PROJECT NO.: 105-03
DATE: Jan. 7, 2013

EL CASCO MAP (DF-113)

LEGEND

Qa / Qg

SURFICIAL SEDIMENTS
Unindurated, undissected

Qg *Alluvial gravel and sand of stream channels*
Qa *Alluvial sand, gravel and clay of level areas, covered by residual soil*

— *UNCONFORMITY* —

Qos

OLDER SURFICIAL SEDIMENTS
Weakly indurated alluvial fan deposits derived from local terrains

Qos *Alluvial gravel and sand, light reddish brown and of granitic and gneissic detritus of San Bernardino Mountains in north areas, brownish gray in south area; top surface slopes slightly from source terrains*

— *UNCONFORMITY* —

QTst / Tst — QTsg

SAN TIMOTEO FORMATION
(San Timoteo Beds of Frick, 1921) Stream laid alluvial sediments of detritus derived from plutonic and metamorphic rocks of San Bernardino Mountains NE of Banning Fault and deposited on plutonic and meta-sedimentary rocks of Peninsular Ranges NE of San Jacinto Fault zone; weakly indurated; upper part yielded vertebrate fauna diagnostic of Blancan Stage, Plio-Pleistocene (Frick, 1921, Savage et. al. 1954) or Irvingtonian Stage, earliest Pleistocene, (Repenning 1987) lower or main part inferred to be of Pliocene age (Morton and Matti, 2001)

QTst *Upper part, sandstone, light gray to tan, fine to coarse grained arkosic and minor conglomerate of mostly granitic detritus, some gneissic and quartzitic detritus; includes thin layers of soft greenish to light reddish silty claystone, overlain by older alluvium*
QTsg *Conglomerate/conglomerate, brownish gray, crudely bedded, of poorly sorted subrounded clasts of granitic and gneissic detritus in sandy matrix, base unexposed, overlain by older alluvium; probably proximal facies of upper part (QTst); exposed adjacent to Banning fault*
Tst *Main part (middle part of Morton and Matti, 2001) sandstone, minor conglomerate and claystone, similar to those of upper part; conformably overlain by upper part (QTst), conformably underlain by Mount Eden Formation (Tme), but thins and buttresses eastward onto basement rocks as shown.*

Tme / Tmeg

MOUNT EDEN FORMATION
(of Frezier, 1931), present only near and SE of Mount Eden, stream laid sediments, clasts derived from basement rocks of Peninsular Ranges, moderately lithified, conformable below San Timoteo Formation, overlies basement rocks; mostly sandstone,lithified divided into 4 members by Morton and Matti 2001; one member contains vertebrate fauna diagnostic of late Hemphillian Stage, middle Miocene, dated about 5.3 MA (Morton and Matti 2001)
Tme *Sandstone, medium grained, arkosic, includes interbeds of micaceous silty shale, strata light gray to light reddish maroon, locally contains concretions*
Tmg *Granitic conglomerate, composed of subrounded to subangular boulders and cobbles of light gray massive biotite-hornblende quartz diorite (tonalite), unsorted; form lenses within and at top of unit Tme, derived from quartz diorite to NE (Morton and Matti, 2001)*

— *UNCONFORMITY* —

gr | qdi | qdx | grq

PLUTONIC ROCKS
medium grained holocrystalline granitic rocks; age, Cretaceous

gr *Granitic rock of Mount Eden; granite to monzo-granite (Morton and Matti, 2001) composed of quartz, potassic feldspar and sodic plagioclase feldspar in nearly equal amounts but with somewhat more potassic feldspar, scattered flakes of white mica and almost no mafic minerals, nearly white, massive; intrusive into meta-sedimentary rocks; exposed only near and SE of Mount Eden*
qdi *Granodiorite of east area; composed of quartz, potassic feldspar and sodic plagioclase feldspar in nearly equal amounts but with somewhat more sodic plagioclase feldspar, minor biotite, light gray, massive to very faintly gneissoid*
qdx *Quartz diorite (Borusa Tonalite of Larsen, 1948) composed of about 1/3 quartz, 2/3 sodic plagioclase feldspar, minor potassic feldspar and 5-10% biotite and hornblende, light gray gneissoid, with abundant dark gray discoid inclusions (xenoliths) parallel to gneissoid foliation; exposed only at SW corner of quadrangle*
grq *Granite rock exposed NE of Banning fault at NE corner, of quartz monzonite composition, of quartz, potassic feldspar and sodic plagioclasefeldspar in nearly equal amounts and about 5-10% biotite as evenly scattered flakes, light gray, massive, somewhat incoherent*

hdg

HORNBLENDE DIORITE GABBRO
hdg *Mafic rock exposed at NE corner of quadrangle NE of Banning fault; gray-black, medium grained, massive, composed of about 75% hornblende, 0-30% plagioclase feldspar, locally contains green epidote as secondary veinlets; age Mesozoic (Cretaceous)*

ms | ml | mig

METASEDIMENTARY ROCKS
Remnants of metasedimentary petrolith of San Jacinto Mountains, exposed only near and SE of Mount Eden in this quadrangle; age inferred to be Paleozoic (Morton and Matti 2001)
ms *Mica schist-phyllite, composed of biotite mica, feldspar and quartz, ranges to fine grained gneiss, locally includes calcsilicate skarn, dark gray, foliated along relict bedding planes*
ml *Marble, of calcite and dolomite, pale gray to white, medium to coarse grained, indistinctly bedded, locally contains skarn of diopside, wollastonite, tosterite, garnet and graphite (Morton and Matti 2001) occurs as layers and lenses in unit ms*
mig *Mixture of metasedimentary rocks (schist–gneiss–ms) with quartz diorite (qda); complexly migmatized, at southwest corner*

gn

GNEISS
gn *Gray quartz-feldspar-biotite gneiss, thin bedded, hard but brittle; age, Precambrian (?), occurs as small pendant remnants engulfed in unit grq NE of Banning fault*

Holocene ? Pleistocene ? Pliocene → QUATERNARY → CENOZOIC

Miocene → TERTIARY → CENOZOIC

— UNCONFORMITY —

CRETACEOUS → MESOZOIC

PALEOZOIC (?)

LEG. AMBRIAN (?) TO MESOZOIC

DF-113 GEOLOGY EL CASCO QUADRANGLE

CVAR_09712

Figure 3a
LEGEND
FOR
FIGURE 3

PROJECT NO. : 105-03
DATE : Jan. 7, 2013

Photo of Simple Double Ring Infiltrometer



Photo of Pre-fabricated Double Ring Infiltrometer



(Photo courtesy of Turf-Tec International)

Figure 5
Double Ring Infiltration Apparatus

GINTER AND ASSOCIATES, INC
LOG OF EXPLORATORY BORING

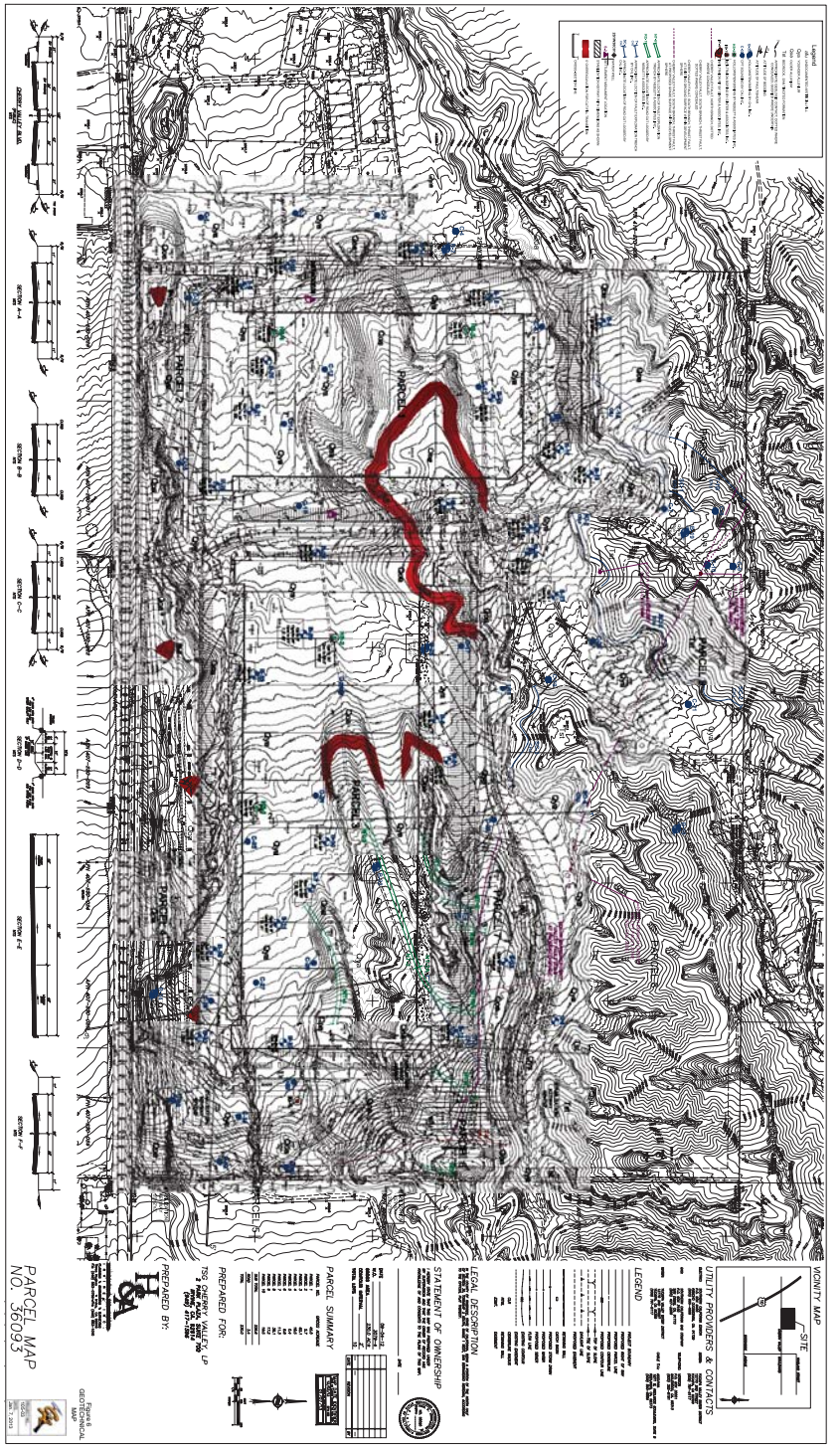
PROJECT #: 105-02
DATE STARTED: 9/24/12
DATE FINISHED: 9/24/12
DRILLER: GREGG
TYPE OF DRILL RIG: Hollow Stem

PROJECT NAME: CALIMESA
GROUND ELEV: 2509
KELLEY WT/DRIVE/DROP: 140 lb./30"
BORING DESIG. IB-1
LOGGED BY: BW
SHEET 1 OF 1

NOTES: 2" PVC Casing with 0.020 Screen and # 3 Sand.

DEPTH (ft.)	ELEV. (ft.)	CLASSIFICATION	SAMPLE TYPE	BLOWS/6"	GRAPHIC LOG	DESCRIPTION	DRY DENSITY lb/ft³	MOISTURE CONTENT (%)
10			SPT	3/4/6		**Older Alluvium (Qoa):** Silty Sand and Sand, reddish brown and grayish brown, slightly moist, loose to medium dense.		
						Gravel and Gravelly Sand, reddish brown and grayish brown, slightly moist, medium dense to dense.		
20			SPT	6/6/8		Gravelly Sand, reddish brown and grayish brown, slightly moist, occasional pebble clasts, medium dense to dense.		
30			SPT	12/14/20		Gravelly Sand, reddish brown and grayish brown, slightly moist, occasional pebble clasts, medium dense to dense.		
40			SPT	10/13/20		Gravelly Sand, reddish brown and grayish brown, slightly moist, occasional pebble clasts, medium dense to dense.		
			SPT	7/8/11		As at 40 Feet with slight increase in pebble size clasts		
50						Total Depth 46 Feet No Water No Caving		

105-02 IB-1.jpg



CVAR_09713

GEOTECHNICAL BORING LOG

SHEET 2 OF 2

PROJECT NO. 665-000-01
DATE STARTED 7/31/08
DATE FINISHED 7/31/08
DRILLER BC2
TYPE OF DRILL RIG Hollow Stem

PROJECT NAME Calimesa TSG
GROUND ELEV.(FT)
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. HS-1
LOGGED BY BW
NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	Other Tests
		SPT	9/11/16			Gravelly Sand and lesser Silty Sand, brown to olive brown, moist, dense.	3.4			
45		R	21/41/50-3"			Clayey Sand and Silty Sand, reddish brown, moist, dense.	5.1	113.4	29	
50		SPT	8/6/9			Clayey Sand, reddish brown, moist, dense with lesser Gravelly Sand lenses, graysih brown, moist, dense.	19.6			
55						Difficulty Drilling 55-60 feet.				
60		SPT	41/50-3"			Clayey Sand and Silty Sand, reddish brown, moist, dense, occasional pebble size clasts. Total Depth 60.75 Feet. No Water.	9.9			

SAMPLE TYPES:
R RING (DRIVE) SAMPLE
S SPT (SPLIT SPOON) SAMPLE
B BULK SAMPLE T TUBE SAMPLE

Water Seepage
Groundwater
DS - Direct Shear
GS - Grain Size Analysis
EI - Expansion Index
CONS - Consolidation

NEBLETT & ASSOCIATES, INC.
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA 92649 714-840-8286

PLATE A-2

GEOTECHNICAL BORING LOG

SHEET 1 OF 2

PROJECT NO. 665-000-01
DATE STARTED 7/31/08
DATE FINISHED 7/31/08
DRILLER BC2
TYPE OF DRILL RIG Hollow Stem

PROJECT NAME Calimesa TSG
GROUND ELEV.(FT)
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. HS-1
LOGGED BY BW
NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	Other Tests
		SPT	8/6/5			**Alluvium: (Qal)** Silty Sand, yellowish brown, slightly moist, loose, occasional rootlets, fine-grained.				
5		R	16/11/8			Silty Sand, brown, slightly moist, loose, occasional rootlets, fine-grained.				
10		SPT	3/3/5			Silty Sand and lesser Gravelly Sand, slightly moist, loose, occasional pebble size clasts.	2.5			
15		R	5/6/7			Silty Sand and increasing Gravelly Sand, slightly moist, loose, occasional pebble size clasts.	2.7			
20		SPT	3/4/5			Gravelly Sand, yellowish brown, slightly moist, loose.	9.8			
25		R	6/11/11			Gravelly Sand, brown and grayish brown, moist, dense.	3.9	113.4	23	
		B								
30		SPT	4/7/6			Gravelly Sand, yellowish brown to olive brown, slightly moist, medium-dense.	4.3			
35		R	6//8/11			**Older Alluvium: (Qoa)** Finer Silty Sand yellowish brown to olive, moist, dense, with occasional Gravelly Sand lenses. Gravelly Sand and Clayey Sand, reddish brown, moist, dense.	8.2	109.8	43	

SAMPLE TYPES:
R RING (DRIVE) SAMPLE
S SPT (SPLIT SPOON) SAMPLE
B BULK SAMPLE T TUBE SAMPLE

Water Seepage
Groundwater
DS - Direct Shear
GS - Grain Size Analysis
EI - Expansion Index
CONS - Consolidation

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PLATE A-1

CVAR_09714

GEOTECHNICAL BORING LOG

SHEET 2 OF 2

PROJECT NO. 665-000-01
DATE STARTED 7/31/08
DATE FINISHED 7/31/08
DRILLER BC2
TYPE OF DRILL RIG Hollow Stem

PROJECT NAME Calimesa TSG
GROUND ELEV.(FT)
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. HS-2
LOGGED BY BW
NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	Other Tests
		R	4/8/11			Clayey Sand, reddish brown, moist, dense.	8.0	111.5	44	
						** Sample Disturbed at 40 feet.				
45		SPT	4/7/9			Clayey Sand, reddish brown, moist, medium dense, occasional carbonate nodules.	6.1			
50		SPT	16/11/11			Clayey Sand, reddish brown, moist, dense/hard, with occasional pebble size clasts.	4.5			
55							85.0			
						Total Depth 58.5 Feet. No Water.				

SAMPLE TYPES:
R RING (DRIVE) SAMPLE
S SPT (SPLIT SPOON) SAMPLE
B BULK SAMPLE T TUBE SAMPLE

Water Seepage
Groundwater
DS - Direct Shear
GS - Grain Size Analysis
EI - Expansion Index
CONS - Consolidation

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HUNTINGTON BEACH, CA 92649 714-840-8286

PLATE A-4

GEOTECHNICAL BORING LOG

SHEET 1 OF 2

PROJECT NO. 665-000-01
DATE STARTED 7/31/08
DATE FINISHED 7/31/08
DRILLER BC2
TYPE OF DRILL RIG Hollow Stem

PROJECT NAME Calimesa TSG
GROUND ELEV.(FT)
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. HS-2
LOGGED BY BW
NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	Other Tests
						Alluvium: (Qal) Silty Sand, yellowish tan to orange-tan, slightly moist, loose, occasional rootlets, fine-grained.				
5		SPT	2/2/2			Silty Sand, reddish brown to brown, dry to slightly moist, occasional rootlets, fine-grained.	4.3			
10		R	2/4/7			Clayey Sand and Silty Sand, reddish brown, dry to slightly moist, loose, porous, rootlets.	5.6	105.2	26	
15		SPT	2/4/3			Clayey Sand and Silty Sand, reddish brown, dry to slightly moist, locse, occasional pebble size clasts, porous, rootlets.	5.9			
20		R	3/4/5			Clayey Sand and Silty Sand, reddish brown, dry to slightly moist, loose, occasional pebble size clasts, porous, 'punky' texture, rootlets.	9.5	115.3	58	
25		SPT	2/2/3			Clayey Sand and Silty Sand, reddish brown, dry to slightly moist, loose, occasional pebble size clasts, porous, 'punky' texture, rcotlets.	8.2			
30		R	4/6/11			**Older Alluvium: (Qoa)** Clayey Sand, reddish brown, slightly moist, medium-dense, frequent pebble size clasts.	7.2	117.9	47	
		B				Clayey Sand and Silty Sand, reddish brown, slightly moist.				
35		SPT	5/5/7			Gravelly Sand and lesser Silty Sand, moist, medium-dense, occasional pebble size clasts.	5.4			

SAMPLE TYPES:
R RING (DRIVE) SAMPLE
S SPT (SPLIT SPOON) SAMPLE
B BULK SAMPLE T TUBE SAMPLE

Water Seepage
Groundwater
DS - Direct Shear
GS - Grain Size Analysis
EI - Expansion Index
CONS - Consolidation

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PLATE A-3

CVAR_09715

GEOTECHNICAL BORING LOG

SHEET 2 OF 2

PROJECT NO. 665-000-01
DATE STARTED 8/1/08
DATE FINISHED 8/1/08
DRILLER BC2
TYPE OF DRILL RIG Hollow Stem

PROJECT NAME Calimesa TSG
GROUND ELEV.(FT)
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. HS-3
LOGGED BY BW
NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	Other Tests
		SPT	5/7/9			Gravelly Sand and lesser Silty Sand, yellowish brown, moist, medium-dense.	7.1			
		B				Silty Sand and lesser Gravelly Sand, brown to yellowish brown, moist, dense, frequent pebble size clasts.				
45										
50		R				**Older Alluvium: (Qoa)** Silty Sand, yellowish brown, moist, dense, frequent cobble size clasts.	10.0			
55										
60		SPT	8/16/20			Gravelly Sand, reddish brown, moist, dense, occasional pebble size clasts.	6.9			
65		B								
70		SPT	12/30/32			Total Depth 71.5 Feet. No Water.	7.7			

SAMPLE TYPES:
R RING (DRIVE) SAMPLE
S SPT (SPLIT SPOON) SAMPLE
B BULK SAMPLE T TUBE SAMPLE

Water Seepage
Groundwater
DS - Direct Shear
GS - Grain Size Analysis
EI - Expansion Index
CONS - Consolidation

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PLATE A-6

GEOTECHNICAL BORING LOG

SHEET 1 OF 2

PROJECT NO. 665-000-01
DATE STARTED 8/1/08
DATE FINISHED 8/1/08
DRILLER BC2
TYPE OF DRILL RIG Hollow Stem

PROJECT NAME Calimesa TSG
GROUND ELEV.(FT)
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. HS-3
LOGGED BY BW
NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	Other Tests
						Alluvium: (Qal) Silty Sand, brown, dry to slightly moist, loose, occasional rootlets, fine to medium-grained.				
5		R	2/5/5			Silty Sand, brown, slightly moist, loose, occasional rootlets, fine to medium-grained.				
		B								
10		SPT	4/7/10			Gravelly Sand, brown to grayish brown, moist, medium-dense, frequent pebble and cobble size clasts. Quartzite cobble fragment in SPT sampler tip- Resulting in probable erroneous blow count.	4.5			
15		R	4/8/12			Gravelly Sand, tan to brown, moist, moderately dense, occasional pebble size clasts	3.8			
						Frequent pebbles and cobbles in spoils 15-20 feet.				
20		SPT	2/3/4			Silty Sand and lesser Gravelly Sand, brown, moist, occasional pebble size clasts.	9.1			
25		R	50/12/15			Silty Sand and lesser Gravelly Sand, brown to yellowish brown, moist, dense, frequent pebble size clasts.	5.2			
30		SPT	8/8/9			Gravelly Sand, brown, moist, dense, frequent pebble size clasts.	3.2			
35		R	6/7/9			Gravelly Sand, brown, moist, dense, frequent pebble and lesser cobble size clasts. **Cobble in sampler tip; sample disturbed.	8.7			

SAMPLE TYPES:
R RING (DRIVE) SAMPLE
S SPT (SPLIT SPOON) SAMPLE
B BULK SAMPLE T TUBE SAMPLE

Water Seepage
Groundwater
DS - Direct Shear
GS - Grain Size Analysis
EI - Expansion Index
CONS - Consolidation

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PLATE A-5

CVAR_09716

GEOTECHNICAL BORING LOG

SHEET 2 OF 2

PROJECT NO. 665-000-01
DATE STARTED 8/1/08
DATE FINISHED 8/1/08
DRILLER BC2
TYPE OF DRILL RIG Hollow Stem

PROJECT NAME Calimesa TSG
GROUND ELEV.(FT)
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. HS-4
LOGGED BY BW/AD
NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	Other Tests
		SPT	2/3/3			Silty Sand with occasional Gravelly Sand, brown to reddish brown, moist, loose, fine-grained.	10.1			
45										
50						Silty Sand, brown to reddish brown, moist, dense, fine to medium-grained.	6.6			
55		B								
60		SPT	Ref.			SPT: Refusal on Cobble/Boulder Total Depth 60 Feet Refusal on boulder. No Water.				

SAMPLE TYPES:
R RING (DRIVE) SAMPLE
S SPT (SPLIT SPOON) SAMPLE
B BULK SAMPLE T TUBE SAMPLE

Water Seepage
Groundwater
DS - Direct Shear
GS - Grain Size Analysis
EI - Expansion Index
CONS - Consolidation

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PLATE A-8

GEOTECHNICAL BORING LOG

SHEET 1 OF 2

PROJECT NO. 665-000-01
DATE STARTED 8/1/08
DATE FINISHED 8/1/08
DRILLER BC2
TYPE OF DRILL RIG Hollow Stem

PROJECT NAME Calimesa TSG
GROUND ELEV.(FT)
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. HS-4
LOGGED BY BW/AD
NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	Other Tests
						Qal: (Alluvium) Silty Sand, brown, slightly moist, loose, fine-grained.				
5		R	3/4/6			Gravelly Sand with lesser Silty Sand, grayish brown to light brown/buff, slightly moist, occasional pebble size clasts.	2.3			
10		SPT	2/2/2			Silty Sand, brown, slightly moist, loose.	6.1			
		B				Silty Sand, brown to reddish brown, moist, loose.				
15		R	3/4/6			**Qoa: (Older Alluvium)** Silty Sand, reddish brown, moist, medium-dense, friable.	6.2	108.4	31	
20		SPT	2/2/3			Silty Sand, brown to reddish brown, moist, loose, fine-grained.	8.3			
25		R	3/6/7			Silty Sand, brown to reddish brown, moist, loose, fine-grained.	6.3	111.8	35	
30		SPT	2/3/3			Silty Sand, brown to reddish brown, moist, loose, fine-grained.	8.3			
35		R	5/6/8			Silty Sand, brown to reddish brown, moist, loose, fine-grained.	8.3	110.5	44	

SAMPLE TYPES:
R RING (DRIVE) SAMPLE
S SPT (SPLIT SPOON) SAMPLE
B BULK SAMPLE T TUBE SAMPLE

Water Seepage
Groundwater
DS - Direct Shear
GS - Grain Size Analysis
EI - Expansion Index
CONS - Consolidation

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PLATE A-7

CVAR_09717

KEY TO LOGS

LEGEND OF LAB/FIELD TESTS:

Bulk	Indicates Disturbed or Bulk Sample
Consol.	Consolidation Test (ASTM D 2435)
Cor.	Corrosivity Test
Dist.	Indicates Disturbed Sample
DS	Direct Shear Test (ASTM D 3080)
MDC	Maximum Density Optimum Moisture Determination (ASTM D 1557)
N.R.	Indicates No Recovery of Sample
Ring	Indicates Undisturbed Ring Sample. Undisturbed Ring Samples are obtained with a "California Sampler" (3.25" O.D. and 2.42" I.D.) driven with a 140-pound weight falling 30 inches. The blows per foot are converted to equivalent SPT values.
SA	Sieve Analysis (ASTM C 136)
SE	Sand Equivalent Test (ASTM D 2419)
SPT	Indicates Standard Penetration Test. The SPT N-value is the number of blows required to drive an SPT sampler 12 inches using a 140-pound weight falling 30 inches. The SPT sampler is 2" O.D. and 1 3/8" I.D.

ENGINEERING PROPERTIES FROM SPT BLOWS

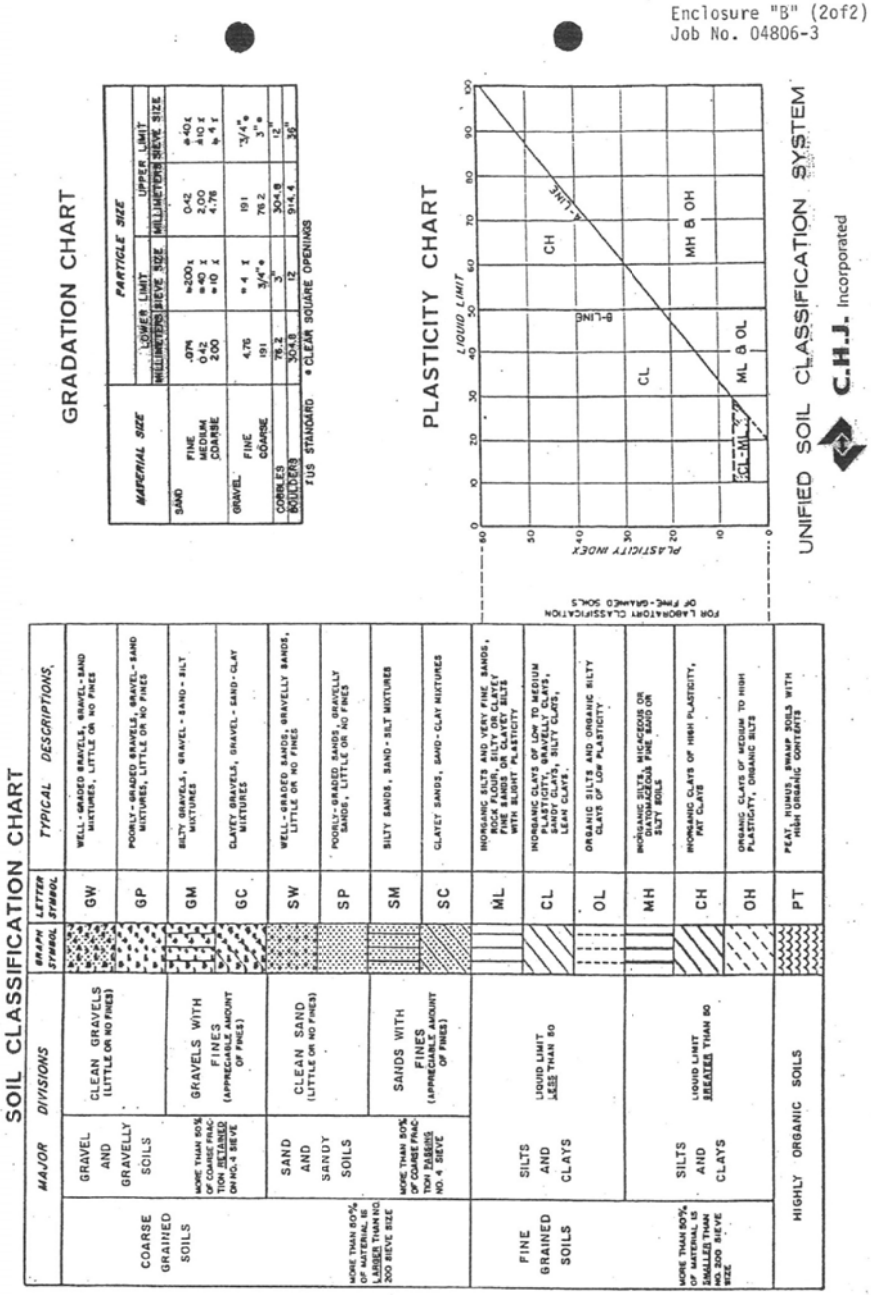
Relationship of Penetration Resistance to Relative Density for Cohesionless Soils*
(After Mitchell and Katti, 1981)

Number of SPT Blows (N_{60})	Descriptive Relative Density	Approximate Relative Density (%)
<4	Very Loose	0-15
4-10	Loose	15-35
10-30	Medium Dense	35-65
30-50	Dense	65-85
>50	Very Dense	85-100

* At an effective overburden pressure of 1 ton per square foot (100 kPa)

Approximate Values of Undrained Shear Strength for Cohesive Soils
(Terzaghi and Peck, 1967)

Number of SPT Blows (N_{60})	Soil Consistency	Approximate Undrained Shear Strength (psf)
<2	Very Soft	Less Than 250
2-4	Soft	250-500
4-8	Medium Stiff	500-1000
8-15	Stiff	1000-2000
15-30	Very Stiff	2000-4000
>30	Hard	More Than 4000



CVAR_09718

EXPLORATORY BORING NO. 2

Date Drilled: 8/11/04 Client: TSG Cherry Valley, LP

Equipment: CME 55 Drill Rig Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A Logged by: J.R. Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0	(SM) Silty Sand, fine with medium, coarse, and gravel to 2", brown	Qs				3.4		
5					6	5.6		SPT
10					10	4.9		SPT
15	(SP-SM) Sand, fine to coarse with silt and gravel to 1/2", brown	Qya			14	3.9		SPT
20	(SM) Silty Sand, fine with medium, coarse, and gravel to 1", brown					2.3		
25					14	4.8		SPT
30	(SM) Silty Sand, fine to medium with coarse and gravel to 1 1/2", brown	Qoa			13	6.4		SPT
35	(SM) Silty Sand, fine to coarse, brown				25	4.3		SPT
40	(SM) Silty Sand, fine to coarse, brown				25	4.6		SPT
45	(SM) Silty Sand, fine with medium, coarse, and gravel to 2", brown				47	3.1		SPT
50					25	4.8		SPT
55					71	3.2		SPT
60	END OF BORING				62	3.0		SPT
65	NO BEDROCK, NO REFUSAL, NO FILL SLIGHT CAVING, NO GROUNDWATER							
70								

BORING LOG 75_FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 Enclosure B-2

EXPLORATORY BORING NO. 1

Date Drilled: 8/11/04 Client: TSG Cherry Valley, LP

Equipment: CME 55 Drill Rig Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A Logged by: J.R. Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0	(SM) Silty Sand, fine to medium, brown	Qs				4.1		SA, MDC, Cor. Ring
5					11	4.3	118	
10					8	9.4	100	Ring, Consol, DS
15					11	4.5	112	Ring
20	(SP) Sand, fine to medium with coarse and gravel to 1", brown	Qya			8	6.6	113	Ring
25						4.1		
30	(SM) Silty Sand, fine with gravel to 1/2", brown	Qoa			13	2.3	106	Ring
35					26	2.9 7.1	114	Ring
40	(SP) Sand, fine to medium with coarse, brown				30	4.7 2.9	118	Ring
45	(SP) Sand, fine to medium with coarse, brown				21	2.9	114	Ring
50	(SM) Silty Sand, fine with medium, coarse, and gravel to 1/2", brown				18	5.0 5.6	116	Ring
55					33	4.1	115	Ring
60	(SP) Sand, fine to medium with coarse and gravel to 3/8", olive brown				34	6.1 2.5	125	Ring
65	END OF BORING NO BEDROCK, NO REFUSAL, NO FILL SLIGHT CAVING, NO GROUNDWATER							
70								

BORING LOG 75_FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 Enclosure B-1

CVAR_09719

EXPLORATORY BORING NO. 4

Date Drilled: 8/11/04 | Client: TSG Cherry Valley, LP

Equipment: CME 55 Drill Rig | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0	(SM) Silty Sand, fine with medium and coarse, yellow brown	Qoa			18	2.0 5.6	122	Ring
5	(SM) Silty Sand, fine, yellow brown				16	3.7 8.9	120	Ring
10	(SM) Silty Sand, fine with medium, coarse, and gravel to 1", yellow brown				31	3.4 6.7	115	Ring
	(SM) Silty Sand, fine, yellow brown					4.1		
15	(SM) Silty Sand, fine with medium, coarse, and gravel to 1", yellow brown				29	5.3	122	Ring
20	(SM) Silty Sand, fine, yellow brown				22	6.8 9.6	117	Ring
25	(SM) Silty Sand, fine with medium, coarse, and gravel to 1/2", yellow brown				30/3"	4.8 4.0	117	Ring
	(SM) Silty Sand, fine to medium with coarse and gravel to 1", yellow brown					2.7 3.4		
30	(SM) Silty Sand, fine with medium and coarse, yellow brown				30/6"	3.2	112	Ring
	(SP) Sand, fine with medium, yellow brown							
35	END OF BORING							
40	NO BEDROCK, NO REFUSAL, NO FILL SLIGHT CAVING, NO GROUNDWATER							
45								
50								
55								
60								
65								
70								

BORING_LOG_75_FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-4

EXPLORATORY BORING NO. 3

Date Drilled: 8/11/04 | Client: TSG Cherry Valley, LP

Equipment: CME 55 Drill Rig | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0	(SM) Silty Sand, fine with medium, coarse, and gravel to 3", brown	Qs			8	3.7 4.3	110	Ring
5					16	3.8	122	Ring
10					15	3.9	112	Ring
15	(SM) Silty Sand, fine with medium, coarse, and gravel to 3", brown	Qya			26	2.9	108	Ring
20					20	3.0 5.0	114	Ring
25	(SM) Silty Sand, fine, brown	Qoa			23	3.8	119	Ring
30					14	5.4	116	Ring
35	(SM) Silty Sand, fine, brown				21	6.6	119	Ring
40	(SM) Silty Sand, fine to medium with coarse and gravel to 2", yellow brown				28	4.1 1.6	108	Ring
45	(SM) Silty Sand, fine with medium, coarse, and gravel to 1/2", yellow brown				12	3.9 7.6 12.4	107	Ring
	(SM) Silty Sand, fine to medium, yellow brown							
50	(SM) Silty Sand, fine to medium with coarse and gravel					3.2		
55	END OF BORING							
60	NO BEDROCK, NO REFUSAL, NO FILL SLIGHT CAVING, NO GROUNDWATER							
65								
70								

BORING_LOG_75_FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-3

CVAR_09720

EXPLORATORY BORING NO. 6

Date Drilled: 8/12/04 | Client: TSG Cherry Valley, LP

Equipment: CME 55 Drill Rig | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
	(SM) Silty Sand, fine with medium	Qs				3.3		SA
					11	3.5		SPT
5					7	4.6		SPT
	(SM) Silty Sand, fine to medium, brown	Qya				3.2		
10					14	3.7		SPT
15	(SM) Silty Sand, fine, brown				10	5.7		SPT
20					10	5.3		SPT
25	(SM) Silty Sand, fine to medium with coarse, brown	Qoa			20	3.8		SPT
30					21	5.3		SPT
35	(SM) Silty Sand, fine to medium with coarse, brown				21	5.0		SPT
	(SM) Silty Sand, fine with medium, yellow brown							
40					21	6.4		SPT
45	(SM) Silty Sand, fine to medium with coarse, yellow brown				21	8.2		SPT
						3.8		
50	(SM) Silty Sand, fine, yellow brown					10.6		
	(SM) Silty Sand, fine to medium with coarse, light brown				84	2.7		SPT
	END OF BORING							
55	NO BEDROCK, NO REFUSAL, NO FILL							
60	SLIGHT CAVING, NO GROUNDWATER							
65								
70								

BORING LOG 75 FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-6

EXPLORATORY BORING NO. 5

Date Drilled: 8/12/04 | Client: TSG Cherry Valley, LP

Equipment: CME 55 Drill Rig | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
	(SM) Silty Sand, fine with medium, coarse, and gravel to 2", brown	Qoa				5.8		
					23	6.2	114	Ring
5					39	7.0	126	Ring
10					16	3.9	111	Ring
15					38	6.2	121	Ring
20					32	2.8	104	Ring
						3.7		
25	(SM) Silty Sand, fine to medium with coarse, yellow brown				50	3.2	105	Ring
						5.6		
30	(SM) Silty Sand, fine with medium, coarse, and gravel to 2", red brown				30/6"	6.7	110	Ring
	END OF BORING							
35	NO BEDROCK, NO REFUSAL, NO FILL							
	SLIGHT CAVING, NO GROUNDWATER							
40								
45								
50								
55								
60								
65								
70								

BORING LOG 75 FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-5

CVAR_09721

EXPLORATORY BORING NO. 8

Date Drilled: 8/12/04
Client: TSG Cherry Valley, LP
Equipment: CME 55 Drill Rig
Driving Weight / Drop: 140 lbs/30 in
Surface Elevation(ft): N/A
Logged by: J.R.
Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0	(SM) Silty Sand, fine with medium and gravel to 1 1/2", brown	Qya				3.1		
					6	3.9	114	Ring
5					12	3.6	113	Ring
10					8	6.6	110	Ring, DS
	(SM) Silty Sand, fine to medium with coarse and gravel to 1/2", olive brown					2.2		
15					15	2.7	116	Ring
	(SM) Silty Sand, fine with medium, brown					5.8		
20					10	7.4	126	Ring
	(SM) Silty Sand, fine to medium with coarse and gravel to 2", brown	Qoa				4.5		
25					30/6"	5.2	119	Ring
30					30/6"	3.8	115	Ring
	END OF BORING							
35	NO BEDROCK, NO REFUSAL, NO FILL SLIGHT CAVING, NO GROUNDWATER							
40								
45								
50								
55								
60								
65								
70								

BORING LOG 75 FT 04806-3.GPJ CHLGDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3
Enclosure B-8

EXPLORATORY BORING NO. 7

Date Drilled: 8/12/04
Client: TSG Cherry Valley, LP
Equipment: CME 55 Drill Rig
Driving Weight / Drop: 140 lbs/30 in
Surface Elevation(ft): N/A
Logged by: J.R.
Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0	(SM) Silty Sand, fine to medium, brown	Qya				2.6		SA, MDC, Cor.
					11	3.9	117	Ring
5					7	4.3	103	Ring
10	(SM) Silty Sand, fine to medium with coarse and gravel to 2", brown					1.7		
					16	3.3	120	Ring
15	(SM) Silty Sand, fine with medium, brown					4.9		
					11	5.0	117	Ring
20	(SM) Silty Sand, fine, brown					7.5		
					7	9.6	118	Ring
25					11	7.1	119	Ring
30	(SM) Silty Sand, fine, brown	Qoa			30/4.5"	7.3	117	Ring
	END OF BORING							
35	NO BEDROCK, NO REFUSAL, NO FILL SLIGHT CAVING, NO GROUNDWATER							
40								
45								
50								
55								
60								
65								
70								

BORING LOG 75 FT 04806-3.GPJ CHLGDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3
Enclosure B-7

CVAR_09722

EXPLORATORY BORING NO. 10

Date Drilled: 8/12/04 | Client: TSG Cherry Valley, LP

Equipment: CME 55 Drill Rig | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine to medium with coarse and gravel to 3", light brown	QTst			26	3.1 3.4	121	Ring
5						28	6.6	115	Ring
10						26	4.4	122	Ring
15						54/10"	5.4	120	Ring
20		END OF BORING SAN TIMOTEO AT SURFACE NO BEDROCK, REFUSAL AT 20.5', NO FILL SLIGHT CAVING, NO GROUNDWATER				30/5"	N.R.	N.R.	Ring
25									
30									
35									
40									
45									
50									
55									
60									
65									
70									

BORING LOG .75 FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-10

EXPLORATORY BORING NO. 9

Date Drilled: 8/12/04 | Client: TSG Cherry Valley, LP

Equipment: CME 55 Drill Rig | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine with medium, brown	Qya			10	3.9 5.5	113	Ring, Consol.
5						10	4.2	113	Ring
10						10	4.4	103	Ring
15						12	5.4	121	Ring
20		(SM) Silty Sand, fine to medium with coarse and gravel to 2 1/2", light brown	Qoa			30/5"	5.8 5.9	117	Ring
25						30/6"	6.7	115	Ring
30						30/5"	N.R.	N.R.	Ring
35		END OF BORING NO BEDROCK, NO REFUSAL, NO FILL SLIGHT CAVING, NO GROUNDWATER							
40									
45									
50									
55									
60									
65									
70									

BORING LOG .75 FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-9

CVAR_09723

EXPLORATORY BORING NO. 12

Date Drilled: 8/12/04 | Client: TSG Cherry Valley, LP

Equipment: CME 55 Drill Rig | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0	(SM) Silty Sand, fine with medium, yellow brown	Qoa				4.4		
					30	4.0	120	Ring
5	(SP-SM) Sand, fine to medium with coarse and gravel to 2", brown				26	3.8	119	Ring
						7.2		
10					35	3.2	119	Ring
15					30/6"	3.1	124	Ring
	(SM) Silty Sand, fine with medium, brown					5.5		
20					22	6.5	125	Ring
25					46/11"	4.8	127	Ring
	(SM) Silty Sand, fine to medium with coarse and gravel to 2 1/2", olive brown					3.1		
30	(SM) Silty Sand, fine, brown				34	5.9	133	Ring
	(SM) Silty Sand, fine with medium and gravel to 1", brown					5.2		
35	END OF BORING NO BEDROCK, REFUSAL AT 20.5', NO FILL SLIGHT CAVING, NO GROUNDWATER							
40								
45								
50								
55								
60								
65								
70								

BORING LOG 75 FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-12

EXPLORATORY BORING NO. 11

Date Drilled: 8/12/04 | Client: TSG Cherry Valley, LP

Equipment: CME 55 Drill Rig | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0	(SM) Silty Sand, fine to medium, yellow brown	Qoa				4.6		
					19	6.5	121	Ring
5					19	8.7	110	Ring
10					17	9.1	116	Ring
15					23	8.6	121	Ring
	(SM) Silty Sand, fine to medium with coarse and gravel to 1/2", brown					3.5		
20					34	5.0	123	Ring
	(SM) Silty Sand, fine to medium, red brown					10.1		
25					23	11.0	127	Ring
	(SM) Silty Sand, fine sand, yellow brown					6.9		
30	END OF BORING				50/11"	7.8	127	Ring
35	NO BEDROCK, REFUSAL AT 20.5', NO FILL SLIGHT CAVING, NO GROUNDWATER							
40								
45								
50								
55								
60								
65								
70								

BORING LOG 75 FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-11

CVAR_09724

EXPLORATORY BORING NO. 14

Date Drilled: 7/6/05 | Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0	(SM) Silty Sand, fine to medium with coarse and gravel to 3", light olive brown	Qya				2.8		
5					14	N.R.	N.R.	Ring
10					13	5.1	112	Ring
15	(SM) Silty Sand, fine to medium with coarse, olive brown	Qoa			25	2.9	115	Ring
20					24	4.9 6.2 10.5	111	Ring
25	(SM) Silty Sand, fine to medium, olive brown END OF BORING NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER				16	8.9	110	Ring
30								
35								
40								
45								
50								
55								
60								
65								
70								

BORING LOG 75 FT 04806-3.GPJ CHJ.GDT 8/1/205

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-14

EXPLORATORY BORING NO. 13

Date Drilled: 7/6/05 | Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0	(SM) Silty Sand, fine to medium, olive brown	Qya			5	7.6 6.9	114	MDC, SA, SE Ring
5					7	8.5	113	Ring, Consol
10					9	10.6	114	Ring, DS
15					10	10.3	115	Ring
20					8	10.3	118	Ring
25					11	7.6	110	Ring
30					12	9.4	120	Ring
35					11	10.6	118	Ring
40					16	8.4	120	Ring
45	(SM) Silty Sand, fine to medium with coarse and gravel to 1 1/2", red brown	Qoa			21	7.3 6.3	117	Ring
50	(SM) Silty Sand, fine to medium, yellow brown				23	11.8	121	Ring
55	(SM) Silty Sand, fine to medium with coarse, gravel to 3/4", and clay, red brown				45/5"	8.7 5.3	113	Ring
60	END OF BORING NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER				76/9"	9.6	121	Ring
65								
70								

BORING LOG 75 FT 04806-3.GPJ CHJ.GDT 8/1/205

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-13

CVAR_09725

EXPLORATORY BORING NO. B-16

Date Drilled: 7/6/05 | Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
							2.8		
0		(SM) Silty Sand, fine to medium with coarse and gravel to 1 1/2", olive brown	Qs	X		14	3.0	113	Ring
5				X		26	3.8	117	Ring
10		(SM) Silty Sand, fine to medium, olive brown					8.6		
				X		9	9.8	107	Ring
15		(SM) Silty Sand, fine to medium with coarse and gravel to 1", olive brown	Qya				4.4		
20				X		29	3.8	121	Ring
				X		28	5.3	111	Ring
25		END OF BORING							
		NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
30									
35									
40									
45									
50									
55									
60									
65									
70									

BORING LOG 75 FT 04806-3.GPJ CHJ.GDT 6/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-16

EXPLORATORY BORING NO. B-15

Date Drilled: 7/6/05 | Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine to medium with coarse and gravel to 1 1/2", light olive brown	Qs	X		14	10.3 2.8		SPT
5		(SM) Silty Sand, fine to medium, olive brown		X		3	9.5		SPT
10				X		8	8.6		SPT
15		(SM) Silty Sand, fine to medium with coarse and gravel to 3/4", olive brown	Qya	X		17	3.8		SPT
20				X		11	7.1		SPT
25				X		14	9.6		SPT
30		(SM) Silty Sand, fine to medium with coarse and gravel to 3/4", brown	Qon	X		32	4.0		SPT
35				X		29	4.0		SPT
40				X		46	2.8		SPT
45				X		78	2.7		SPT
50				X		32	2.7		SPT
55		END OF BORING							
		NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
60									
65									
70									

BORING LOG 75 FT 04806-3.GPJ CHJ.GDT 6/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-15

CVAR_09726

EXPLORATORY BORING NO. B-18

Date Drilled: 7/6/05 | Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0	(SM) Silty Sand, fine to medium with coarse and gravel to 2", olive brown	Qya				5.9		
5					6	4.5	106	Ring, DS
10					11	3.9	108	Ring
	(SM) Silty Sand, fine to medium, olive brown					8.0		
15					13	7.7	115	Ring
	(SM) Silty Sand, fine to medium with coarse and gravel to 1/2", olive brown	Qoa				3.8		
20					37	4.0	120	Ring
25	END OF BORING				27	7.0	123	Ring
	NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
30								
35								
40								
45								
50								
55								
60								
65								
70								

BORING_LOG_75_FT_04806-3.GPJ CHJ.GDT 8/1/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-18

EXPLORATORY BORING NO. B-17

Date Drilled: 7/6/05 | Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0	(SM) Silty Sand, fine to coarse with gravel to 1", olive brown	Qya			13	2.7 3.5	109	MDC, SA, SE Ring
5					8	8.2	107	Ring, Consol
10					16	10.4	116	Ring
15					9	11.0	113	Ring
20					12	10.1	113	Ring
25	(SM) Silty Sand, fine to medium with coarse and gravel to 1", brown	Qoa			26	7.3	104	Ring
30	END OF BORING				25	6.6	107	Ring
	NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
35								
40								
45								
50								
55								
60								
65								
70								

BORING_LOG_75_FT_04806-3.GPJ CHJ.GDT 8/1/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-17

CVAR_09727

EXPLORATORY BORING NO. 20

Date Drilled: 7/8/05 | Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SM) Silty Sand, fine to medium with coarse, olive brown	Qs				3.9		
5				X		7	4.2	115	Ring
10				X		8	8.4	117	Ring
15				X		9	10.5	124	Ring
		(SP-SM) Sand, fine to medium with coarse, gravel to 1", olive brown					3.5		
20				X		21	4.8	117	Ring
		(SM) Silty Sand, fine to medium with coarse, gravel to 1", and clay, red brown	Qya				4.5		
25				X		11	3.3	121	Ring
		END OF BORING							
		NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							

BORING LOG 75 FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-20

EXPLORATORY BORING NO. 19

Date Drilled: 7/6/05 | Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SM) Silty Sand, fine to medium with coarse and gravel to 1", olive brown	Qya				3.4		
5				X		12	2.5	116	Ring
10				X		12	4.9	117	Ring
		(SM) Silty Sand, fine to medium with coarse and gravel to 1", brown	Qoa	X		18	5.8	115	Ring
15				X		19	5.0	115	Ring
20				X		26	4.3	118	Ring
25				X		42	3.2	122	Ring
30				X		37	4.7	118	Ring
		END OF BORING							
		NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							

BORING LOG 75 FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-19

CVAR_09728

EXPLORATORY BORING NO. B-22

Date Drilled: 7/8/05 Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A Logged by: J.R. Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine to medium, olive brown	Qya				6.7		MDC, SA, SE
5						5	9.1	109	Ring
10						2	15.6	97	Ring, Consol
15						9	7.5	110	Ring
20		(SM) Silty Sand, fine to coarse with gravel to 1 1/2", olive gray	Qoa			8	9.1	113	Ring
							3.4		
25		END OF BORING				26	3.2	123	Ring
30		NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							

BORING_LOG_75_FT_04806-3.GPJ_CHJ.GDT 8/1/205

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 Enclosure B-22

EXPLORATORY BORING NO. B-21

Date Drilled: 7/8/05 Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A Logged by: J.R. Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SP-SM) Sand, fine to medium with silt, olive brown	Qs				3.5		
		(SM) Silty Sand, fine to medium, olive brown				12	5.8	112	Ring
5							10.5		
						5	9.7	107	Ring
10						11	10.8	118	Ring
		(SM) Silty Sand, fine to medium with coarse and gravel to 1/2", olive brown					3.4		
15						12	4.2	125	Ring
20						21	7.0	117	Ring
		(SP) Sand, fine to medium with coarse and gravel to 1", light olive brown	Qya				3.0		
25		END OF BORING				19	9.2	119	Ring
30		NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							

BORING_LOG_75_FT_04806-3.GPJ_CHJ.GDT 8/1/205

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 Enclosure B-21

CVAR_09729

EXPLORATORY BORING NO. B-24

Date Drilled: 7/8/05 Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A Logged by: J.R. Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SM) Silty Sand, fine to medium with coarse and gravel to 1 1/2", olive brown	Qya				5.7		
5				X		5	5.0	115	Ring
10				X		10	7.9	117	Ring
		(SM) Silty Sand, fine to medium with clay, red brown	Qoa				8.0		
15				X		8	11.0	122	Ring
20				X		37	9.0	132	Ring
		END OF BORING		X		30/6"	N.R.	N.R.	Ring
25		NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
30									
35									
40									
45									
50									
55									
60									
65									
70									

BORING LOG 75 FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 Enclosure B-24

EXPLORATORY BORING NO. B-23

Date Drilled: 7/8/05 Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A Logged by: J.R. Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
		(SM) Silty Sand, fine to medium, yellow brown	Qoa				5.1		
5				X		32	5.0	114	Ring
				X		30/4"	9.2	119	Ring
10									
				X		34	7.8	115	Ring
15		END OF BORING	Refusal due to cobbles						
20		PRACTICAL REFUSAL AT 12.5' NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
25									
30									
35									
40									
45									
50									
55									
60									
65									
70									

BORING LOG 75 FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 Enclosure B-23

CVAR_09730

EXPLORATORY BORING NO. B-26

Date Drilled: 7/8/05 | Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
	(SM) Silty Sand, fine to medium with coarse and gravel to 1", olive brown	Qya				3.9		
5	(SP-SM) Sand, fine to medium with coarse and gravel to 2", olive gray				12	3.3 5.4	118	Ring
10					14	3.0	123	Ring
15					23	3.6	122	Ring
	(SM) Silty Sand, fine to medium with coarse and gravel to 3", olive brown	Qoa				4.2		
20					19	6.7	116	Ring
25					32	4.4	115	Ring
30					30/6"	3.4	126	Ring
					29	7.0	112	Ring
35	(SM) Silty Sand, fine to medium with coarse and gravel to 1/2", olive brown					8.6		
40					16	9.7	121	Ring
45					34	4.7	116	Ring
					27	11.5	121	Ring
50	END OF BORING							
	NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
55								
60								
65								
70								

BORING_LOG_75_FT_04806-3.GPJ_CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-26

EXPLORATORY BORING NO. B-25

Date Drilled: 7/8/05 | Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
	(SM) Silty Sand, fine to coarse with gravel to 2", olive brown	Qs				4.8		SA, SE
5					6	6.0	116	Ring, DS
10					5	9.2	120	Ring, Consol
15					9	6.0	114	Ring
20					5	8.5	119	Ring
25	(SP-SM) Sand, fine to medium with coarse, gravel to 3/4", and silt, light olive brown	Qoa			8	10.0	116	Ring
						2.8		
30	(SM) Silty Sand, fine to medium with coarse, olive brown				23	3.5	114	Ring
	(SP-SM) Sand, fine to medium with coarse, gravel to 3", and silt, olive brown					8.8		
35					29	6.7 4.1	123	Ring
40	(SM) Silty Sand, fine to medium with coarse and gravel, olive brown				33	3.7	118	Ring
45						6.6		
					24	10.3	123	Ring
50	(SM) Silty Sand, fine to medium, olive brown				30/5"	4.2	127	Ring
	END OF BORING					9.3		
55	NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER				30	9.5	117	Ring
60								
65								
70								

BORING_LOG_75_FT_04806-3.GPJ_CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-25

CVAR_09731

EXPLORATORY BORING NO. B-28

Date Drilled: 7/15/05 | Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine to medium, dark olive brown	Qs				7.7		
5						3	12.0	109	Ring
10						4	9.3	113	Ring
15						7	10.3	115	Ring
		(SP-SM) Sand, fine to medium with coarse, gravel to 1/2", olive brown	Qya				4.8		
20						16	4.4	114	Ring
		(SM) Silty Sand, fine to medium, olive brown					8.8		
25						6	9.2	112	Ring
30		END OF BORING				1	11.3	119	Ring
		NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							

BORING LOG 75 FT 04806-3.GPJ CHJ.GDT 8/1/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-28

EXPLORATORY BORING NO. B-27

Date Drilled: 7/8/05 | Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine to medium with coarse and gravel to 1", olive brown	Qs				2.6		
5						17	2.8	116	Ring
		(SP-SM) Sand, fine to medium with coarse, gravel to 2 1/2", and silt, olive brown	Qoa				2.9		
10						17	2.0	129	Ring
15						18	3.0	120	Ring
20						32	4.3	127	Ring
25						27	3.4	116	Ring
30		END OF BORING				30	4.0	118	Ring
		NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							

BORING LOG 75 FT 04806-3.GPJ CHJ.GDT 8/1/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-27

CVAR_09732

EXPLORATORY BORING NO. B-30

Date Drilled: 7/15/05 Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A Logged by: J.R. Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine to medium with coarse, dark red brown	Qya				5.3		SA, SE
5						2	5.6	112	Ring, Consol
10						5	9.2	119	Ring, DS
15						7	6.0	118	Ring
20						12	5.6	120	Ring
25		END OF BORING				14	6.6	125	Ring
30		NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
35									
40									
45									
50									
55									
60									
65									
70									

BORING_LOG_75_FT_04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 Enclosure B-30

EXPLORATORY BORING NO. B-29

Date Drilled: 7/15/05 Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A Logged by: J.R. Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine to medium with coarse and gravel to 1/2", light olive brown	Qya				1.9		
5						11	2.9	116	Ring
10		(SP-SM) Sand, fine to medium with coarse, olive gray				2	7.1	112	Ring
15		(SM) Silty Sand, fine to coarse with gravel to 3", olive brown	Qoa			10	3.9 4.4	109	Ring
20		(SM) Silty Sand, fine to medium with coarse and gravel to 2", red brown				20	4.1	120	Ring
25		(SM) Silty Sand, fine to medium with coarse and clay, yellow brown				5	11.2 11.6	122	Ring
30		(SM) Silty Sand, fine to medium with coarse and gravel to 1", yellow brown				11	11.5 12.0	125	Ring
35		END OF BORING				35	6.5 7.0	121	Ring
40		NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
45									
50									
55									
60									
65									
70									

BORING_LOG_75_FT_04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 Enclosure B-29

CVAR_09733

EXPLORATORY BORING NO. B-32

Date Drilled: 7/15/05
Client: TSG Cherry Valley, LP
Equipment: Mobile Drill Rig B-61
Driving Weight / Drop: 140 lbs/30 in
Surface Elevation(ft): N/A
Logged by: J.R.
Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0	(SM) Silty Sand, fine to medium, light olive brown	Qya				2.9		
5					3	4.5	104	Ring
	(SP-SM) Sand, fine to medium with coarse and gravel to 2", olive gray					3.5		
10					7	3.2	110	Ring
15	(SP) Sand, fine to coarse with gravel to 1", olive gray				11	4.1 2.1	112	Ring
	(SM) Silty Sand, fine to medium with coarse and gravel to 1", olive brown					8.2		
20					8	8.8	114	Ring
	(SP) Sand, fine to coarse with gravel to 3/8" and silt, olive gray	Qoa				3.7		
25					17	5.5	111	Ring
	(SM) Silty Sand, fine to medium with coarse and gravel to 2 1/2", olive gray					4.0		
30	END OF BORING				27	3.3	126	Ring
	NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
35								
40								
45								
50								
55								
60								
65								
70								

BORING_LOG_75_FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3
Enclosure B-32

EXPLORATORY BORING NO. B-31

Date Drilled: 7/15/05
Client: TSG Cherry Valley, LP
Equipment: Mobile Drill Rig B-61
Driving Weight / Drop: 140 lbs/30 in
Surface Elevation(ft): N/A
Logged by: J.R.
Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0	(SM) Silty Sand, fine to medium with coarse and gravel, olive brown	Qya				5.1		
5					4	5.7		SPT
					5	9.1		SPT
10	(SP-SM) Sand, fine to medium with coarse, silt, and gravel to 3/4", olive gray	Qoa			7	5.2		SPT
15					19	3.4		SPT
20					32	4.3		SPT
25	(SM) Silty Sand, fine to medium with coarse and gravel to 2", olive brown				25	5.3		SPT
30	(SP) Sand, fine to medium with coarse and silt, olive gray				26	3.4		SPT
35	(SM) Silty Sand, fine to medium with coarse and gravel to 2", olive gray				35	4.3		SPT
40	(SM) Silty Sand, fine to medium with coarse and gravel to 3/4", olive brown				24	7.1		SPT
45	(SM) Silty Sand, fine to medium, olive brown				26	7.2		SPT
50	END OF BORING				29	7.4		SPT
55	NO REFUSAL NO BEDROCK FILL TO 9.0' SLIGHT CAVING NO FREE GROUNDWATER							
60								
65								
70								

BORING_LOG_75_FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3
Enclosure B-31

CVAR_09734

EXPLORATORY BORING NO. B-34

Date Drilled: 7/15/05 | Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
	(SM) Silty Sand, fine to medium with coarse, red brown	Qya				4.9		SA, SE
5			X		3	6.2	111	Ring, DS
10			X		3	9.3	113	Ring, Consol
15			X		5	8.7	118	Ring
20			X		8	7.6	119	Ring
25			X		7	9.0	121	Ring
	END OF BORING							
	NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							

BORING LOG 75 FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-34

EXPLORATORY BORING NO. B-33

Date Drilled: 7/15/05 | Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
	(SM) Silty Sand, fine to medium with coarse and gravel to 1", brown	Qya				4.7		
5			X		6	5.0	108	Ring
10			X		4	4.8	112	Ring
15	(SP-SM) Sand, fine to medium with coarse and gravel to 1", olive gray	Qoa	X		7	8.1	107	Ring
20			X		15	4.2	117	Ring
25			X		15	4.6	117	Ring
	END OF BORING							
	NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							

BORING LOG 75 FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3 | Enclosure B-33

CVAR_09735

GREGG DRILLING AND TESTING, INC.
GREGG IN SITU, INC.
ENVIRONMENTAL AND GEOTECHNICAL INVESTIGATION SERVICES

July 5, 2005

CHJ
Attn: Terrance Davis
1355 E. Cooley Dr.
Colton, California 92324

Subject: CPT Site Investigation
Cherry Valley Blvd & Roberts Ave
Cherry Valley, California
GREGG Project Number: 05-173SH

Dear Mr. Davis:

The following report presents the results of GREGG IN SITU's Cone Penetration Test investigation for the above referenced site. The following testing services were performed:

1	Cone Penetration Tests	(CPTU)	☒
2	Pore Pressure Dissipation Tests	(PPD)	☐
3	Seismic Cone Penetration Tests	(SCPTU)	☐
4	Resistivity Cone Penetration Tests	(RCPTU)	☐
5	UVIF Cone Penetration Tests	(UVIFCPTU)	☐
6	Groundwater Sampling	(GWS)	☐
7	Soil Sampling	(SS)	☐
8	Vapor Sampling	(VS)	☐
9	Vane Shear Testing	(VST)	☐
10	SPT Energy Calibration	(SPTE)	☐

A list of reference papers providing additional background on the specific tests conducted is provided in the bibliography following the text of the report. If you would like a copy of any of these publications or should you have any questions or comments regarding the contents of this report, please do not hesitate to contact our office at (562) 427-6899.

Sincerely,
GREGG IN SITU, INC.

Brian Savela
Operations Manager

2726 Walnut Ave • Signal Hill, California 90755 • (562) 427-6899 • FAX (562) 427-3314
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EXPLORATORY BORING NO. B-35

Date Drilled: 7/15/05 Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A Logged by: J.R. Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine to medium with coarse, olive brown	Qya	☒		5	3.6 3.3	105	Ring
5		(SM) Silty Sand, fine to medium with coarse and gravel to 1", olive gray		☒		5	4.7 6.2	107	Ring
10				☒		12	4.6	118	Ring
15		(SP-SM) Sand, fine to coarse with gravel to 1/2" and silt, olive gray		☒		13	3.7 9.1	119	Ring
20		(SM) Silty Sand, fine to medium with coarse, olive gray	Qoa	☒		19	4.9 4.6	118	Ring
25		(SP-SM) Sand, fine to coarse with gravel to 2 1/2" and silt, olive gray		☒		26	3.4 3.5	120	Ring
		END OF BORING							
		NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							

BORING LOG 75 FT 04806-3.GPJ CHJ.GDT 9/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3

Enclosure B-35

CVAR_09736

Cone Penetration Test Data & Interpretation

Soil behavior type and stratigraphic interpretation is based on relationships between cone bearing (q_c), sleeve friction (f_s), and pore water pressure (u_2). The friction ratio (R_f) is a calculated parameter defined by $100f_s/q_c$ and is used to infer soil behavior type. Generally:

Cohesive soils (clays)

- High friction ratio (R_f) due to small cone bearing (q_c)
- Generate large excess pore water pressures (u_2)

Cohesionless soils (sands)

- Low friction ratio (R_f) due to large cone bearing (q_c)
- Generate very little excess pore water pressures (u_2)

A complete set of baseline readings are taken prior to and at the completion of each sounding to determine temperature shifts and any zero load offsets. Corrections for temperature shifts and zero load offsets can be extremely important, especially when the recorded loads are relatively small. In sandy soils, however, these corrections are generally negligible.

The cone penetration test data collected from your site is presented in graphical form in Appendix CPT. The data includes CPT logs of measured soil parameters, computer calculations of interpreted soil behavior types (SBT), and additional geotechnical parameters. A summary of locations and depths is available in Table 1. Note that all penetration depths referenced in the data are with respect to the existing ground surface.

Soil interpretation for this project was conducted using recent correlations developed by Robertson et al, 1990, *Figure SBT*. Note that it is not always possible to clearly identify a soil type based solely on q_c, f_s, and u_2. In these situations, experience, judgment, and an assessment of the pore pressure dissipation data should be used to infer the soil behavior type.

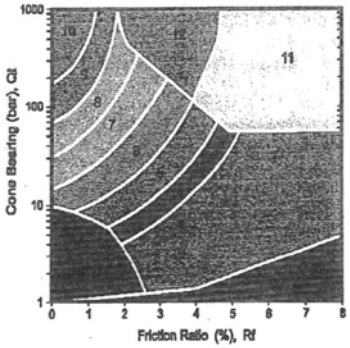

Figure SBT

ZONE	Qt/N	SBT
1	2	Sensitive, fine grained
2	1	Organic materials
3	1	Clay
4	1.5	Silty clay to clay
5	2	Clayey silt to silty clay
6	2.5	Sandy silt to clayey silt
7	3	Silty sand to sandy silt
8	4	Sand to silty sand
9	5	Sand
10	6	Gravely sand to sand
11	1	Very stiff fine grained*
12	2	Sand to clayey sand*

*over consolidated or cemented

GREGG DRILLING AND TESTING, INC.
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ENVIRONMENTAL AND GEOTECHNICAL INVESTIGATION SERVICES

CPT-24	6/30/05	50	-	-	-	-	-	-	-
CPT-25	6/30/05	50	-	-	-	-	-	-	-
CPT-26	6/30/05	32	-	-	-	-	-	-	-
CPT-27	6/30/05	50	-	-	-	-	-	-	-
CPT-28	7/01/05	50	-	-	-	-	-	-	-
CPT-29	7/01/05	43	-	-	-	-	-	-	-
CPT-30	7/01/05	50	-	-	-	-	-	-	-
CPT-31	7/01/05	50	-	-	-	-	-	-	-
CPT-32	7/01/05	50	-	-	-	-	-	-	-
CPT-33	7/01/05	50	-	-	-	-	-	-	-

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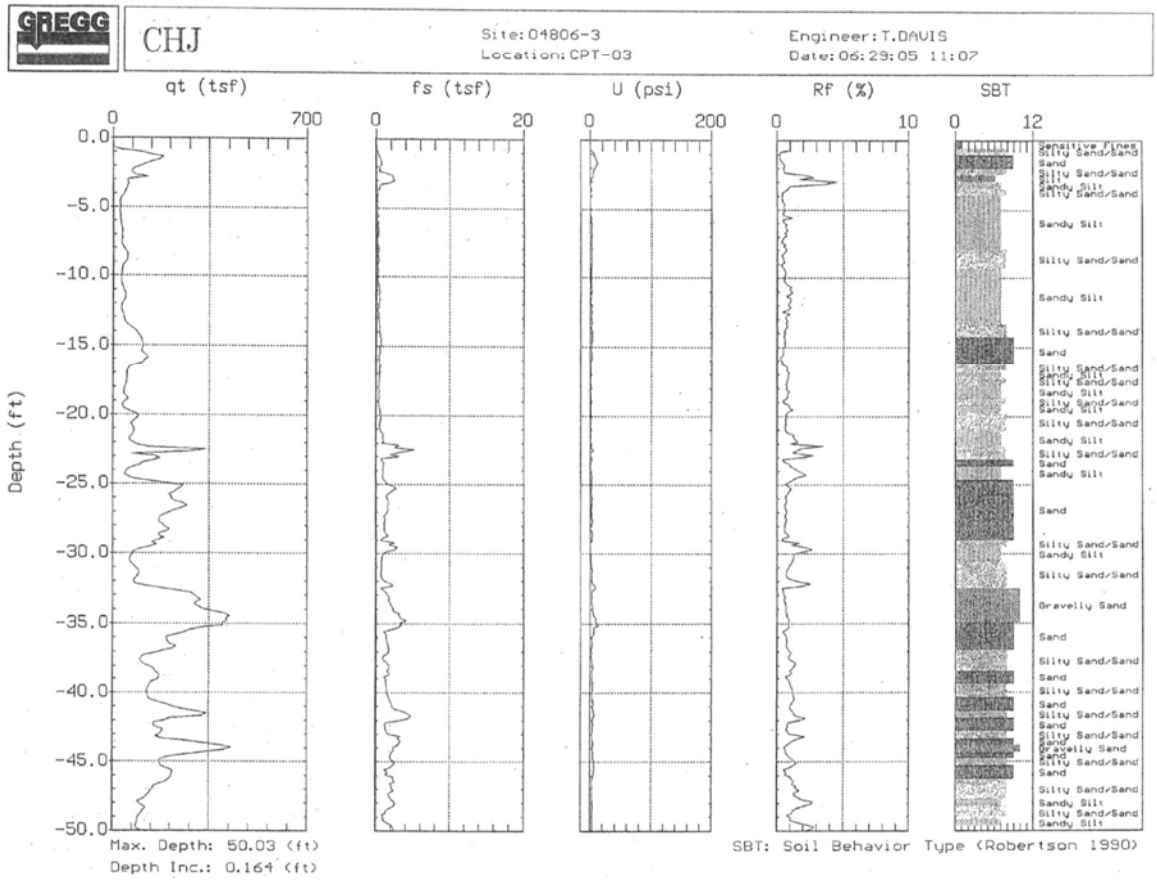
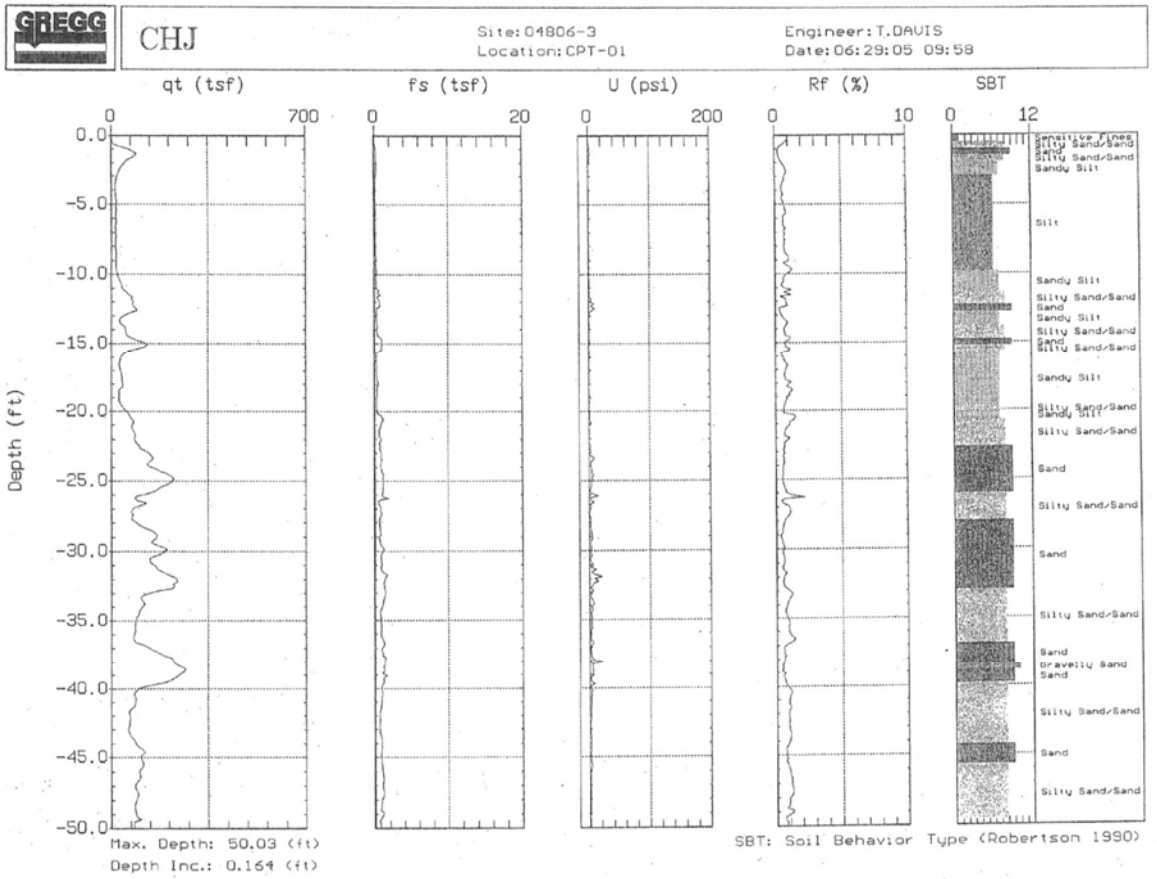
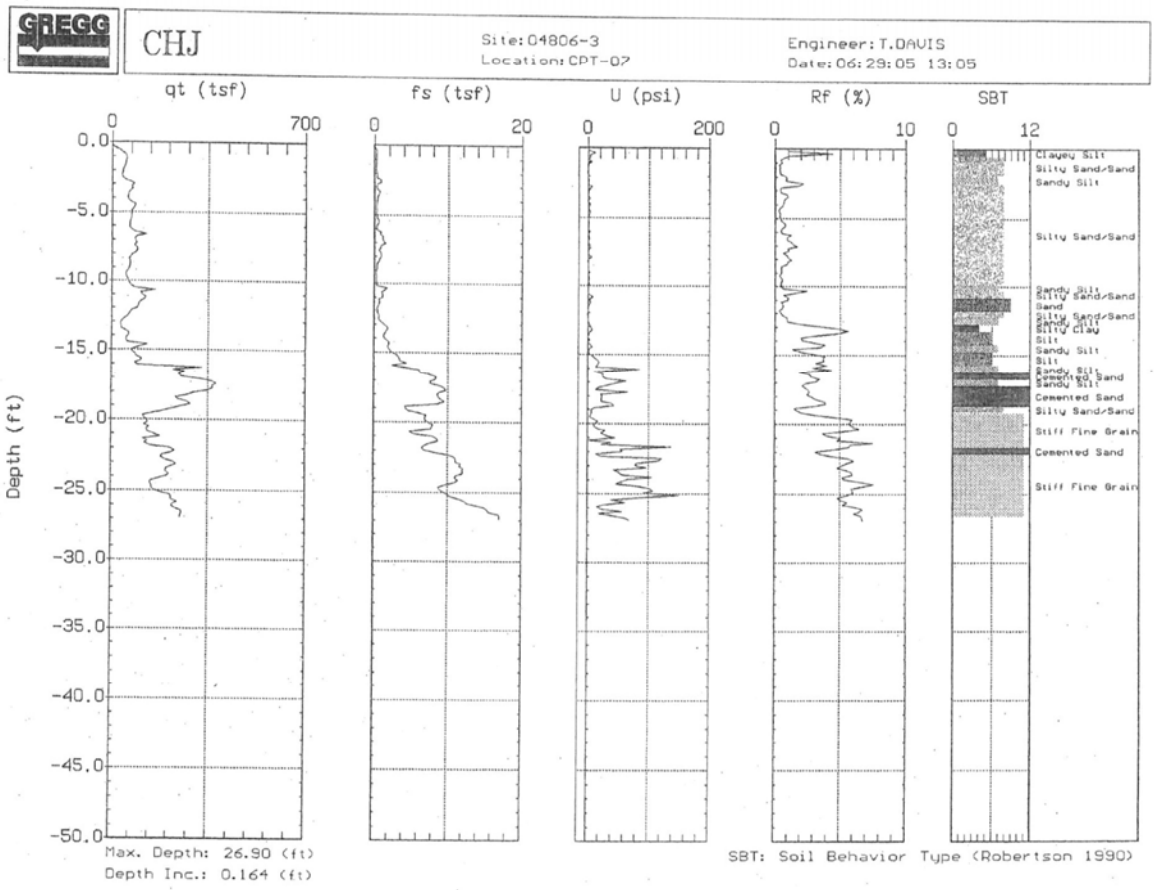
CVAR_09737


GREGG
CHJ
Site: 04806-3
Location: CPT-03
Engineer: T.DAVIS
Date: 06:29:05 11:07
qt (tsf)
fs (tsf)
U (psi)
Rf (%)
SBT
Depth (ft)
Max. Depth: 50.03 (ft)
Depth Inc.: 0.164 (ft)
SBT: Soil Behavior Type (Robertson 1990)


GREGG
CHJ
Site: 04806-3
Location: CPT-01
Engineer: T.DAVIS
Date: 06:29:05 09:58
qt (tsf)
fs (tsf)
U (psi)
Rf (%)
SBT
Depth (ft)
Max. Depth: 50.03 (ft)
Depth Inc.: 0.164 (ft)
SBT: Soil Behavior Type (Robertson 1990)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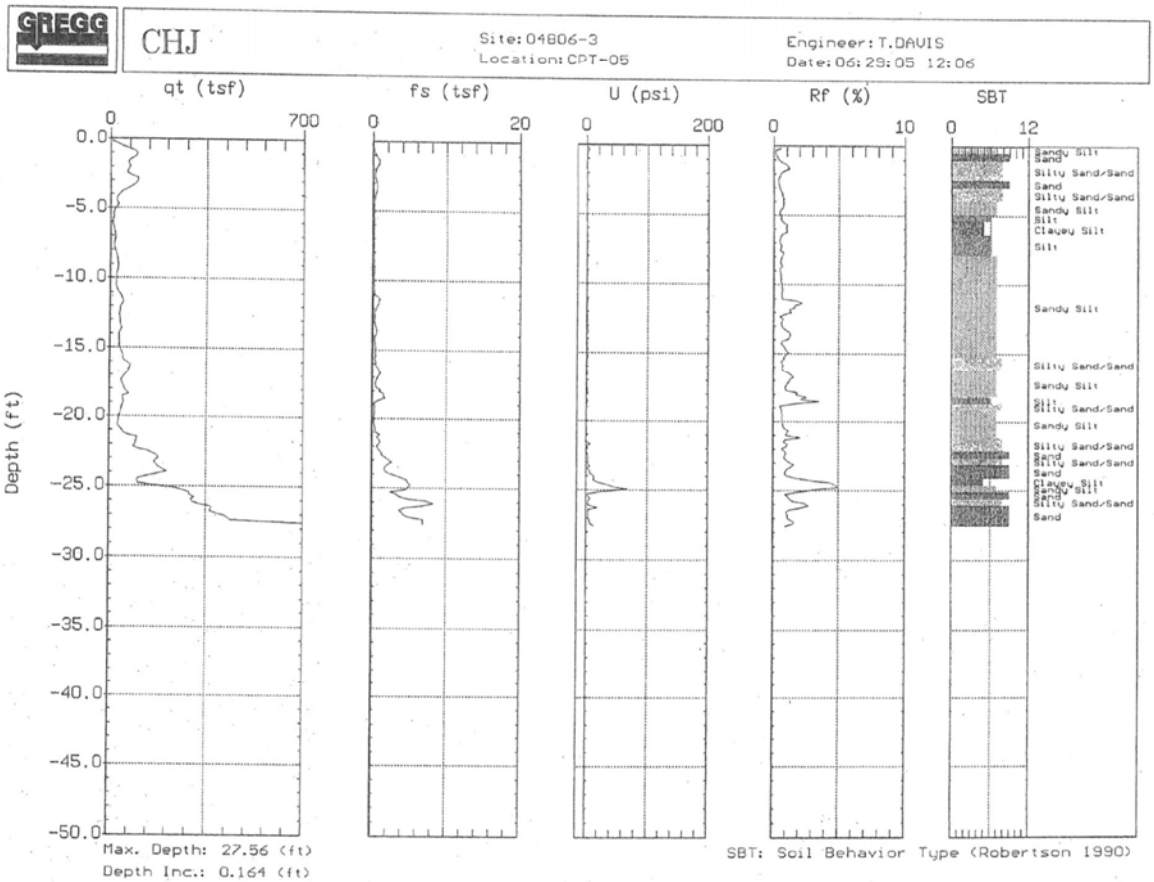
CHJ
Site: 04806-3
Location: CPT-07
Engineer: T.DAVIS
Date: 06:29:05 13:05
qt (tsf)
fs (tsf)
U (psi)
Rf (%)
SBT
Depth (ft)
Max. Depth: 26.90 (ft)
Depth Inc.: 0.164 (ft)
SBT: Soil Behavior Type (Robertson 1990)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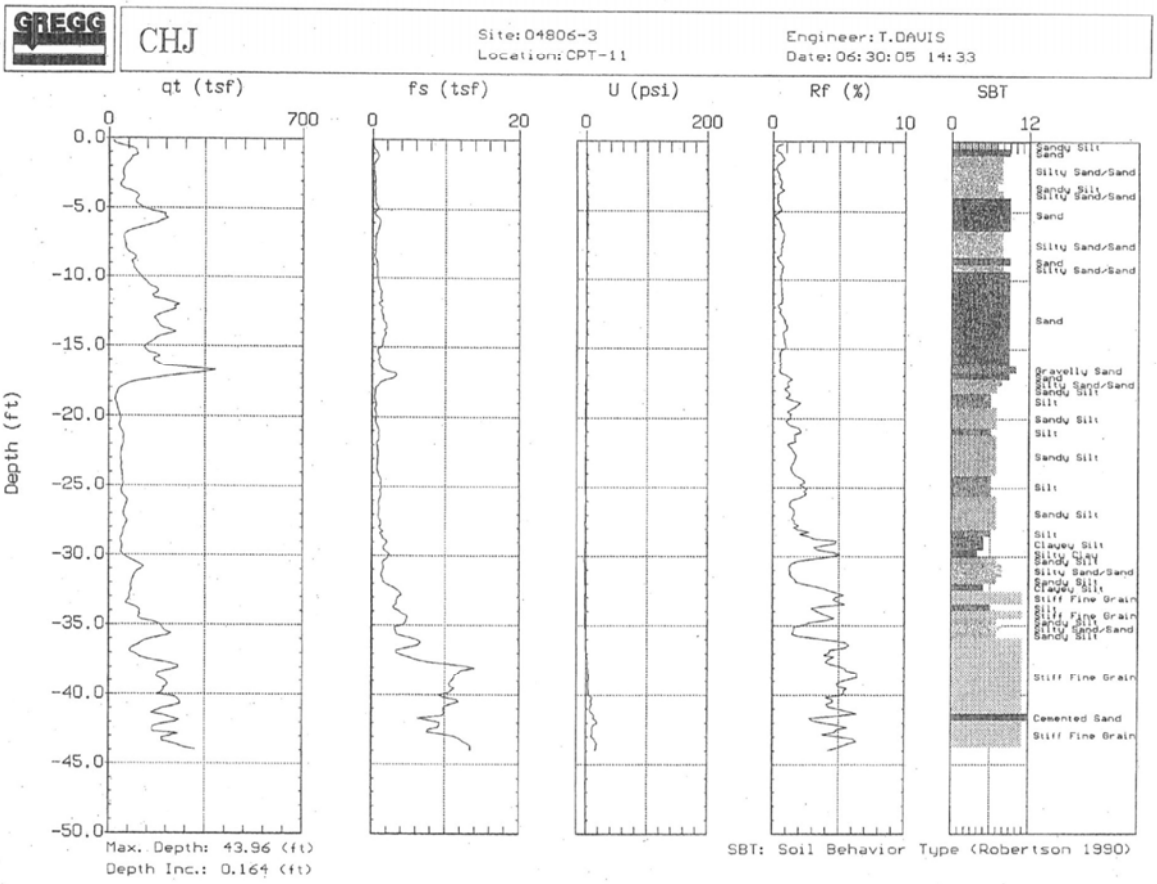
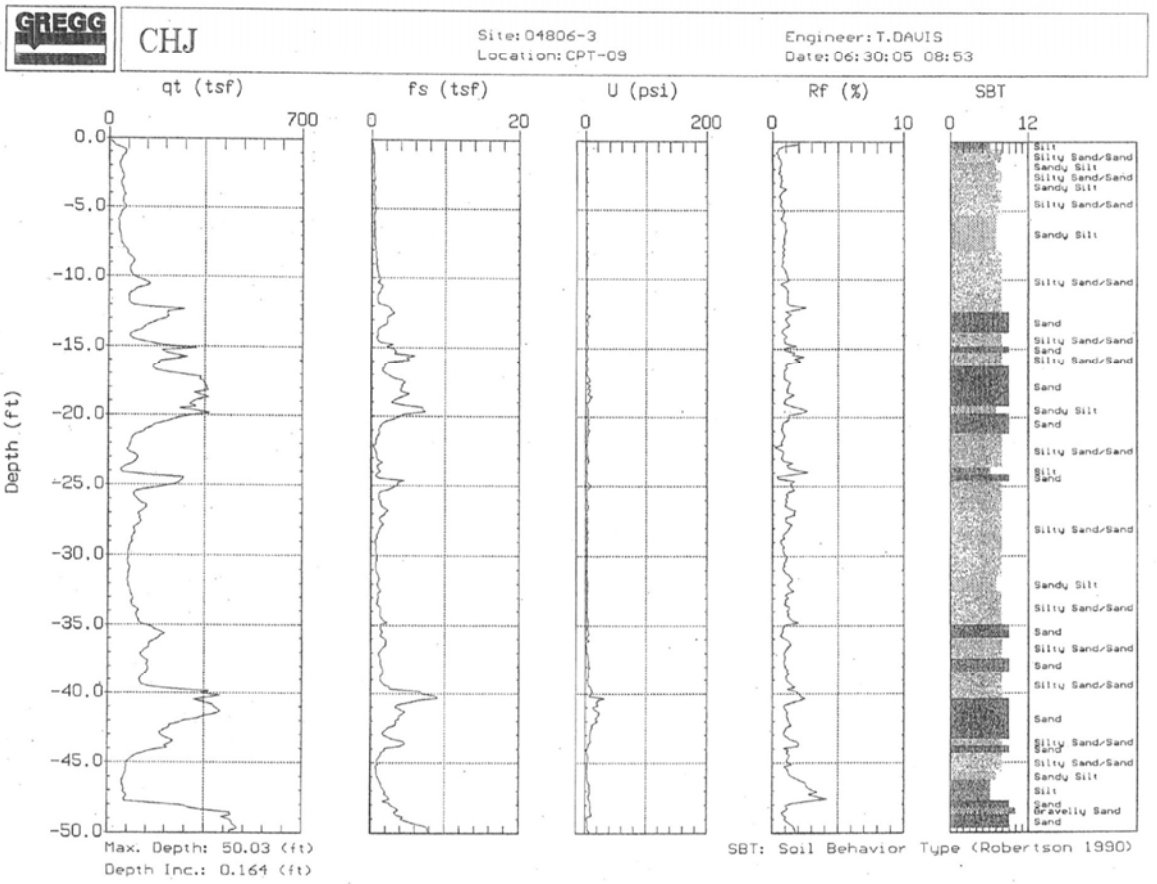
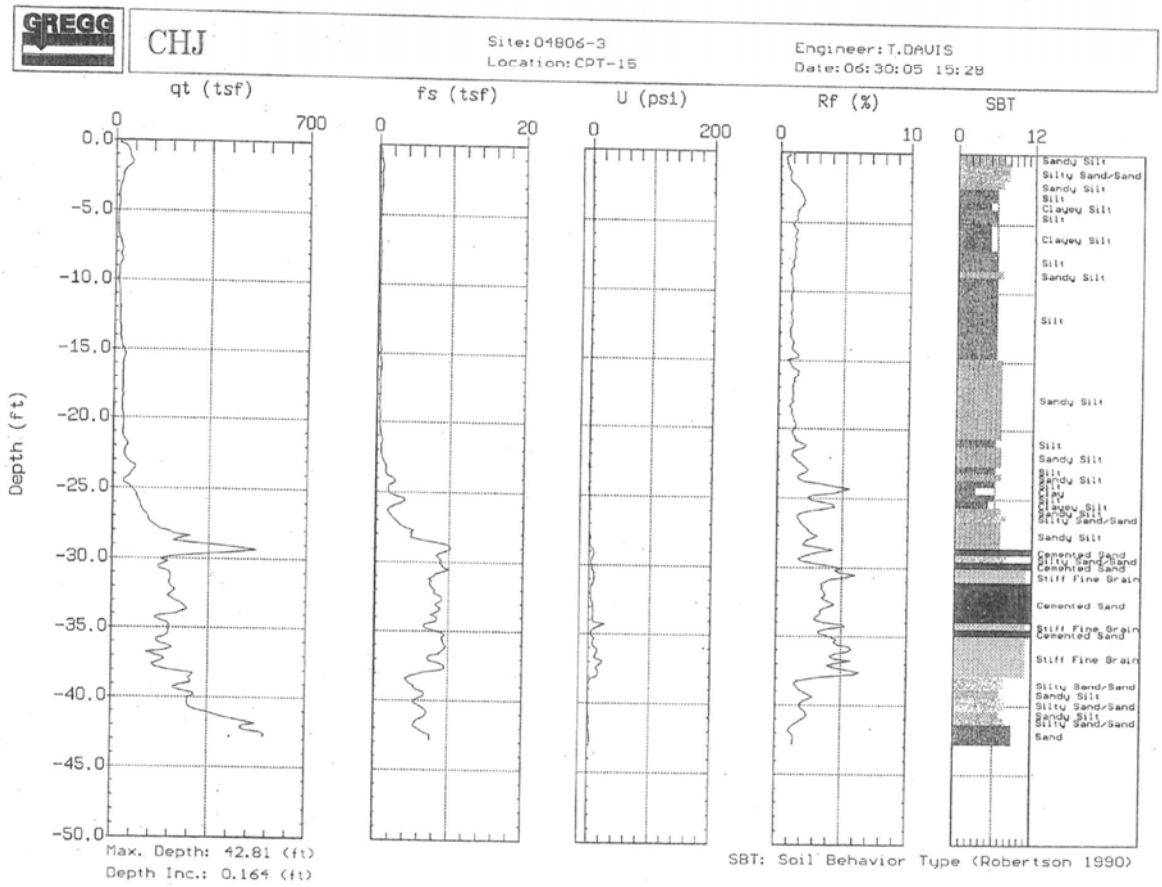
CHJ
Site: 04806-3
Location: CPT-05
Engineer: T.DAVIS
Date: 06:29:05 12:06
qt (tsf)
fs (tsf)
U (psi)
Rf (%)
SBT
Depth (ft)
Max. Depth: 27.56 (ft)
Depth Inc.: 0.164 (ft)
SBT: Soil Behavior Type (Robertson 1990)


GREGG
CHJ
Site: 04806-3
Location: CPT-11
Engineer: T.DAVIS
Date: 06:30:05 14:33
qt (tsf)
fs (tsf)
U (psi)
Rf (%)
SBT
Depth (ft)
Max. Depth: 43.96 (ft)
Depth Inc.: 0.164 (ft)
SBT: Soil Behavior Type (Robertson 1990)


GREGG
CHJ
Site: 04806-3
Location: CPT-09
Engineer: T.DAVIS
Date: 06:30:05 08:53
qt (tsf)
fs (tsf)
U (psi)
Rf (%)
SBT
Depth (ft)
Max. Depth: 50.03 (ft)
Depth Inc.: 0.164 (ft)
SBT: Soil Behavior Type (Robertson 1990)


GREGG
CHJ
Site: 04806-3
Location: CPT-15
Engineer: T.DAVIS
Date: 06:30:05 15:28
qt (tsf)
fs (tsf)
U (psi)
Rf (%)
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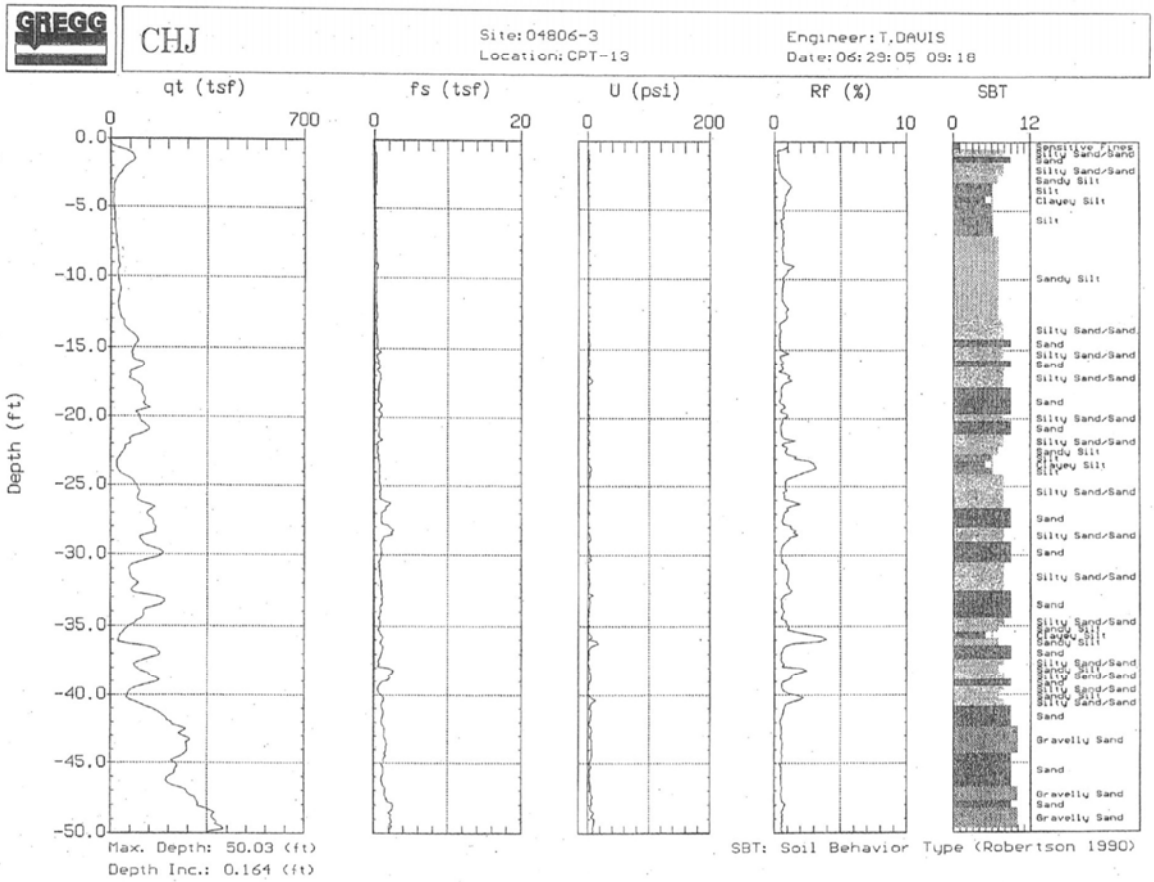
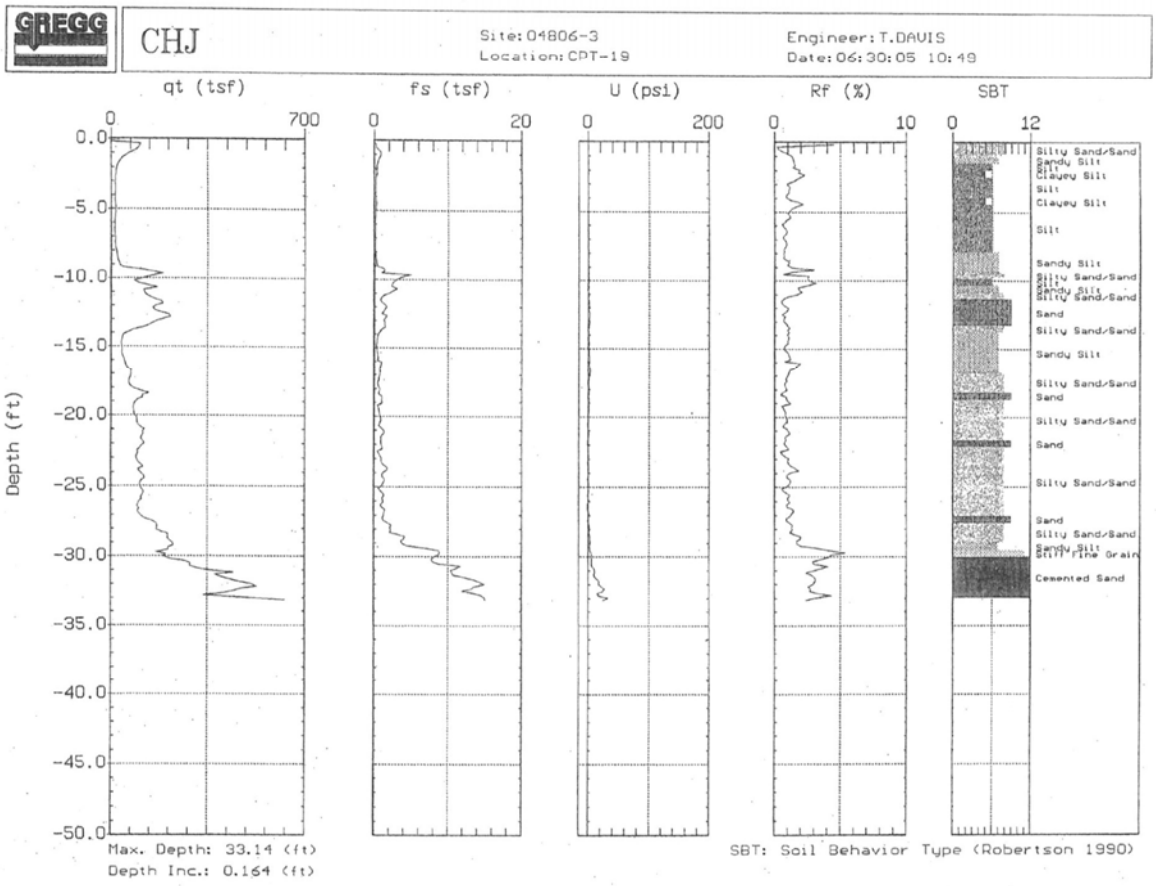
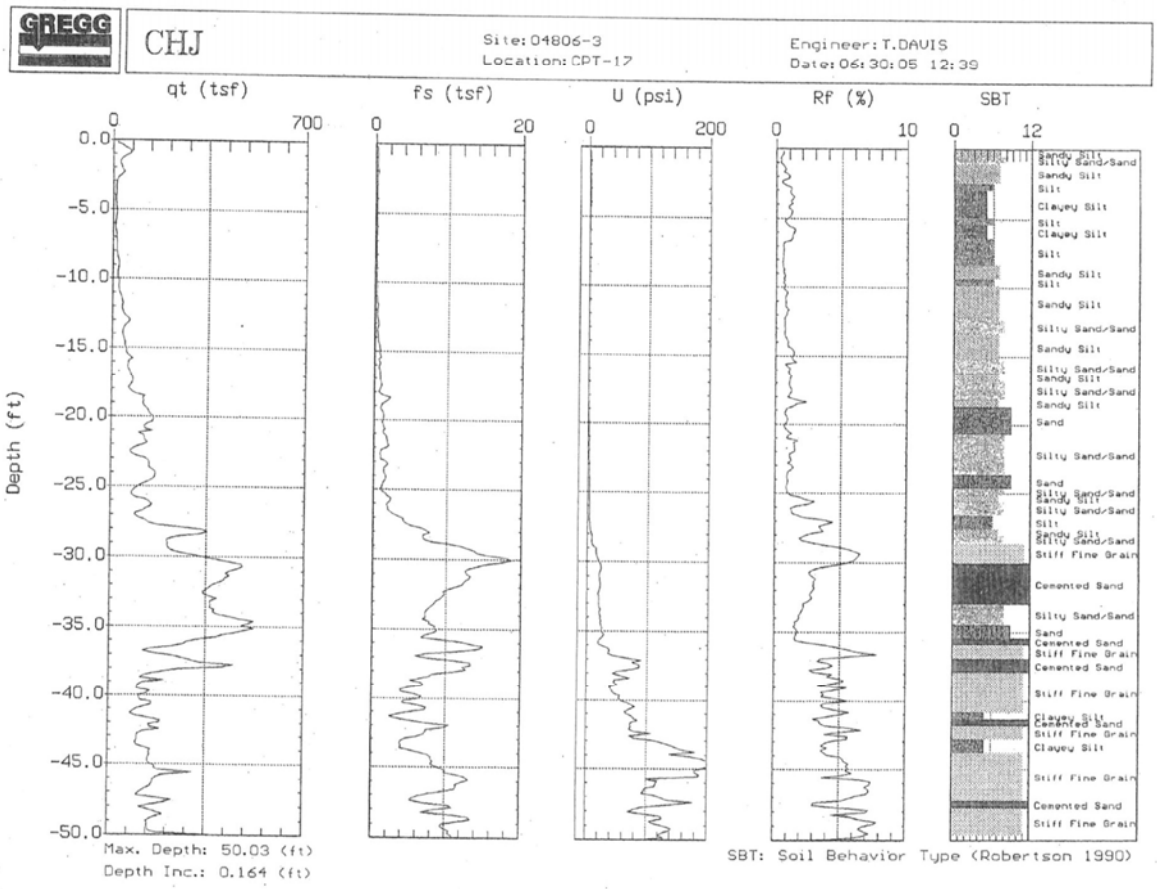
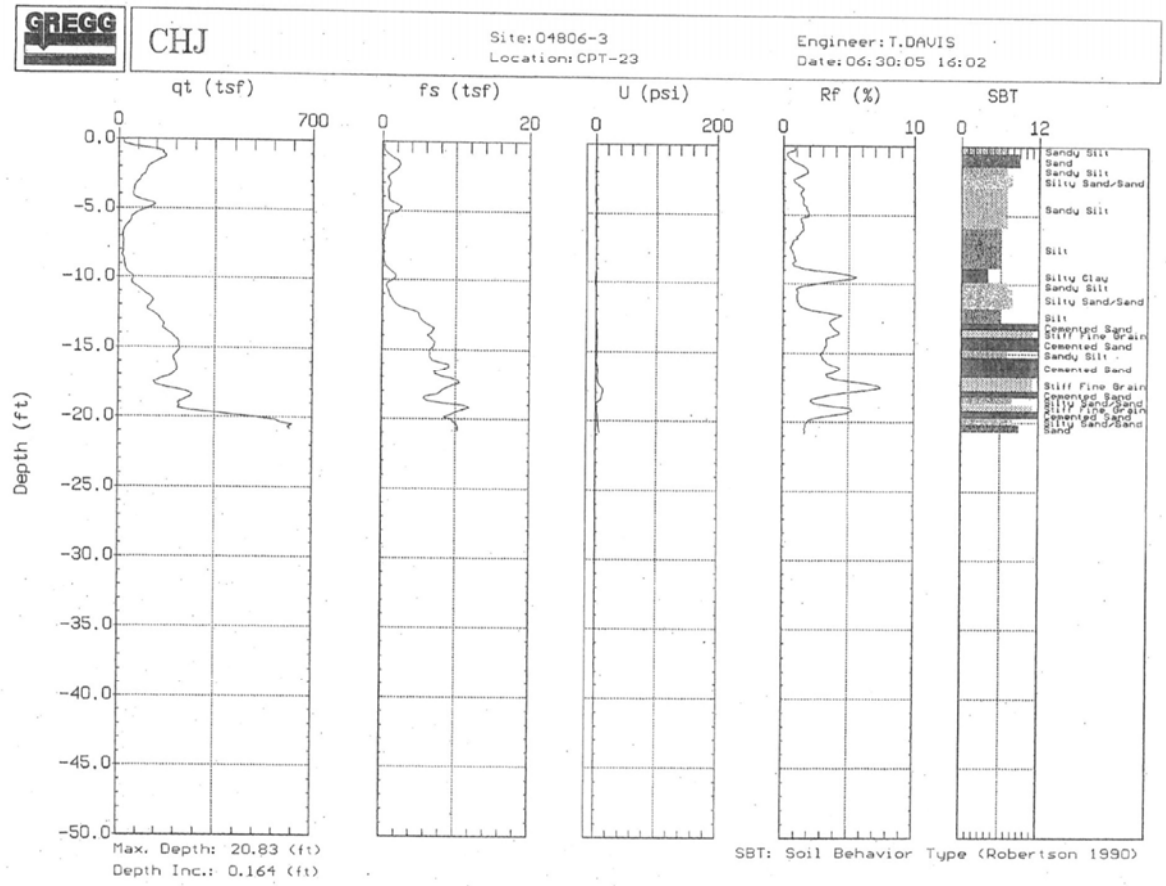
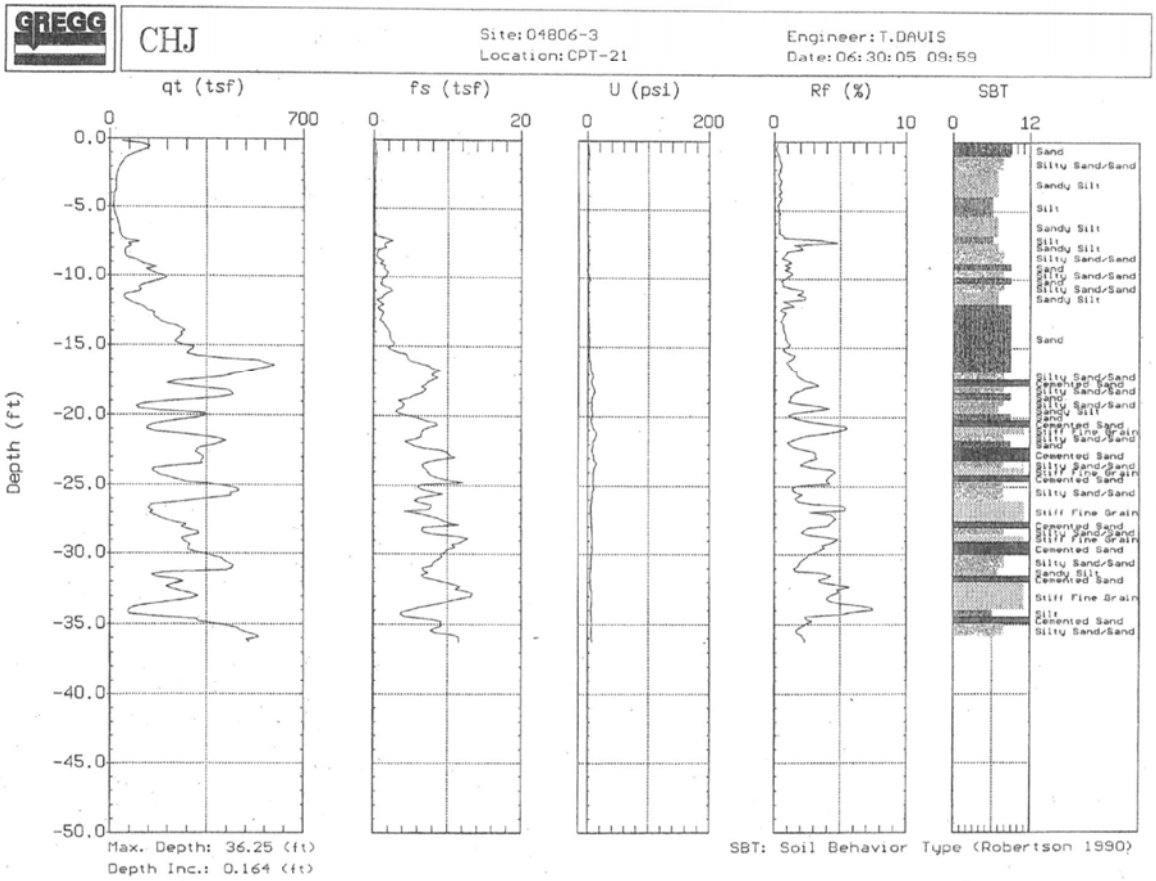
Depth (ft)
Max. Depth: 42.81 (ft)
Depth Inc.: 0.164 (ft)
SBT: Soil Behavior Type (Robertson 1990)

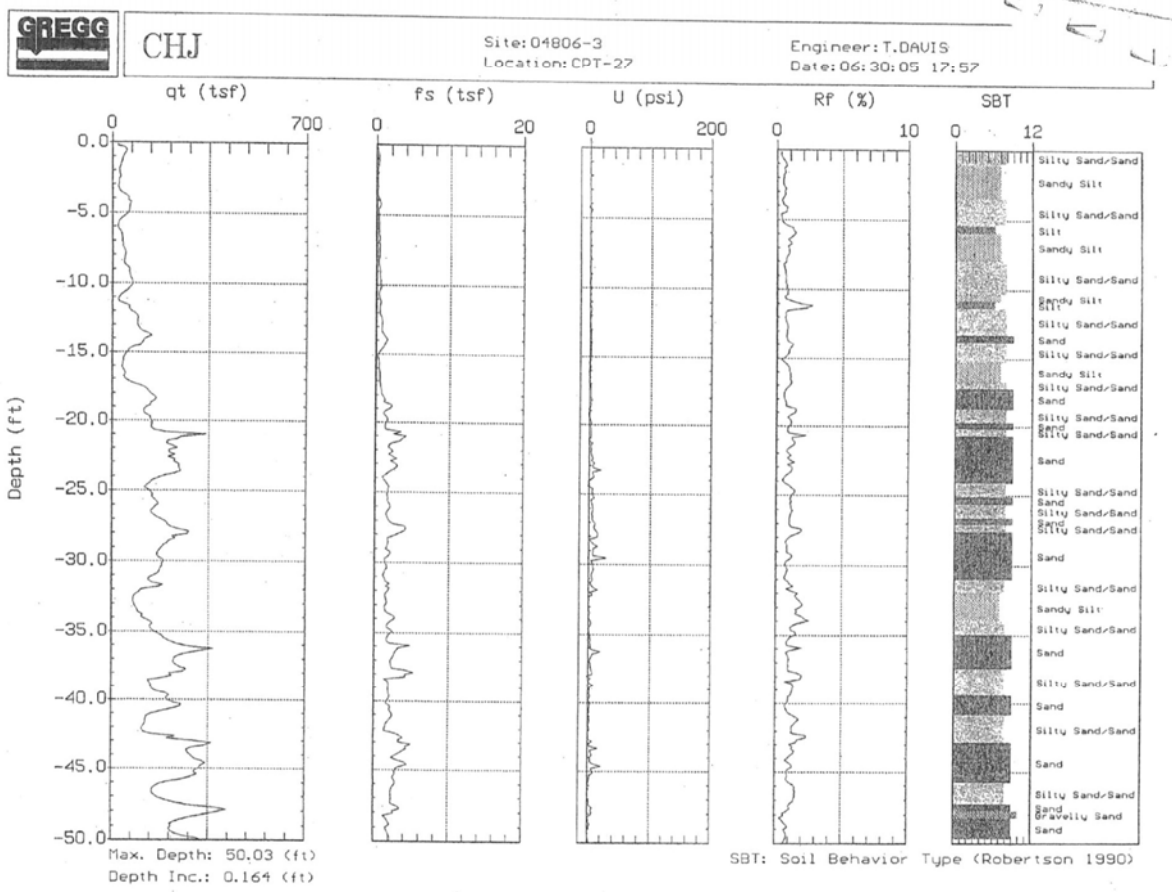

GREGG
CHJ
Site: 04806-3
Location: CPT-13
Engineer: T.DAVIS
Date: 06:29:05 09:18
qt (tsf)
fs (tsf)
U (psi)
Rf (%)
SBT
Depth (ft)
Max. Depth: 50.03 (ft)
Depth Inc.: 0.164 (ft)
SBT: Soil Behavior Type (Robertson 1990)

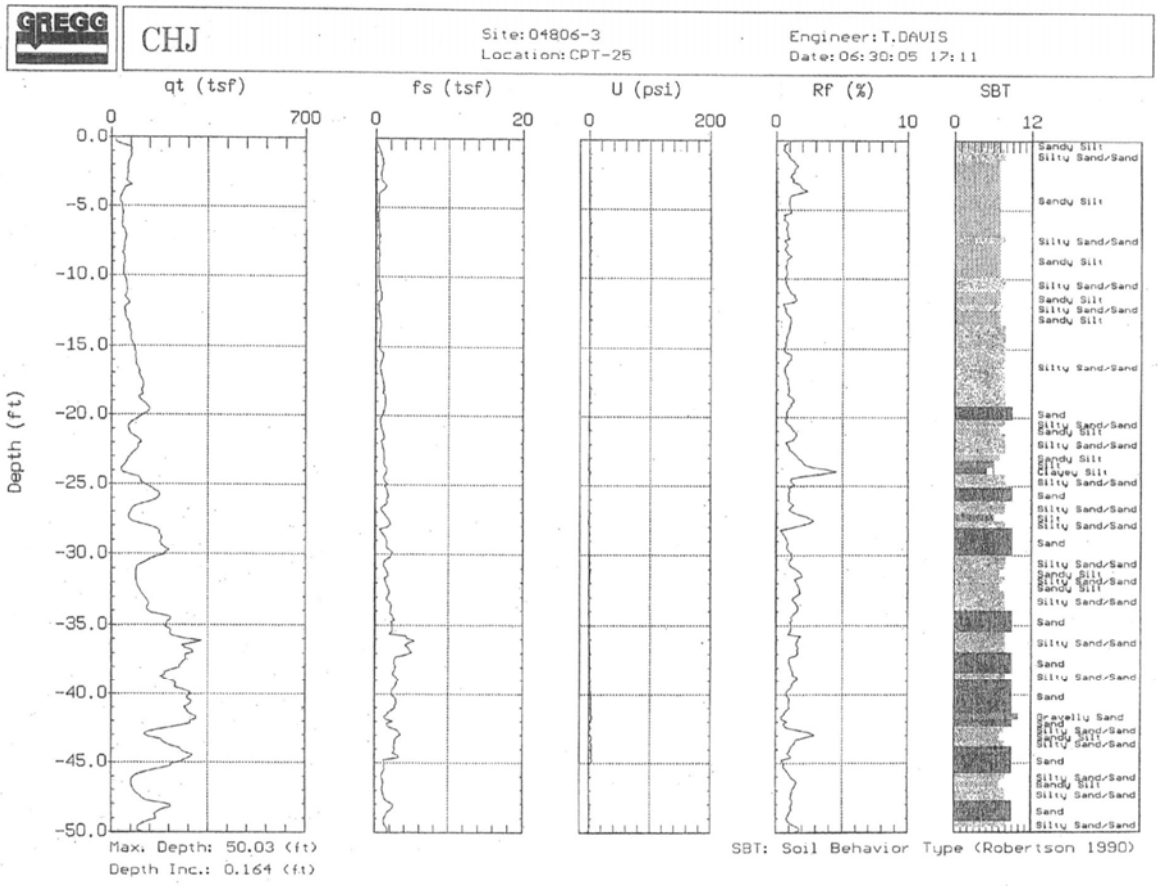

GREGG
CHJ
Site: 04806-3
Location: CPT-19
Engineer: T.DAVIS
Date: 06:30:05 10:49
qt (tsf)
fs (tsf)
U (psi)
Rf (%)
SBT
Depth (ft)
Max. Depth: 33.14 (ft)
Depth Inc.: 0.164 (ft)
SBT: Soil Behavior Type (Robertson 1990)

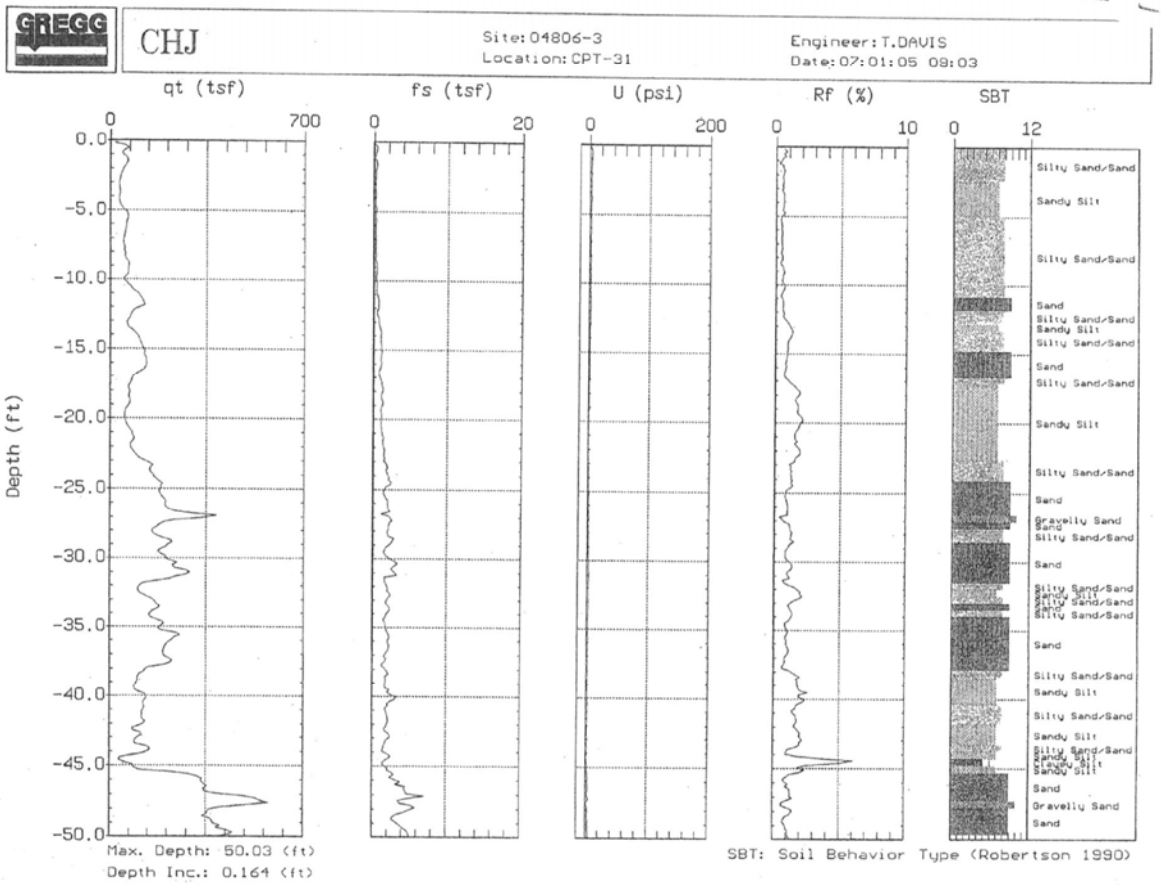

GREGG
CHJ
Site: 04806-3
Location: CPT-17
Engineer: T.DAVIS
Date: 06:30:05 12:39
qt (tsf)
fs (tsf)
U (psi)
Rf (%)
SBT
Depth (ft)
Max. Depth: 50.03 (ft)
Depth Inc.: 0.164 (ft)
SBT: Soil Behavior Type (Robertson 1990)

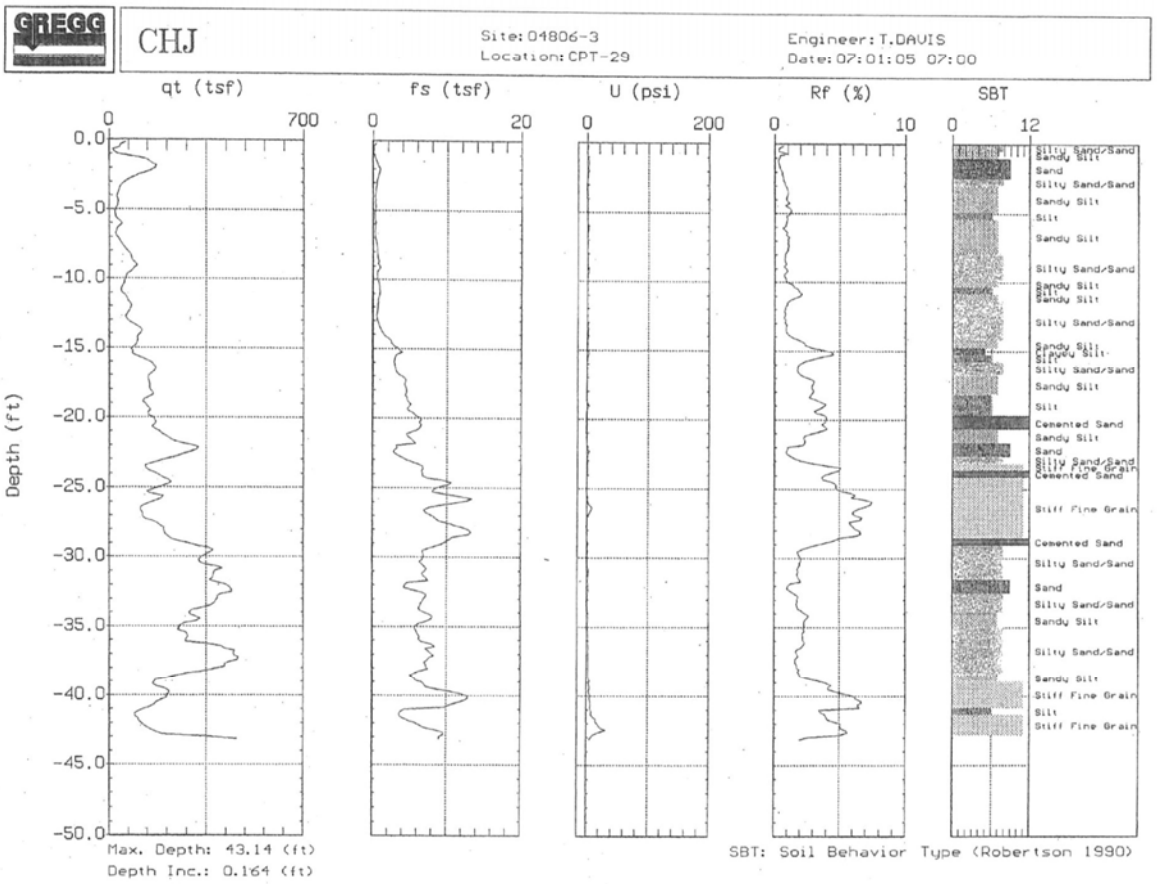

GREGG
CHJ
Site: 04806-3
Location: CPT-23
Engineer: T.DAVIS
Date: 06:30:05 16:02
qt (tsf)
fs (tsf)
U (psi)
Rf (%)
SBT
Depth (ft)
Max. Depth: 20.83 (ft)
Depth Inc.: 0.164 (ft)
SBT: Soil Behavior Type (Robertson 1990)


GREGG
CHJ
Site: 04806-3
Location: CPT-21
Engineer: T.DAVIS
Date: 06:30:05 09:59
qt (tsf)
fs (tsf)
U (psi)
Rf (%)
SBT
Depth (ft)
Max. Depth: 36.25 (ft)
Depth Inc.: 0.164 (ft)
SBT: Soil Behavior Type (Robertson 1990)

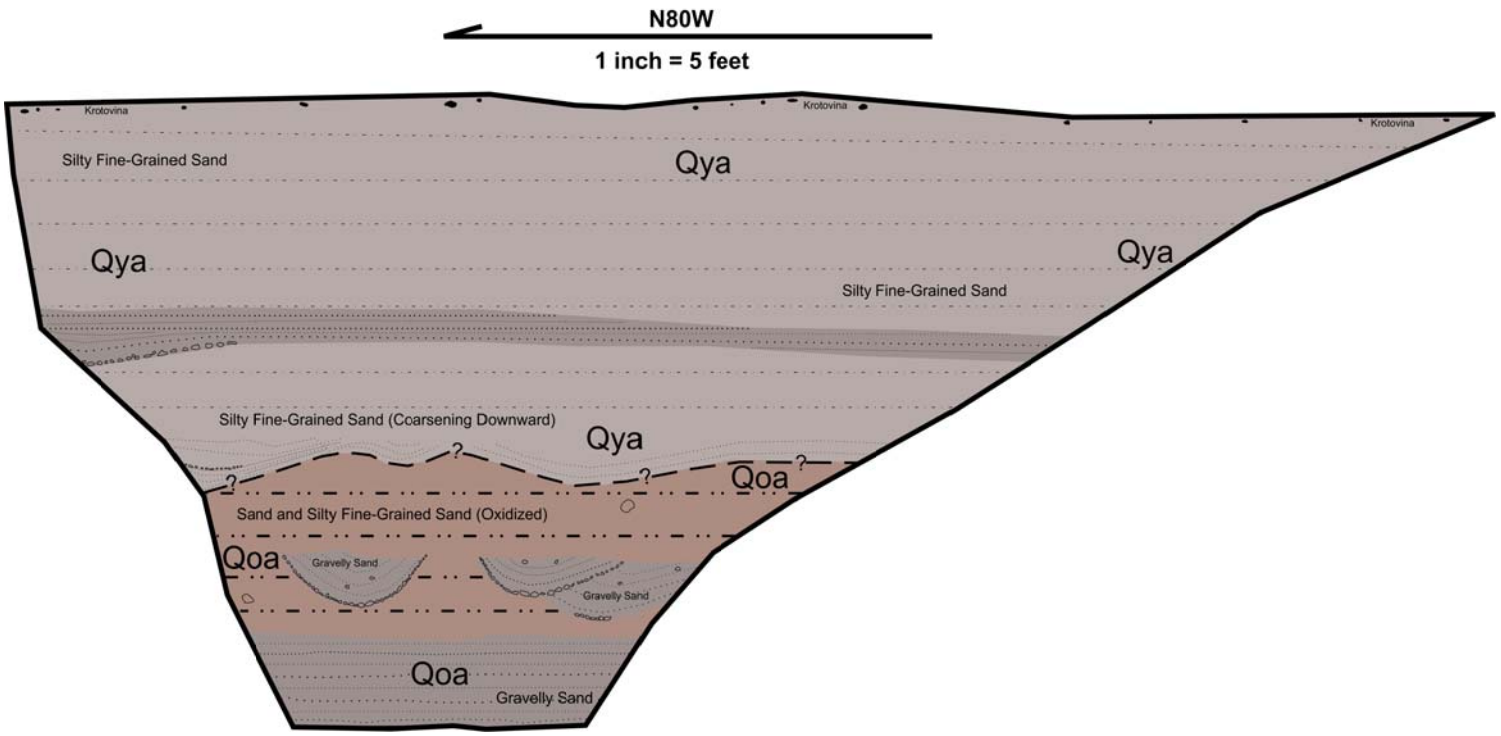

GREGG
CHJ
Site: 04806-3
Location: CPT-27
Engineer: T.DAVIS
Date: 06:30:05 17:57
qt (tsf)
fs (tsf)
U (psi)
Rf (%)
SBT
Depth (ft)
Max. Depth: 50.03 (ft)
Depth Inc.: 0.164 (ft)
SBT: Soil Behavior Type (Robertson 1990)

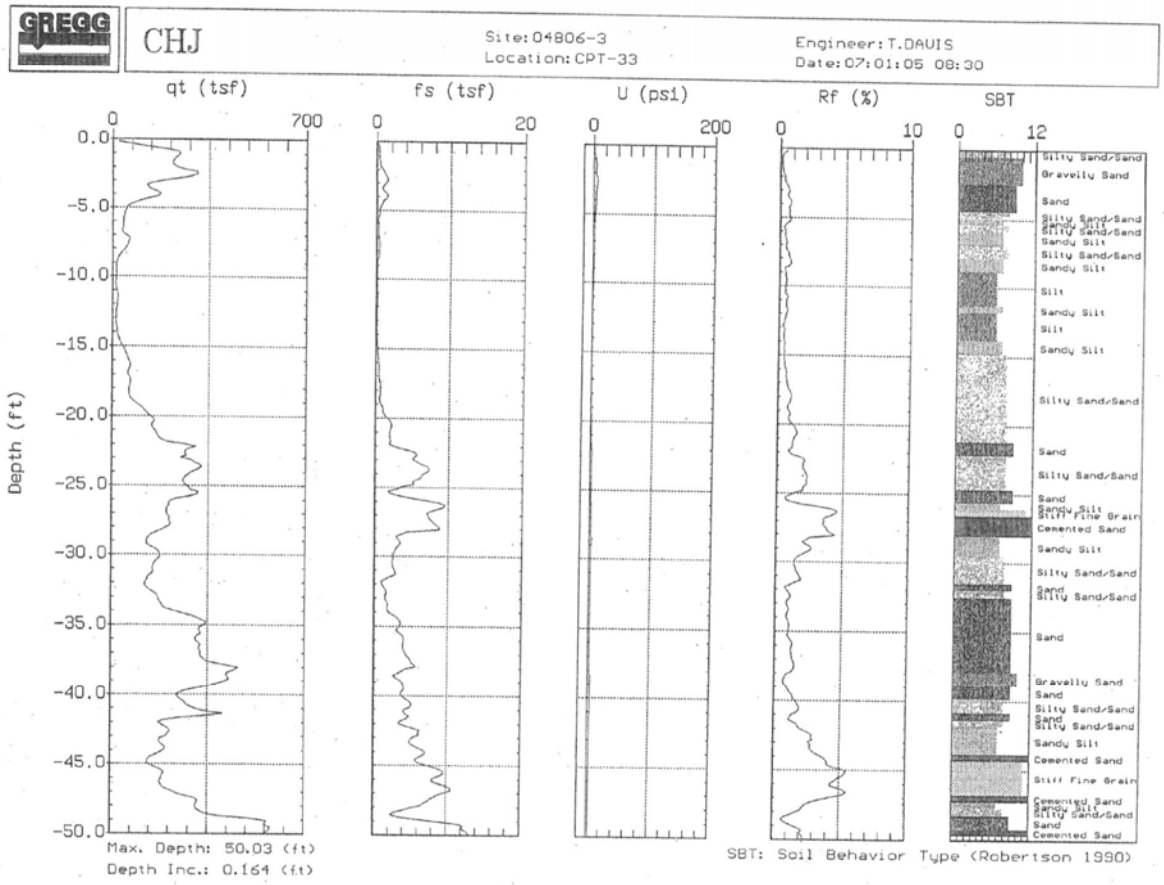

GREGG
CHJ
Site: 04806-3
Location: CPT-25
Engineer: T.DAVIS
Date: 06:30:05 17:11
qt (tsf)
fs (tsf)
U (psi)
Rf (%)
SBT
Depth (ft)
Max. Depth: 50.03 (ft)
Depth Inc.: 0.164 (ft)
SBT: Soil Behavior Type (Robertson 1990)


GREGG
CHJ
Site: 04806-3
Location: CPT-31
Engineer: T.DAVIS
Date: 07:01:05 09:03
qt (tsf)
fs (tsf)
U (psi)
Rf (%)
SBT
Depth (ft)
Max. Depth: 50.03 (ft)
Depth Inc.: 0.164 (ft)
SBT: Soil Behavior Type (Robertson 1990)


GREGG
CHJ
Site: 04806-3
Location: CPT-29
Engineer: T.DAVIS
Date: 07:01:05 07:00
qt (tsf)
fs (tsf)
U (psi)
Rf (%)
SBT
Depth (ft)
Max. Depth: 43.14 (ft)
Depth Inc.: 0.164 (ft)
SBT: Soil Behavior Type (Robertson 1990)

IP-4 PROFILE NORTHERLY WALL



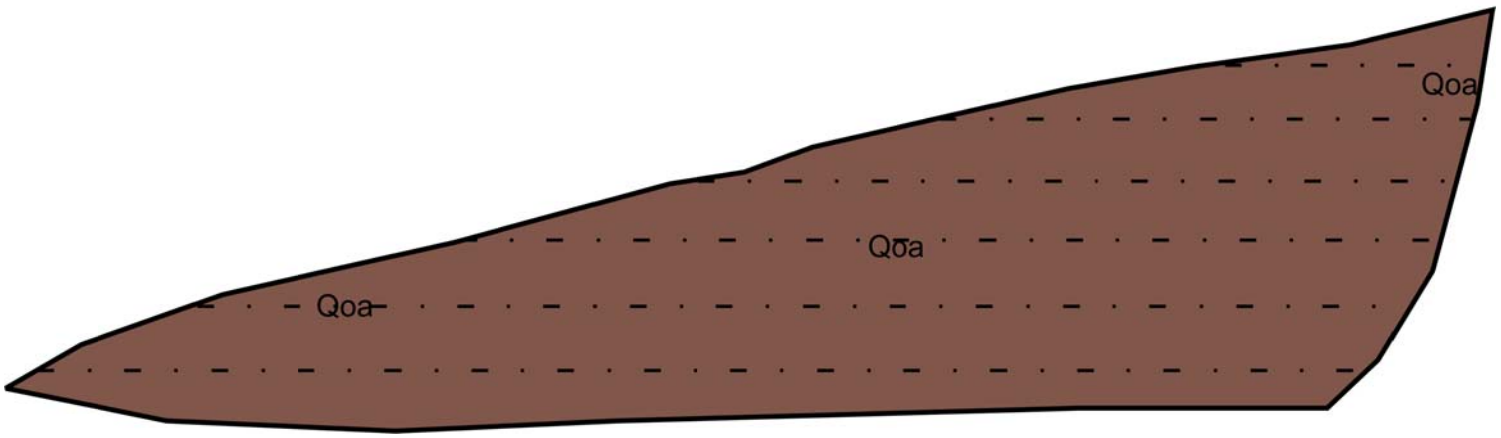


CVAR_09746

IP-2 PROFILE EASTERLY WALL

N33W

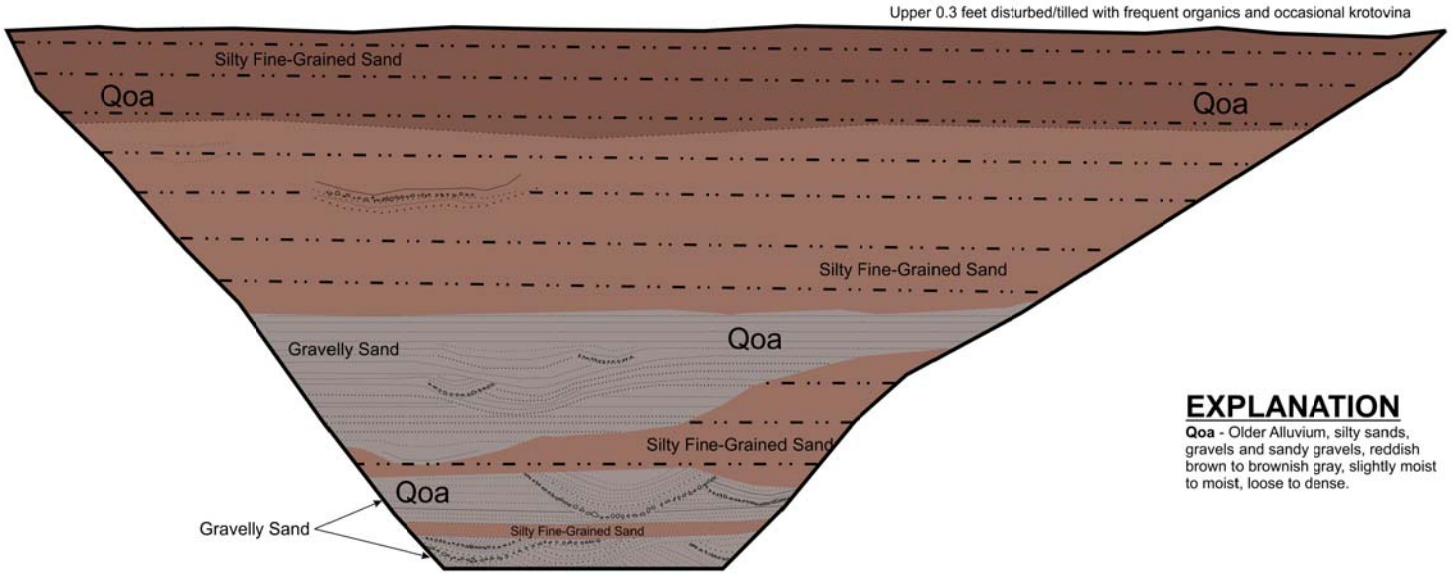
1 inch = 2.5 feet



IP-1 PROFILE NORTHERLY WALL

N88E

1 inch = 2.5 feet



EXPLANATION

Qoa - Older Alluvium, silty sands, gravels and sandy gravels, reddish brown to brownish gray, slightly moist to moist, loose to dense.

LOG OF INFILTRATION PIT IP-1

GINTER AND ASSOCIATES, INC	
PROJECT # 105-02	**DATE**

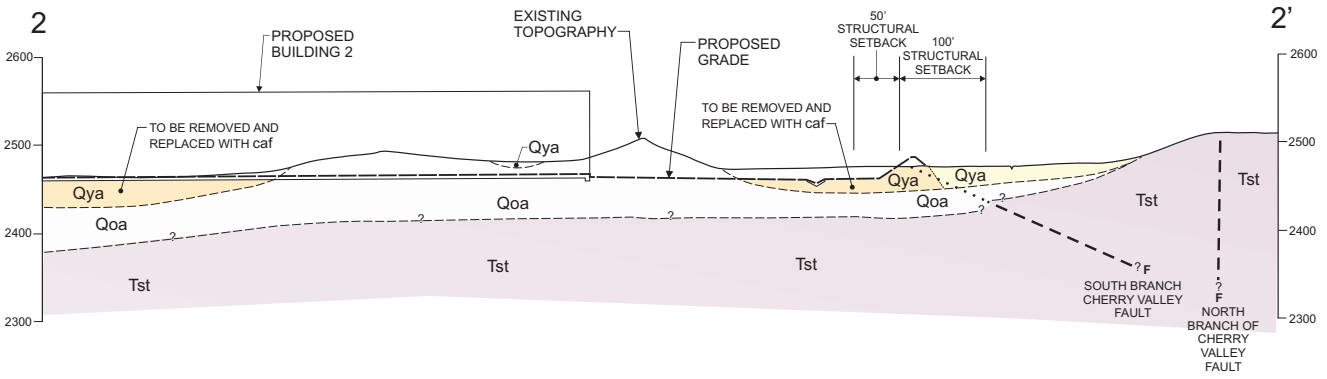
CVAR_09747

IP-3 PROFILE EASTERLY WALL

N48W

1 inch = 2.5 feet

CVAR_09748

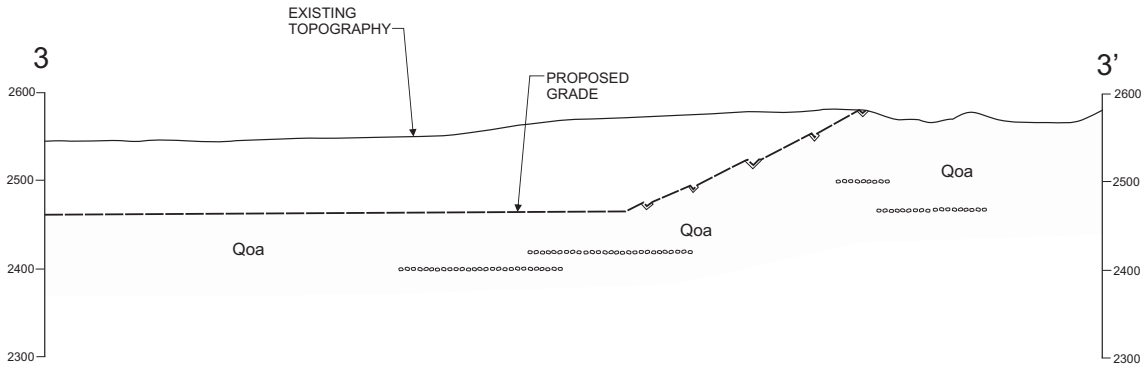


CROSS-SECTION 2-2'

SCALE: 1"=100' H&V

*SEE CROSS-SECTION 1-1' FOR LEGEND

PROJECT NO. :
105-03
DATE :
Dec. , 2012

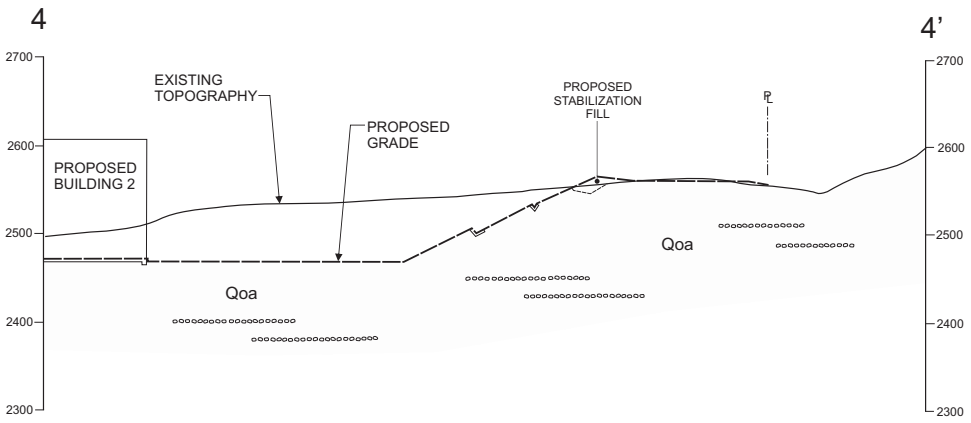


CROSS-SECTION 3-3'

SCALE: 1"=100' H&V

*SEE CROSS-SECTION 1-1' FOR LEGEND

PROJECT NO. :
105-03
DATE :
Dec. , 2012

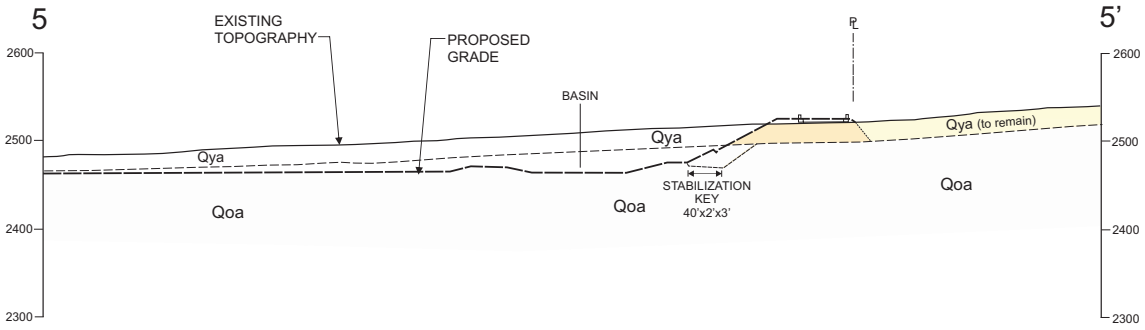


CROSS-SECTION 4-4'

SCALE: 1"=100' H&V

*SEE CROSS-SECTION 1-1' FOR LEGEND

PROJECT NO. :
105-03
DATE :
Dec. , 2012

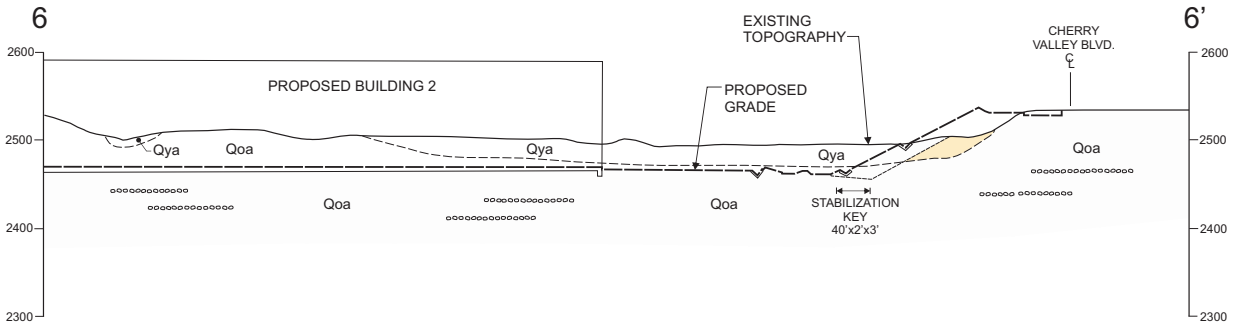


CROSS-SECTION 5-5'

SCALE: 1"=100' H&V

*SEE CROSS-SECTION 1-1' FOR LEGEND

PROJECT NO. :
105-03
DATE :
Dec. , 2012

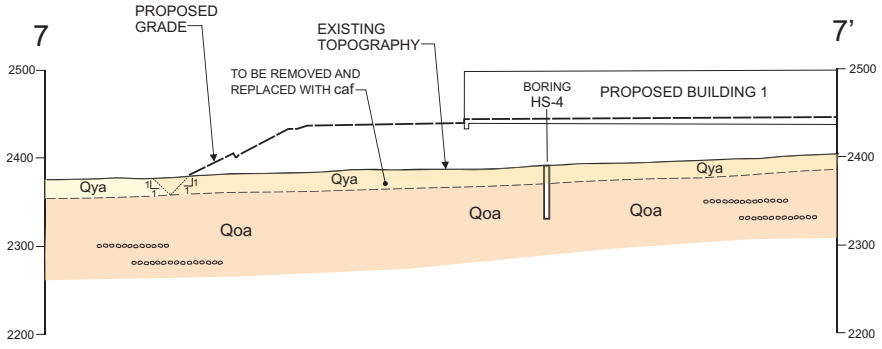


CROSS-SECTION 6-6'

SCALE: 1"=100' H&V

*SEE CROSS-SECTION 1-1' FOR LEGEND

PROJECT NO. :
105-03
DATE :
Dec. , 2012

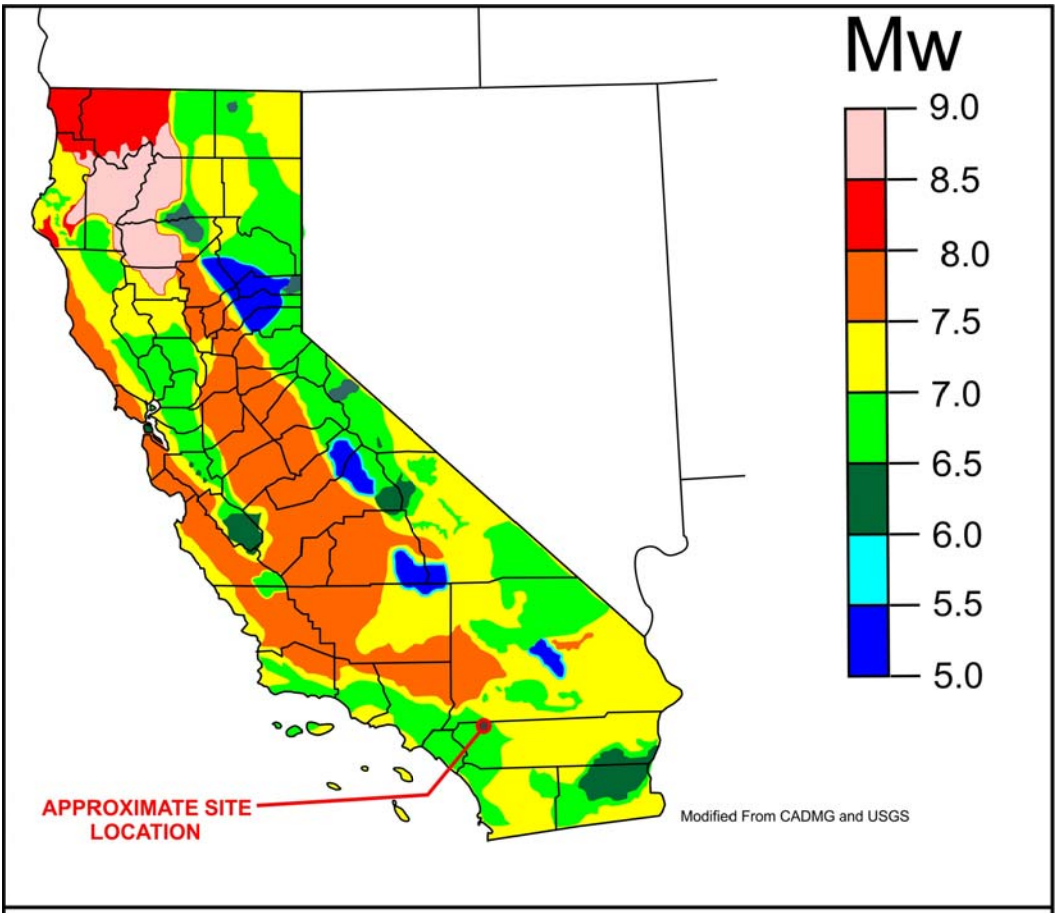


CROSS-SECTION 7-7'

SCALE: 1"=100' H&V

*SEE CROSS-SECTION 1-1' FOR LEGEND

PROJECT NO. :
105-03
DATE :
Dec. , 2012



California Earthquake Magnitude Contour Map

Dominant Hazard Earthquake Contour Map for Peak Ground Acceleration at 10% Probability of Exceedance in 50 years with Alluvial Site Conditions

CVAR_09752

CBC SEISMIC DESIGN PARAMETERS
Rio Santiago Site
Project No. 107-04
Determined Utilizing
USGS EARTHQUAKE GROUND MOTION PARAMETERS
Version 5.1.0 (Revised 2/11/2011)

Conterminous 48 States
2005 ASCE 7 Standard
Latitude = 33.970150000000004
Longitude = -117.02122600000001
Spectral Response Accelerations Ss and S1
Ss and S1 = Mapped Spectral Acceleration Values
Site Class B - Fa = 1.0 ,Fv = 1.0
Data are based on a 0.01 deg grid spacing

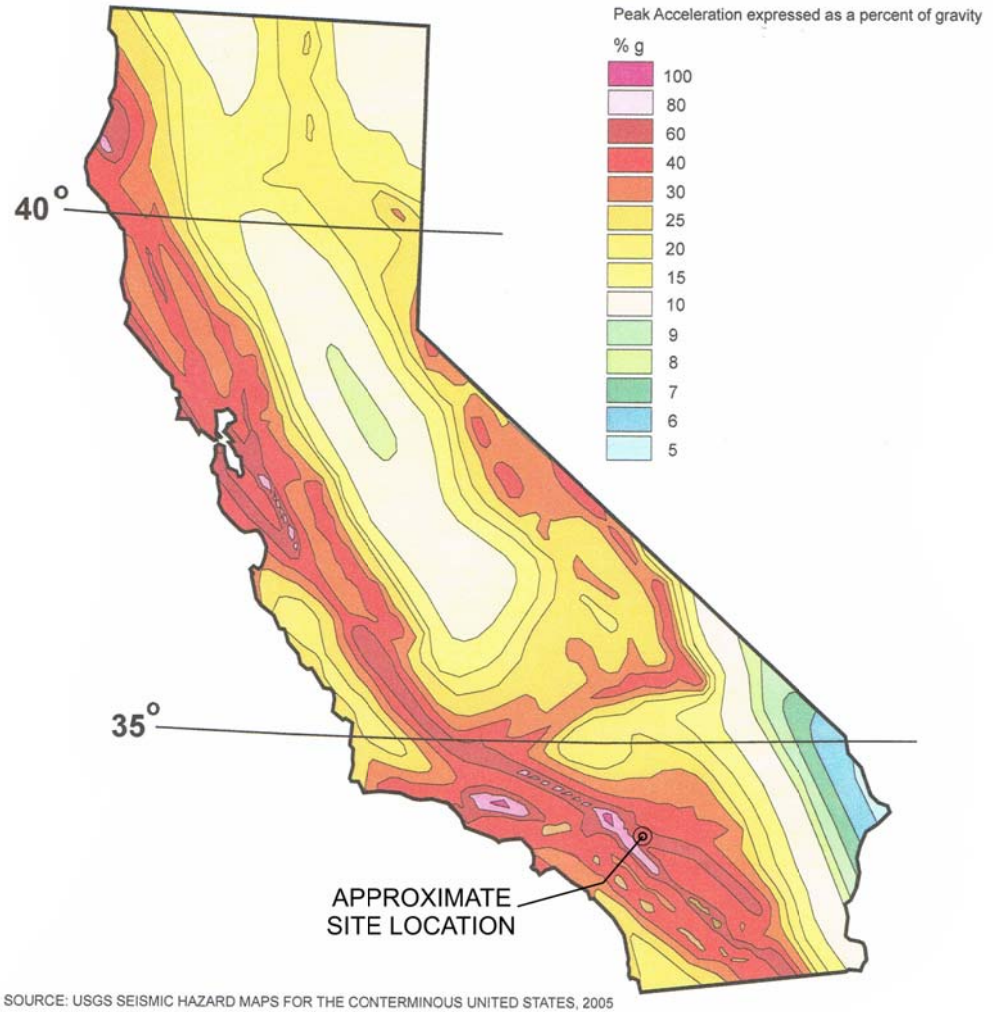
Period (sec)	Sa (g)
0.2	1.500 (Ss, Site Class B)
1.0	0.600 (S1, Site Class B)

Conterminous 48 States
2005 ASCE 7 Standard
Latitude = 33.970150000000004
Longitude = -117.02122600000001
Spectral Response Accelerations SMs and SM1
SMs = Fa x Ss and SM1 = Fv x S1
Site Class C - Fa = 1.0 ,Fv = 1.3

Period (sec)	Sa (g)
0.2	1.500 (SMs, Site Class C)
1.0	0.780 (SM1, Site Class C)

Conterminous 48 States
2005 ASCE 7 Standard
Latitude = 33.970150000000004
Longitude = -117.02122600000001
Design Spectral Response Accelerations SDs and SD1
SDs = 2/3 x SMs and SD1 = 2/3 x SM1
Site Class C - Fa = 1.0 ,Fv = 1.3

Period (sec)	Sa (g)
0.2	1.000 (SDs, Site Class C)
1.0	0.520 (SD1, Site Class C)



SOURCE: USGS SEISMIC HAZARD MAPS FOR THE CONTERMINOUS UNITED STATES, 2005

PEAK HORIZONTAL ACCELERATION
10 PERCENT PROBABILITY OF EXCEEDANCE IN 50 YEARS

CVAR_09753

Peak Ground Acceleration Data
Calimesa Site
Project No. 105-02
Dertermined Utilizing
EARTHQUAKE GROUND MOTION PARAMETERS
Version 5.1.0 (Revised 2/11/2011)

Conterminous 48 States
2002 Data
Hazard Curve for PGA
Latitude = 33.97015
Longitude = -117.021226
Data are based on a 0.05 deg grid spacing
Frequency of Exceedance values less than
1E-4 should be used with caution.

Ground Motion (g)	Frequency of Exceedance (per year)
0.005	8.8708E-01
0.007	7.977E-01
0.010	6.8623E-01
0.014	5.5931E-01
0.019	4.2776E-01
0.027	3.0797E-01
0.038	2.1217E-01
0.053	1.4181E-01
0.074	9.3738E-02
0.103	6.1665E-02
0.145	3.9552E-02
0.203	2.4881E-02
0.284	1.4704E-02
0.397	7.532E-03
0.556	2.9857E-03
0.778	8.4125E-04
1.090	1.5154E-04
1.520	1.5346E-05
2.130	4.4998E-07

Ground Motion (g)	Freq. of Exceed. (per year)	Return Pd. (years)	P.E. %	Exp. Time (years)
0.6100	2.1053E-03	475.00	10.00	50.0

LABORATORY TEST PROCEDURES AND RESULTS

The samples obtained during the field investigation were transported to the laboratory for testing and analysis. The results of tests performed on selected samples, including the test procedures are summarized below. The laboratory testing program consisted of the following:

Soil Classification

The soil samples obtained from the borings and test pits were visually classified in accordance with the Unified Soil Classification System. The soil classifications are shown in the Logs of borings (Appendix II).

In-Place Moisture Content and Density

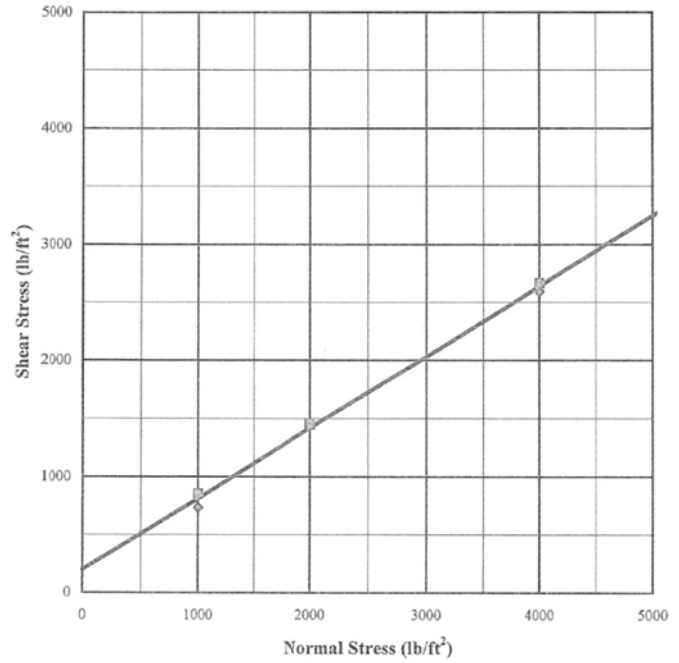
Representative relatively undisturbed and bulk samples of the sub-surface materials were tested to determine their in-place moisture content, in accordance with ASTM: D 2922 and ASTM D 2974-87 Test Methods. The in-place density of relatively undisturbed soil samples were calculated based on the moisture content and direct volume measurement. The test results are shown on the Logs of Borings (Appendix II).

Grain Size

Selected soil samples were tested in accordance with ASTM: D 442 to determine soil particle size as an aid in classification of soil types. The test results are presented in Plate III-1 through III-3

Maximum Dry Density and Optimum Moisture Content

Maximum dry density and optimum moisture content tests were performed on representative bulk soil samples in accordance with ASTM: D 1557. The results are shown in Table III-1.



Direct Shear Test Data For Compacted Fill
(Remolded Sample to 90% R.C - Ultimate)

Project No: 665-000-01
Date : April 3 2009
Plate III-14

Noblett & Associates

CVAR_09754

Expansion Index

Representative bulk soil samples were tested for expansion potential following the UBC Standard 18-2 and classified in accordance with UBC 18-I-B. Test results are presented in the following Table III-3.

Table III-3

Location	Expansion Index	Expansion Potential (UBC 29-2)
HS-2 @ 34 ft	12	Very Low
HS-3@ 7 ft	8	Very Low

Table III-1

Location	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
HS-2 @ 34 ft	137.0	8.0
HS-3@ 7 ft	132.5	8.5

Consolidation

Consolidation tests were performed on remolded samples of the sub-surface materials to determine the compressibility characteristics. The test specimens were soaked prior to the tests to simulate possible adverse field conditions. The test results are presented on Plates III-4 through III-13.

Direct Shear

Direct shear tests were performed on remolded samples of the subsurface materials with a direct shear machine of the strain-controlled type in which the rate of strain is 0.01 inches per minute. The remolded samples were compacted to 90 percent relative compaction (ASTM: D1557). Each sample was soaked in a confined state prior to shearing. Each sample was sheared under varied normal loads ranging from 1.0 ksf to 4.0 ksf. The test results are shown in composite plot on Plate III-.14

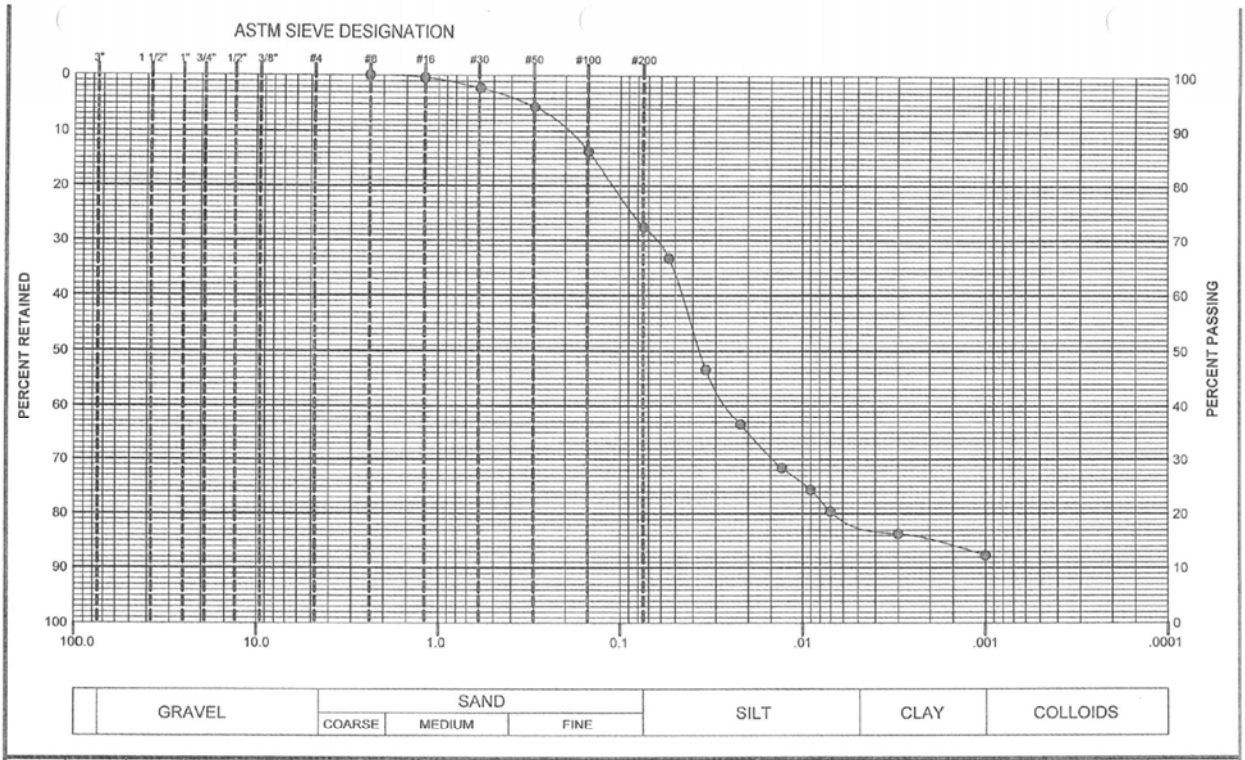
Sulfate Content

Selected bulk samples were tested for soluble sulfate content in accordance with the Hach method. The test results are shown in Table III-2.

Table III-2

Sample	Water Soluble Sulfate In Soil (Percentage by weight (%))	Sulfate Exposure (UBC Table 19-A-4)
HS-2 @ 34 ft	0.0029	Negligible
HS-3@ 7 ft	0.0031	Negligible

CVAR_09755



GRAVEL	SAND			SILT	CLAY	COLLOIDS
	COARSE	MEDIUM	FINE			

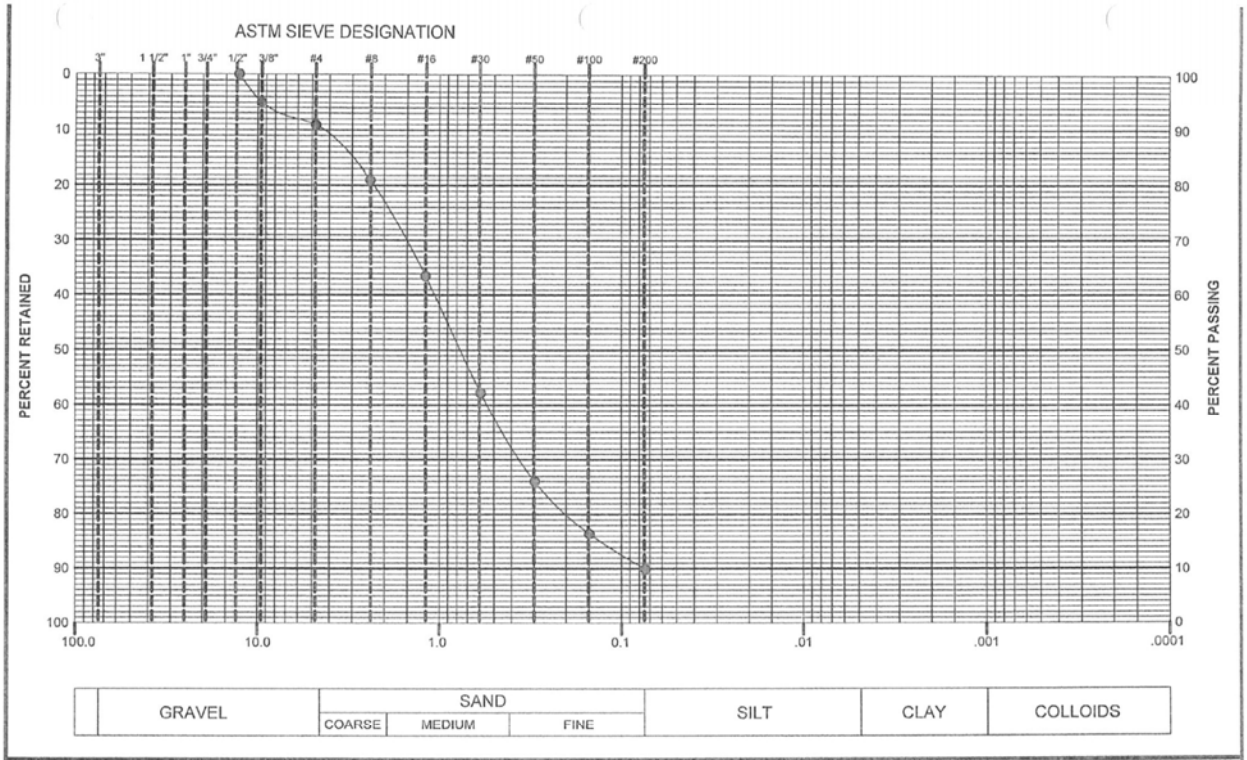
Symbol	Boring or Trench	Depth (ft.)	L.L.	P.L.	P.I.	% Passing #200 sieve	Group Symbol	Typical Names
●	HS-1	50.00				72.4		

GRAIN SIZE DISTRIBUTION

NEBLETT & ASSOCIATES,INC.
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA, 92649 714 840-8286

P.N. 665-000-01 DATE 4/3/09

III-2



GRAVEL	SAND			SILT	CLAY	COLLOIDS
	COARSE	MEDIUM	FINE			

Symbol	Boring or Trench	Depth (ft.)	L.L.	P.L.	P.I.	% Passing #200 sieve	Group Symbol	Typical Names
●	HS-1	30.00				9.9		

GRAIN SIZE DISTRIBUTION

NEBLETT & ASSOCIATES,INC.
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA, 92649 714 840-8286

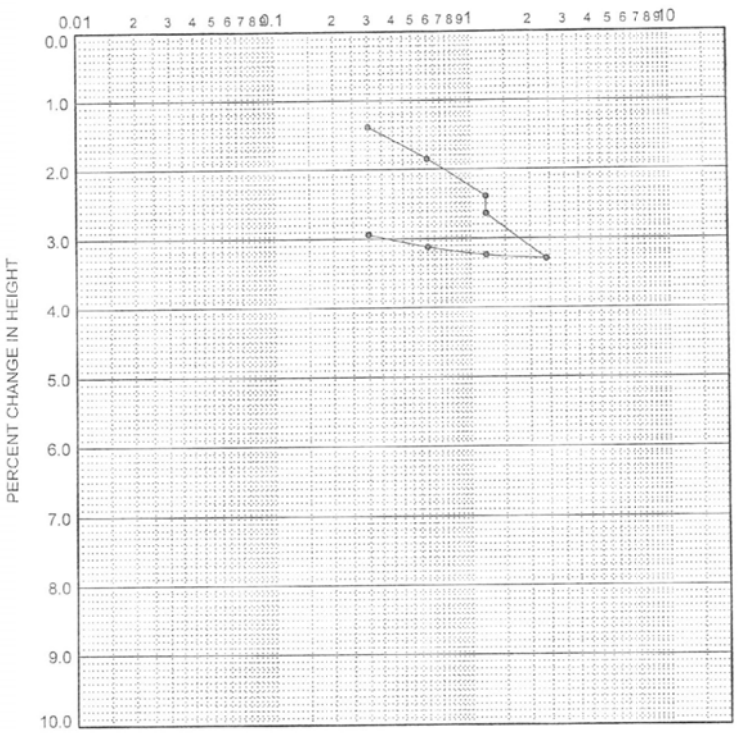
P.N. 665-000-01 DATE 4/3/09

III-1

GRAIN SIZE DISTRIBUTION
NEBLETT & ASSOCIATES, INC.
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA. 92649
714 840-8286
P.N. 665-000-01 DATE 4/3/09
Symbol
Boring or Trench
Depth (ft.)
L.L.
P.L.
P.I.
% Passing #200 sieve
Group Symbol
Typical Names
HS-2
25.00
44.6
GRAVEL
SAND
COARSE
MEDIUM
FINE
SILT
CLAY
COLLOIDS
ASTM SIEVE DESIGNATION
PERCENT PASSING
PERCENT RETAINED

CONSOLIDATION CURVE
NEBLETT & ASSOCIATES, INC.
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA. 92649
714 840-8286
PN 665-000-01
DATE
COMPRESSIVE STRESS IN TSF
PERCENT CHANGE IN HEIGHT
Boring
Depth(ft.)
Dry Density
In situ Moist.
-200 sieve
Group Symbol
Soil Description
HS-1
25.0
113.4
3.8
WATER ADDED AT 1.6 TSF.

CVAR_09757

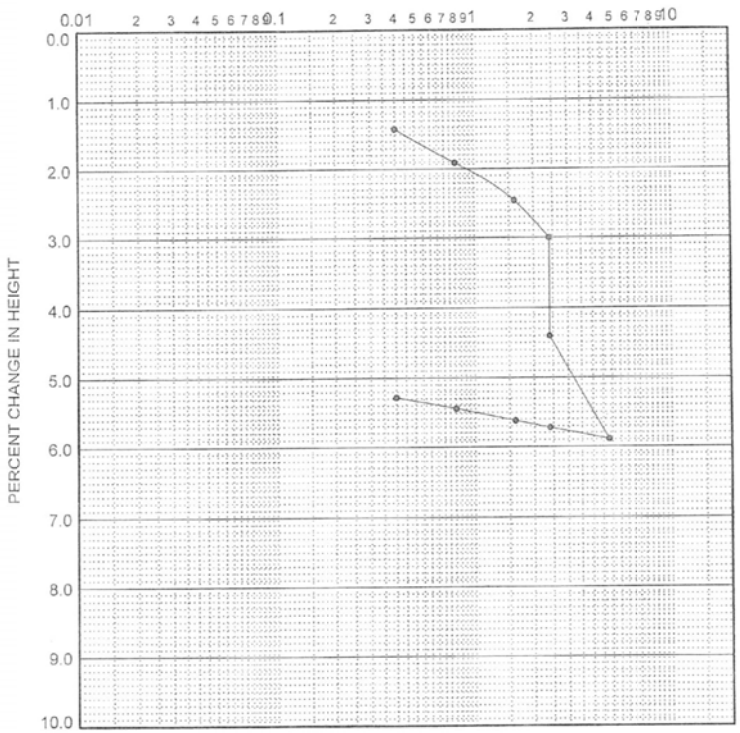


Boring	Depth(ft.)	Dry Density	in situ Moist.	-200 sieve	Group Symbol	Soil Description
HS-2	20.0	115.3	9.5			

WATER ADDED AT 1.2 TSF.

CONSOLIDATION CURVE

NEBLETT & ASSOCIATES, INC.
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA, 92649 714 840-8286
PN 665-000-01 DATE



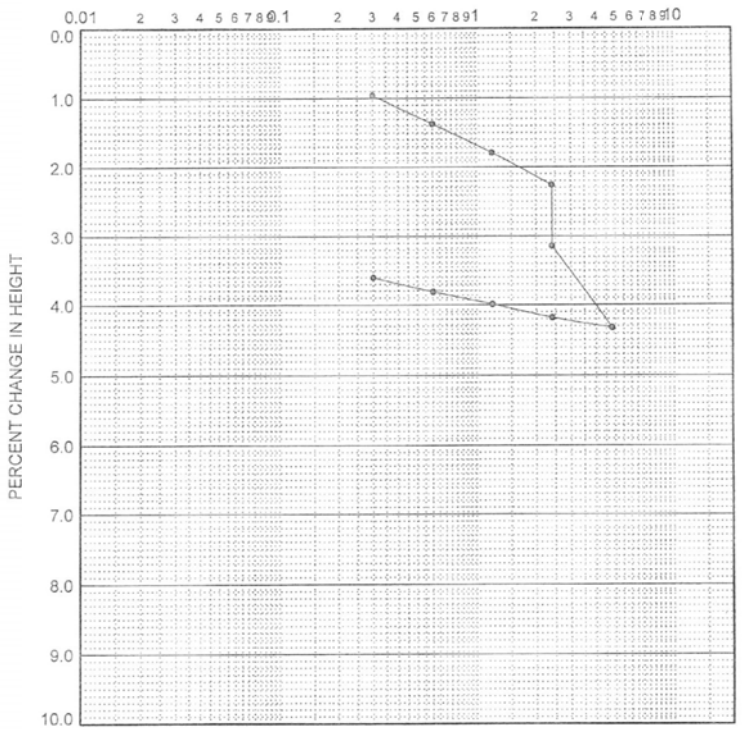
Boring	Depth(ft.)	Dry Density	in situ Moist.	-200 sieve	Group Symbol	Soil Description
HS-1	35.0	109.8	8.2			

WATER ADDED AT 2.4 TSF.

CONSOLIDATION CURVE

NEBLETT & ASSOCIATES, INC.
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA, 92649 714 840-8286
PN 665-000-01 DATE

CVAR_09758

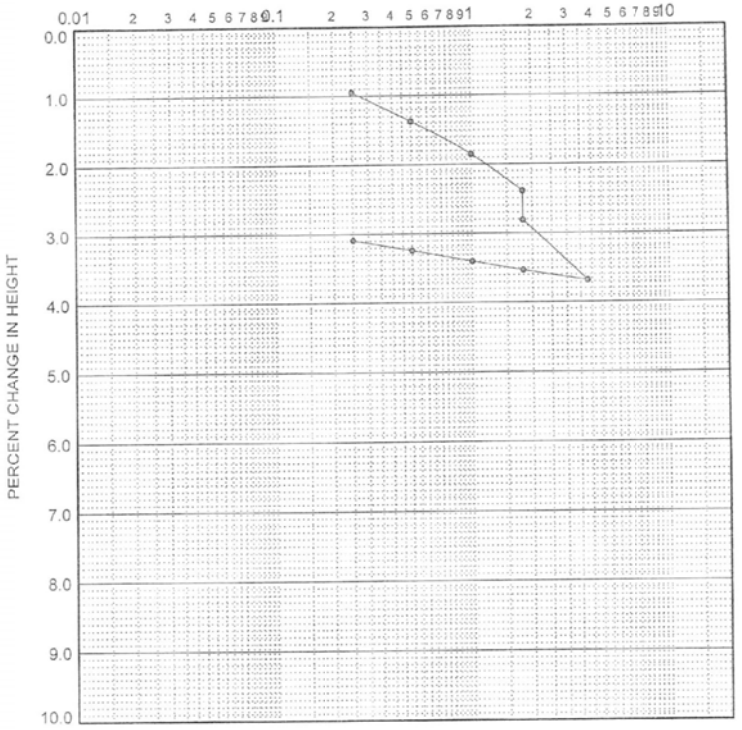


Boring	Depth(ft.)	Dry Density	In situ Moist.	-200 sieve	Group Symbol	Soil Description
HS-2	40.0	111.5	8.0			

WATER ADDED AT 2.4 TSF.

CONSOLIDATION CURVE

NEBLETT & ASSOCIATES, INC.
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA, 92649 714 840-8286
PN 665-000-01 DATE



Boring	Depth(ft.)	Dry Density	In situ Moist.	-200 sieve	Group Symbol	Soil Description
HS-2	30.0	117.9	7.2			

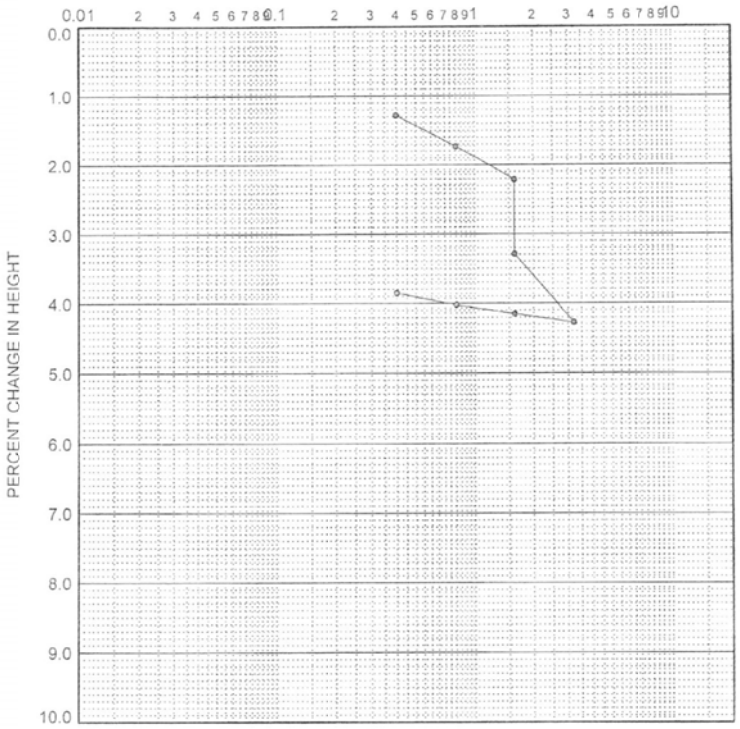
WATER ADDED AT 1.8 TSF.

CONSOLIDATION CURVE

NEBLETT & ASSOCIATES, INC.
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA, 92649 714 840-8286
PN 665-000-01 DATE

CVAR_09759

COMPRESSIVE STRESS IN TSF



Boring	Depth(ft.)	Dry Density	in situ Moist.	-200 sieve	Group Symbol	Soil Description
HS-3	25.0		5.2			

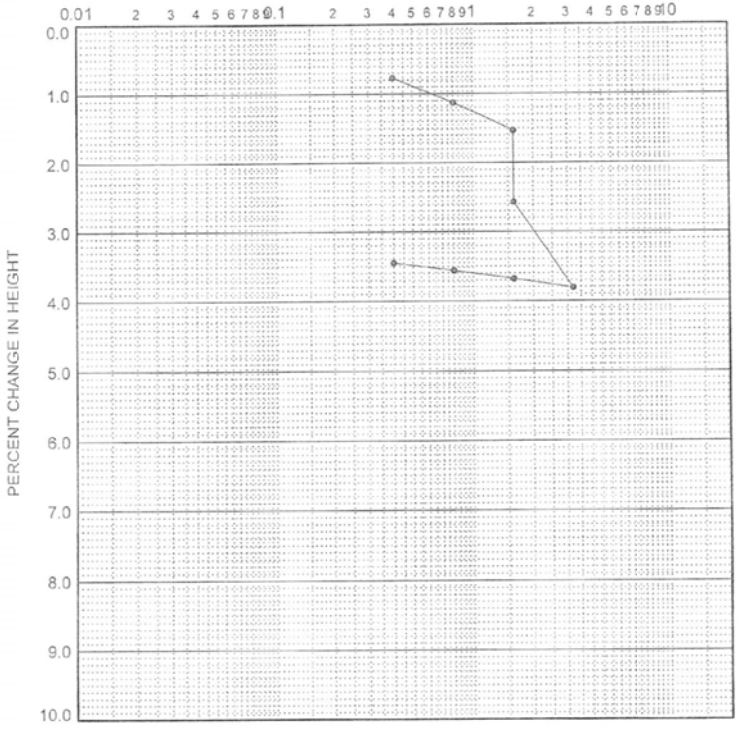
WATER ADDED AT 1.6 TSF.

CONSOLIDATION CURVE

NEBLETT & ASSOCIATES, INC.
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA. 92649 714 840-8286
PN 665-000-01 DATE

III-10

COMPRESSIVE STRESS IN TSF



Boring	Depth(ft.)	Dry Density	in situ Moist.	-200 sieve	Group Symbol	Soil Description
HS-3	15.0		3.8			

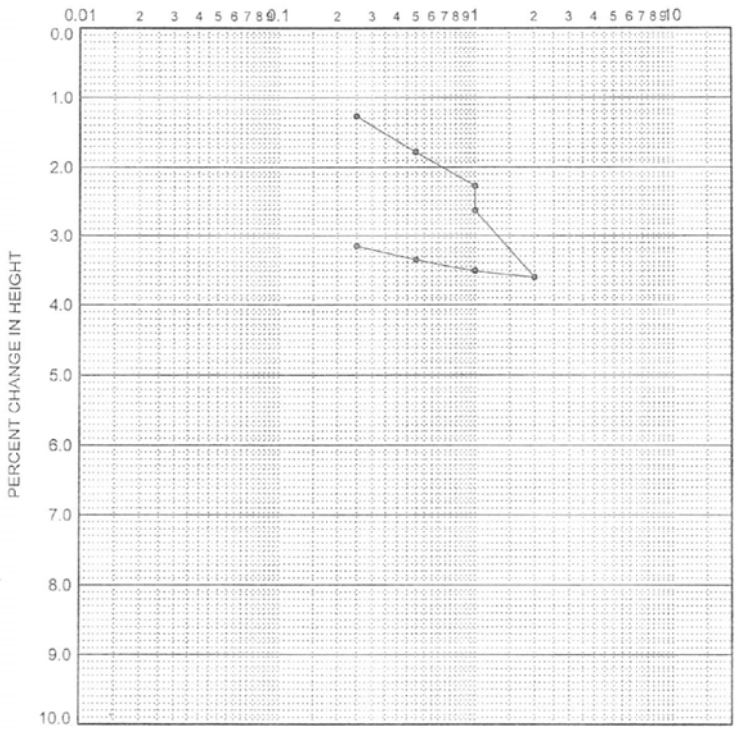
WATER ADDED AT 1.6 TSF.

CONSOLIDATION CURVE

NEBLETT & ASSOCIATES, INC.
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA. 92649 714 840-8286
PN 665-000-01 DATE

III-9

CVAR_09760



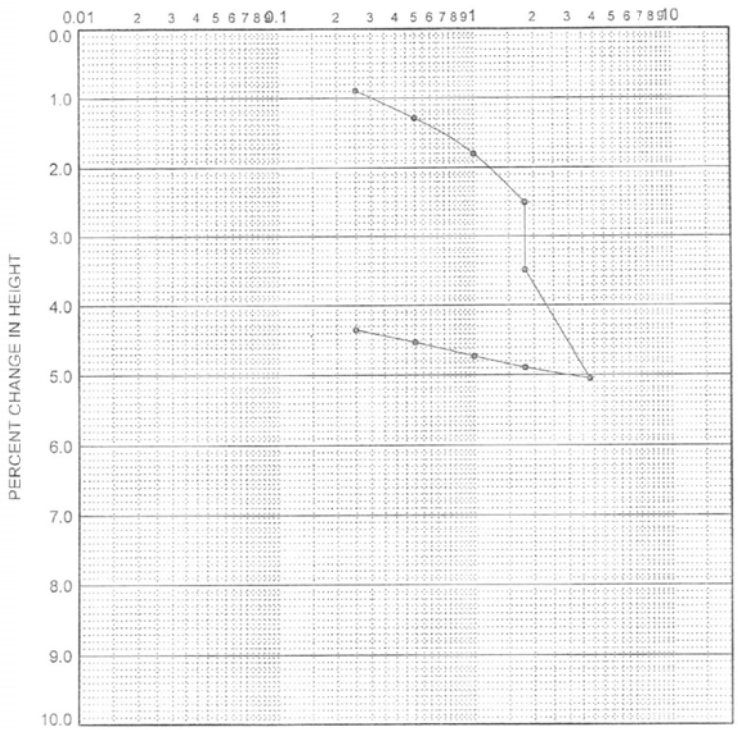
Boring	Depth(ft.)	Dry Density	In situ Moist.	-200 sieve	Group Symbol	Soil Description
HS-4	15.0	108.4	6.2			

WATER ADDED AT 1 TSF.

CONSOLIDATION CURVE

NEBLETT & ASSOCIATES, INC.
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA, 92649 714 840-8286

PN 665-000-01 DATE



Boring	Depth(ft.)	Dry Density	In situ Moist.	-200 sieve	Group Symbol	Soil Description
HS-3	35.0		8.7			

WATER ADDED AT 1.8 TSF.

CONSOLIDATION CURVE

NEBLETT & ASSOCIATES, INC.
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA, 92649 714 840-8286

PN 665-000-01 DATE

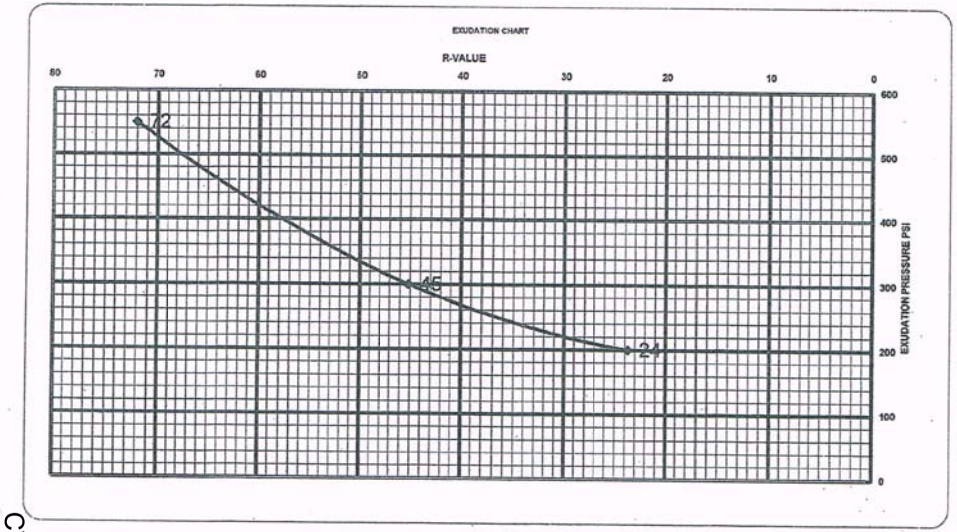
CVAR_09761

Enclosure: "C-24"
Job No. 04806-3

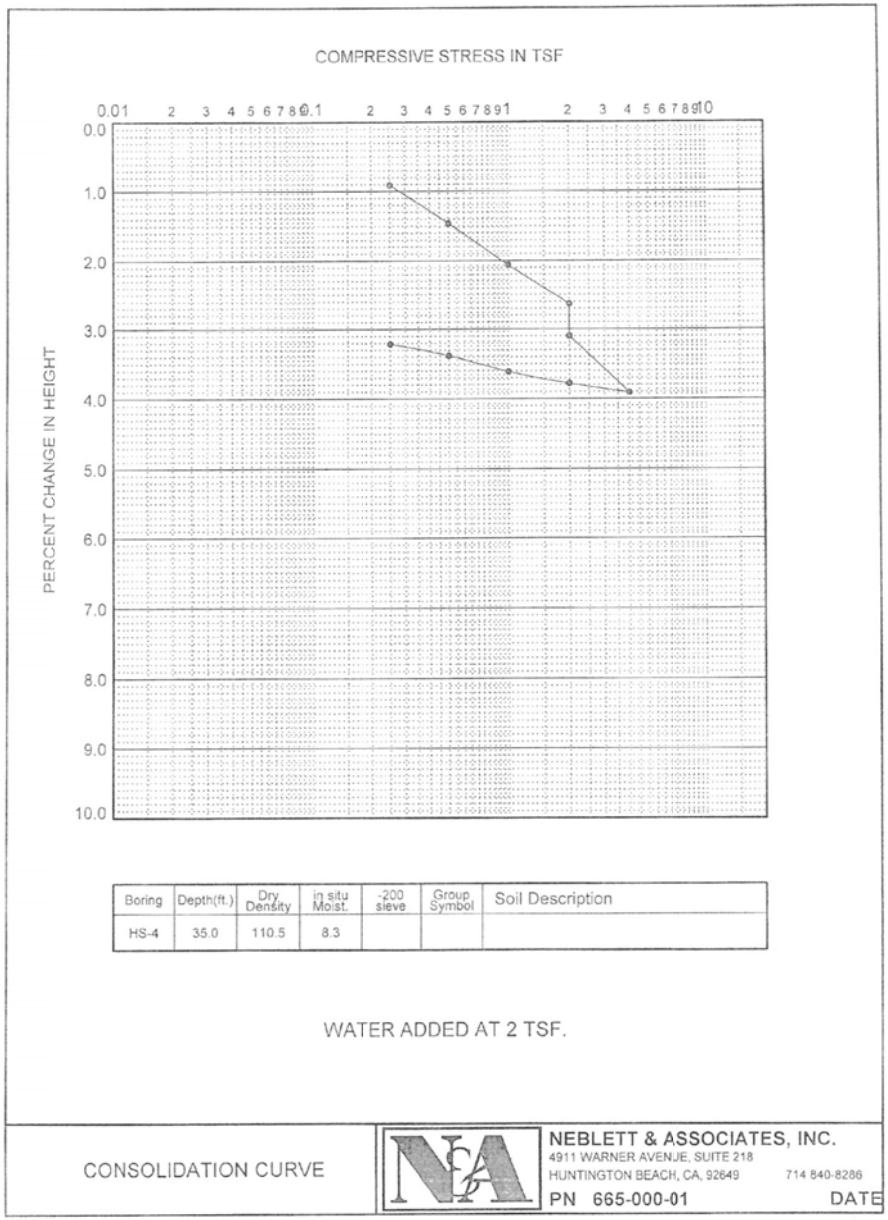
LABORATORY RECORD OF TESTS MADE ON BASE, SUBBASE, AND BASEMENT SOILS

CLIENT:
PROJECT TSG - Cherry Valley
LOCATION: Cherry Valley, Calif.
R-VALUE # : 22A
T.I. : 5.0

	A	B	C	D
COMPACTOR AIR PRESSURE P.S.I.	350	325	300	
INITIAL MOISTURE %	10.3	10.3	10.3	
WATER ADDED, ML	0	10	25	
WATER ADDED %	0.0	0.9	2.3	
MOISTURE AT COMPACTION %	10.3	11.2	12.6	
HEIGHT OF BRIQUETTE	2.47	2.49	2.50	
WET WEIGHT OF BRIQUETTE	1170	1170	1170	
DENSITY LB. PER CU.FT.	130.1	128.0	125.9	
STABILOMETER PH AT 1000 LBS.	16	32	42	
2000 LBS.	34	70	106	
DISPLACEMENT	3.60	3.90	4.10	
R-VALUE	72	45	24	
EXUDATION PRESSURE	550	300	200	
THICK. INDICATED BY STAB.	0.45	0.88	1.22	
EXPANSION PRESSURE	30	13	4	
THICK. INDICATED BY E.P.	1.00	0.43	0.13	



R-Value: 45



Boring	Depth(ft.)	Dry Density	In situ Moist.	-200 sieve	Group Symbol	Soil Description
HS-4	35.0	110.5	8.3			

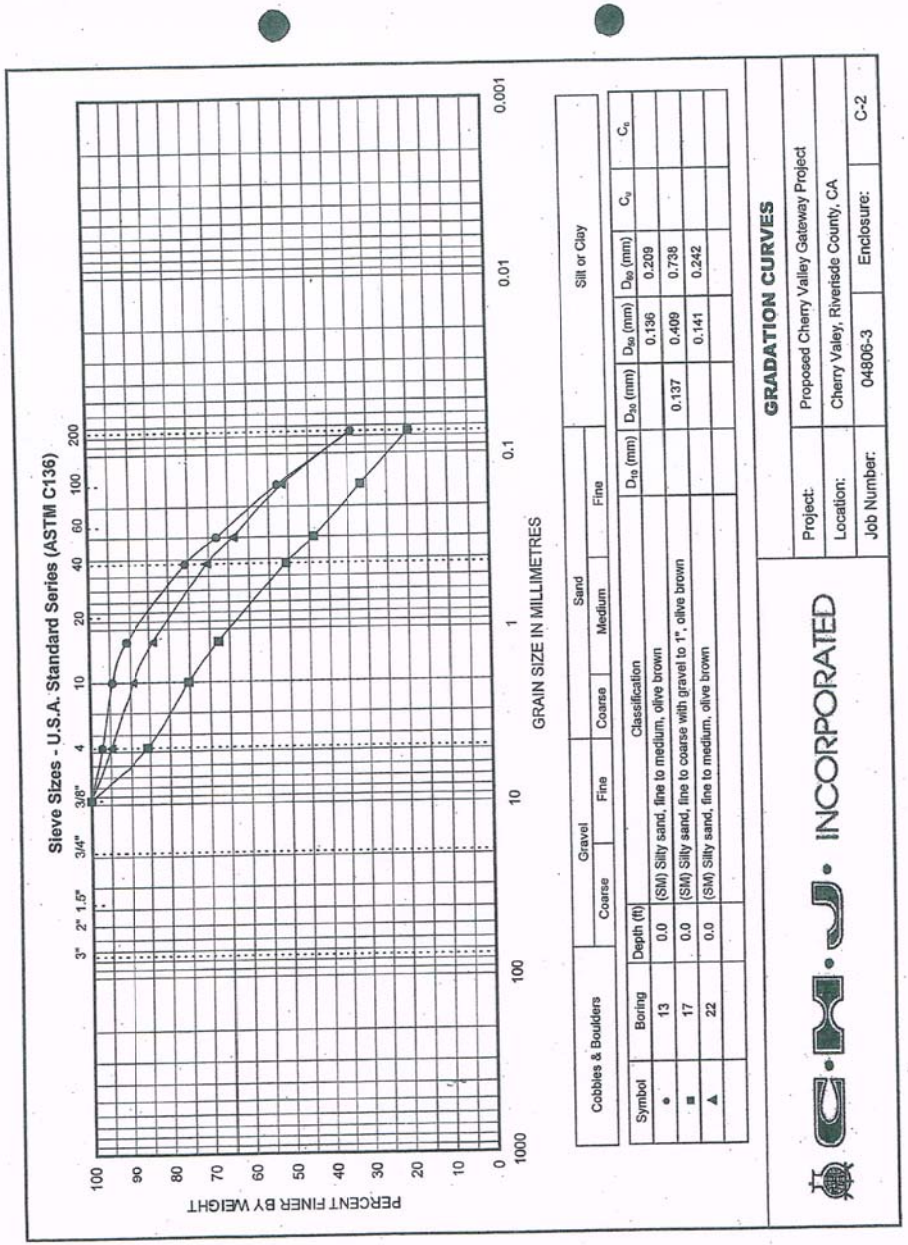
WATER ADDED AT 2 TSF.

CONSOLIDATION CURVE

NEBLETT & ASSOCIATES, INC.
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA, 92649 714 840-8286
PN 665-000-01 DATE

III-13

CVAR_09762



Enclosure "C-1"
Job No. 04806-3

TEST DATA SUMMARY

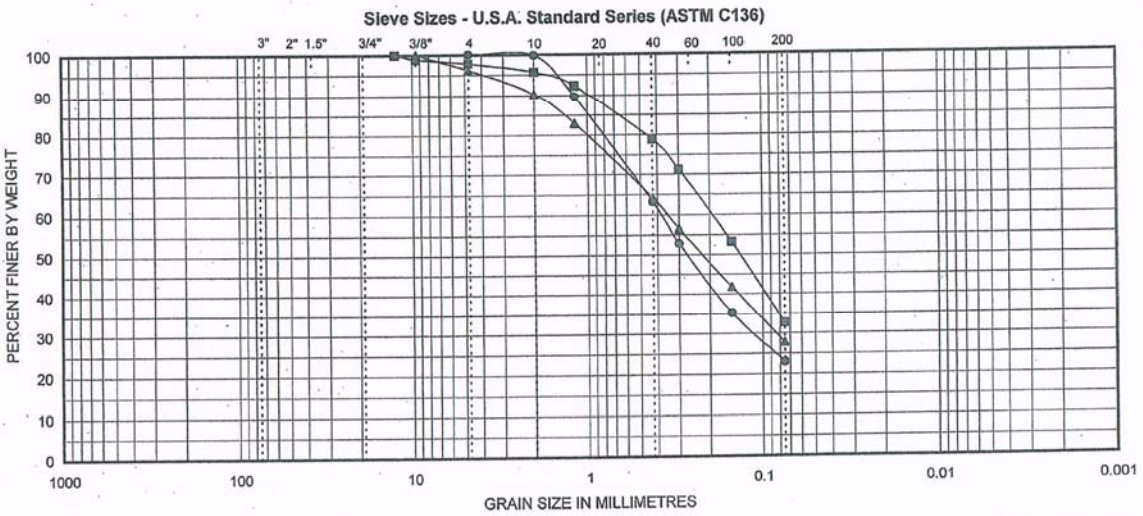
OPTIMUM MOISTURE - MAXIMUM DENSITY RELATION(S):
ASTM D 1557-00

Boring No.	Depth of Sample (ft.)	Classification	Optimum Moisture (Percent)	Maximum Dry Density (pcf)
1	0.0	Silty Sand, fine to medium, brown (SM)	10.5	125
7	0.0	Silty Sand, fine to medium brown (SM)	10.0	130
13	0.0	Silty Sand, fine to medium olive brown (SM)	9.0	131
17	0.0	Silty Sand, fine to coarse with gravel to 1", olive brown (SM)	9.0	132
22	0.0	Silty Sand, fine to medium olive brown (SM)	10.0	131
34	0.0	Silty Sand, fine to medium with coarse, red brown (SM)	11.0	126

DIRECT SHEAR TEST(S) - Undisturbed: (Saturated)
ASTM D 3080

Boring No.	Depth of Sample (ft.)	Angle of Internal Friction (°)	Apparent Cohesion (PSF)
1	5.0	35	82
8	10.0	33	85
13	10.0	32	174
17	10.0	41	-0-
22	2.0	31	498
25	1.0	30	588
30	7.0	32	72
34	2.0	31	54

CVAR_09763



Cobbles & Boulders	Gravel		Sand			Silt or Clay
	Coarse	Fine	Coarse	Medium	Fine	

Symbol	Boring	Depth (ft)	Classification	D_{10} (mm)	D_{30} (mm)	D_{50} (mm)	D_{60} (mm)	C_u	C_c
●	1	0.0	(SM) Silty sand, fine to medium, brown		0.112	0.269	0.382		
■	6	0.0	(SM) Silty sand, fine with medium, brown			0.135	0.195		
▲	7	0.0	(SM) Silty sand, fine to medium, brown		0.083	0.221	0.352		

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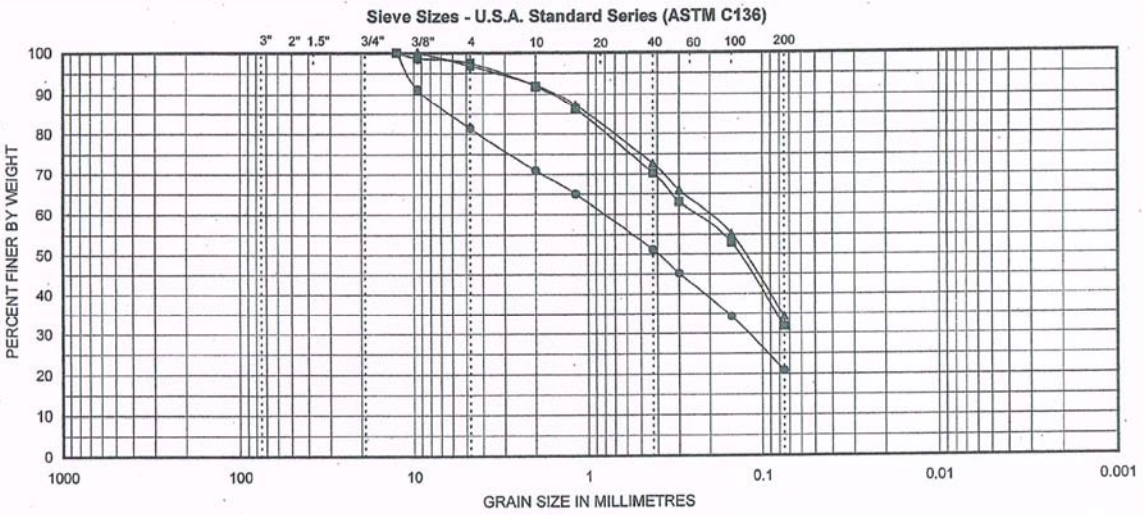
GRADATION CURVES

Project:	Proposed Cherry Valley Gateway Project		
Location:	Cherry Valley, Riverisde County, CA		
Job Number:	04806-3	Enclosure:	C-4



Cobbles & Boulders	Gravel		Sand			Silt or Clay
	Coarse	Fine	Coarse	Medium	Fine	

Symbol	Boring	Depth (ft)	Classification	D_{10} (mm)	D_{30} (mm)	D_{50} (mm)	D_{60} (mm)	C_u	C_c
●	25	0.0	(SM) Silty sand, fine to coarse with gravel to 2", olive brown		0.120	0.396	0.818		
■	30	0.0	(SM) Silty sand, fine to medium with coarse, dark brown			0.136	0.244		
▲	34	0.0	(SM) Silty sand, fine to medium with coarse, red brown			0.127	0.206		

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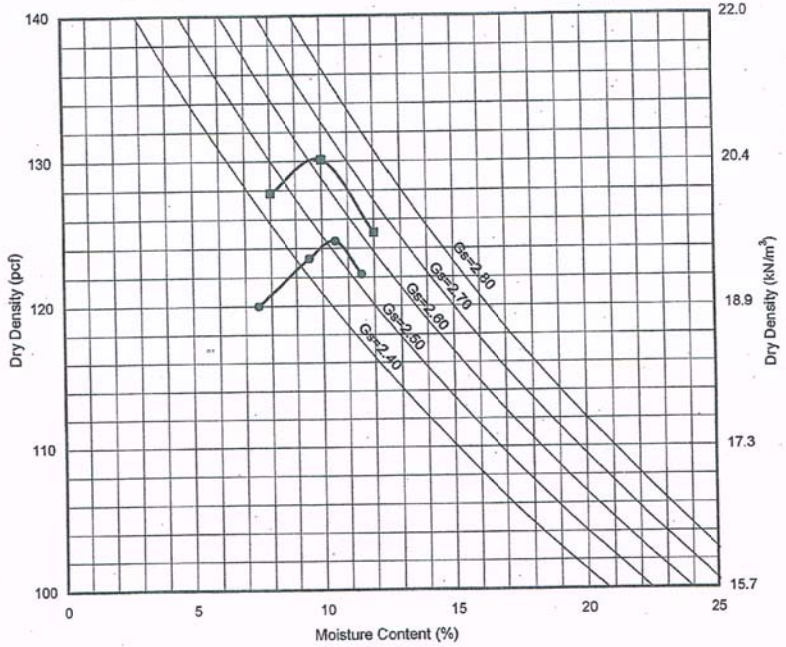
GRADATION CURVES

Project:	Proposed Cherry Valley Gateway Project		
Location:	Cherry Valley, Riverisde County, CA		
Job Number:	04806-3	Enclosure:	C-3

CVAR_09764

Maximum Density Optimum Moisture Determination Test (ASTM 1557)



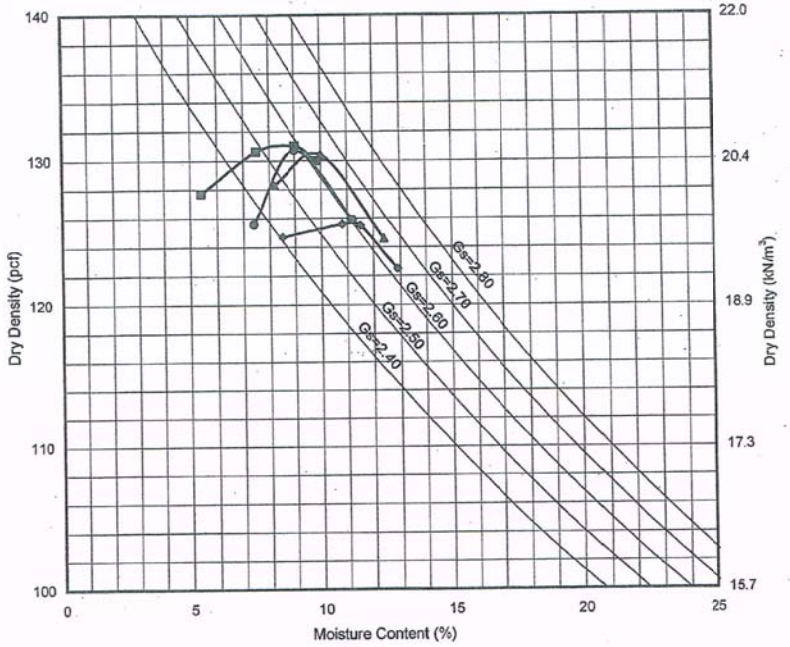
	Boring #	Depth(ft)	Soil/Sample Type	γ_{max} (pcf)	w_{opt} (%)
●	1	0	(SM) Silty sand, fine to medium, brown	125	10.5
■	7	0	(SM) Silty sand, fine to medium, brown	130	10.0

MOISTURE DENSITY TEST

Project:	Proposed Cherry Valley Gateway Project		
Location:	Cherry Valley, Riverisde County, CA		
Job No.:	04806-3	Enclosure:	C-6

C·M·J· INCORPORATED

Maximum Density Optimum Moisture Determination Test (ASTM 1557)



	Boring #	Depth(ft)	Soil/Sample Type	γ_{max} (pcf)	w_{opt} (%)
●	13	0	(SM) Silty sand, fine to medium, olive brown	131	9.0
■	17	0	(SM) Silty sand, fine to coarse with gravel to 1", olive brown	132	9.0
▲	22	0	(SM) Silty sand, fine to medium, olive brown	131	10.0
♦	34	0	(SM) Silty sand, fine to medium with coarse, red brown	126	11.0

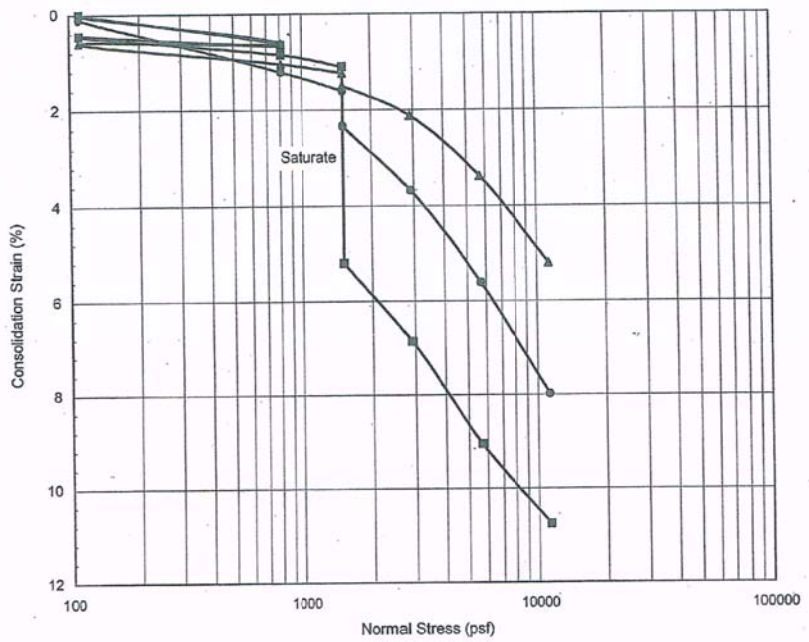
MOISTURE DENSITY TEST

Project:	Proposed Cherry Valley Gateway Project		
Location:	Cherry Valley, Riverisde County, CA		
Job No.:	04806-3	Enclosure:	C-5

C·M·J· INCORPORATED

CVAR_09765

Consolidation Test (ASTM D 2435)



Boring #		Depth(ft)	Soil/Sample Type	γ_d (pcf)	MC(%)	HCS(%)
●	17	5	(SM) Silty sand, fine to coarse with gravel to 1", olive brown	107	8.2	0.72
■	30	2	(SM) Silty sand, fine to medium with coarse, dark brown	112	5.6	4.10
▲	34	7	(SM) Silty sand, fine to medium with coarse, red brown	113	9.3	0.27

* HCS - Hydroconsolidation strain in percent.

CONSOLIDATION TEST			
Project:	Proposed Cherry Valley Gateway Project		
Location:	Cherry Valley, Riverisde County, CA		
Job No.:	04806-3	Enclosure:	C-8

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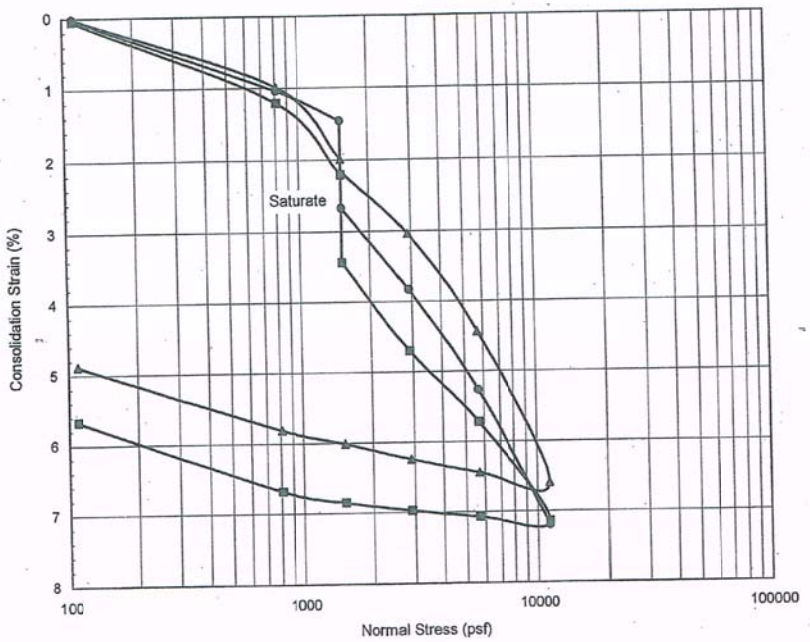
Consolidation Test (ASTM D 2435)



Boring #		Depth(ft)	Soil/Sample Type	γ_d (pcf)	MC(%)	HCS(%)
●	13	5	(SM) Silty sand, fine to medium, olive brown	113	8.5	1.21
■	22	7	(SM) Silty sand, fine to medium, olive brown	97	15.6	1.23
▲	25	5	(SM) Silty sand, fine to coarse with gravel to 2", olive brown	120	9.2	0.17

* HCS - Hydroconsolidation strain in percent.

CONSOLIDATION TEST			
Project:	Proposed Cherry Valley Gateway Project		
Location:	Cherry Valley, Riverisde County, CA		
Job No.:	04806-3	Enclosure:	C-7

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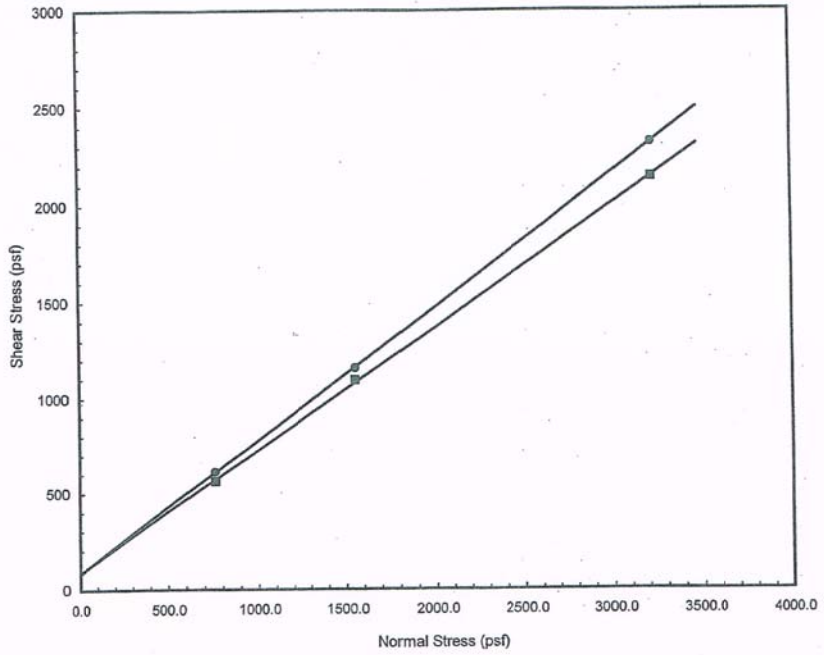
CVAR_09766

Direct Shear Test (ASTM D 3080)



Boring #		Depth(ft)	Soil/Sample Type	γ_d (pcf)	MC(%)	C (psf)	φ(°)
•	1	5	(SM) Silty sand, fine to medium, brown / undisturbed	100	9.4	82	35
■	8	10	(SM) Silty sand, fine with medium and gravel to 1 1/2", brown / undisturbed	110	6.6	85	33

DIRECT SHEAR TEST			
Project:	Proposed Cherry VAlley Gateway Project		
Location:	Cherry Valey, Riverisde County, CA		
Job No.:	04806-3	Enclosure:	C-10

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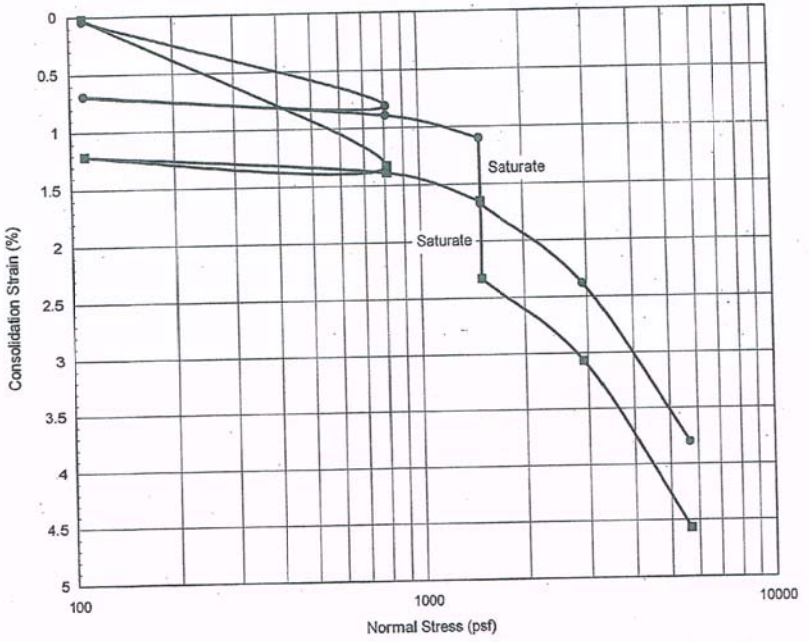
Consolidation Test (ASTM D 2435)



Boring #		Depth(ft)	Soil/Sample Type	γ_d (pcf)	MC(%)	HCS(%)
•	1	5	(SM) Silty sand, fine to medium, brown	100	9.4	0.57
■	9	1	(SM) Silty sand, fine with medium, brown	113	5.5	0.68

* HCS - Hydroconsolidation strain in percent.

CONSOLIDATION TEST			
Project:	Proposed Cherry Valley Gateway Project		
Location:	Cherry Valey, Riverisde County, CA		
Job No.:	04806-3	Enclosure:	C-9

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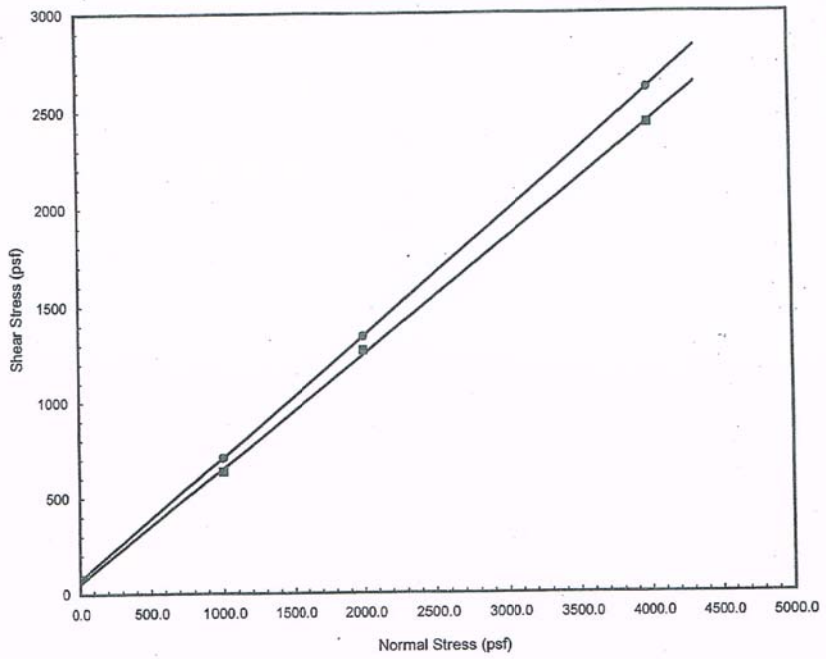
CVAR_09767

Direct Shear Test (ASTM D 3080)

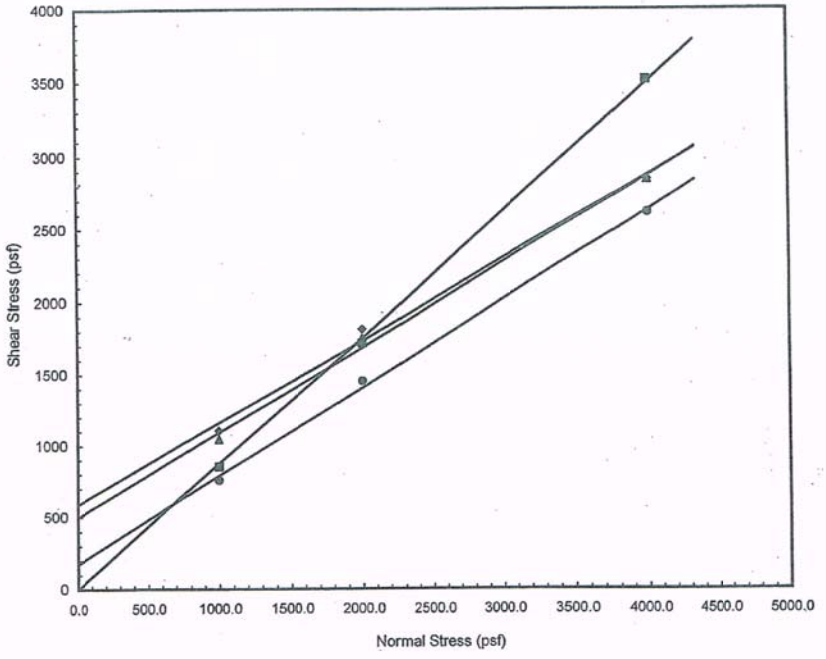


	Boring #	Depth(ft)	Soil/Sample Type	γ_d (pcf)	MC(%)	C (psf)	φ(°)
●	30	7	(SM) Silty sand, fint to medium with coarse, red brown	119	9.2	72	32
■	34	2	(SM) Silty sand, fint to medium with coarse, red brown	111	6.2	54	31

C.H.J. Incorporated

DIRECT SHEAR TEST			
Project:	Proposed Cherry Valley Gateway Project		
Location:	Cherry Valley, Riverisde County, CA		
Job No.:	04806-3	Enclosure:	C-12

Direct Shear Test (ASTM D 3080)

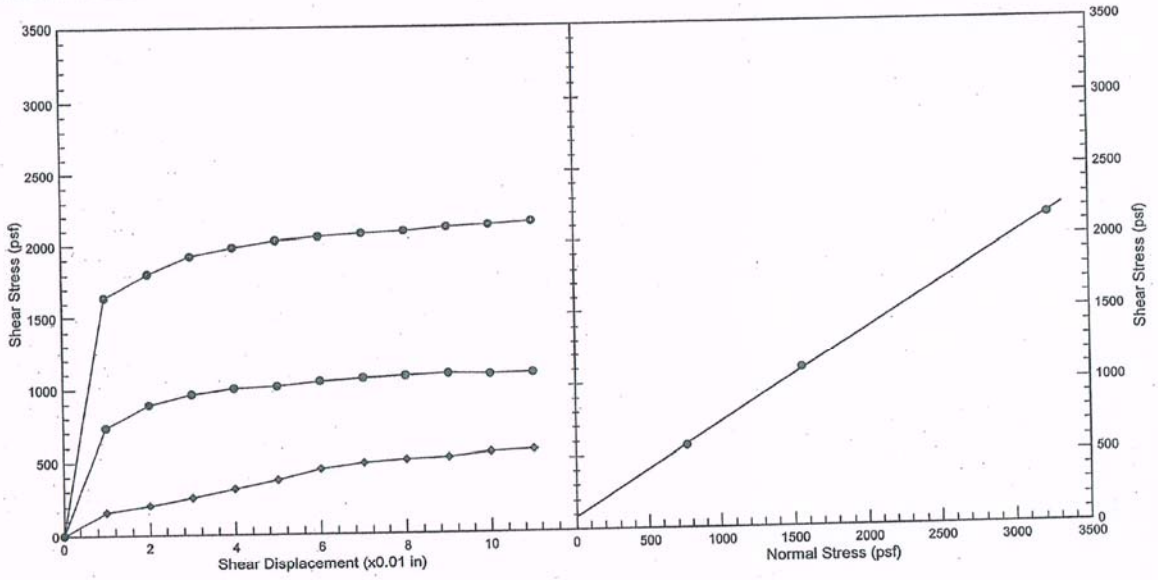


	Boring #	Depth(ft)	Soil/Sample Type	γ_d (pcf)	MC(%)	C (psf)	φ(°)
●	13	10	(SM) Silty sand, fint to medium with coarse, brown	114	10.6	174	32
■	17	10	(SM) Silty sand, fint to medium with clay, olive gray	116	10.4	0	41
▲	22	2	(SM) Silty sand, fine to medium with coarse, olive gray	97	15.6	498	31
◆	25	1	(SM) Silty sand, fine to medium with coarse, olive brown	116	6.0	588	30

C.H.J. Incorporated

DIRECT SHEAR TEST			
Project:	Proposed Cherry Valley Gateway Project		
Location:	Cherry Valley, Riverisde County, CA		
Job No.:	04806-3	Enclosure:	C-11

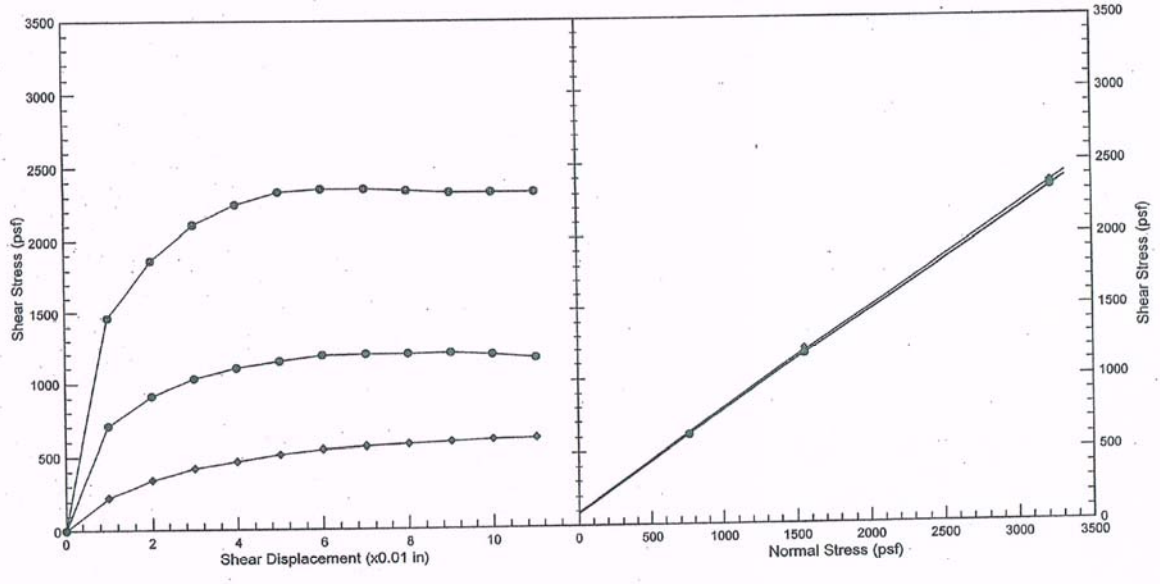
CVAR_09768



Boring #	Depth(ft)	Soil/Sample Type	γ_d (pcf)	MC (%)	C_{peak} (psf)	φ_{peak} (°)	C_{res} (psf)	φ_{res} (°)
• 8	10	(SM) Silty sand, fine with medium and gravel to 1 1/2", brown / undisturbed	110	6.6	86	32.7	85	32.7

DIRECT SHEAR TEST

Project:	Proposed Cherry VAlley Gateway Project		
Location	Cherry Valey, Riverisde County, CA		
Job Number	04806-3	Enclosure	C-14



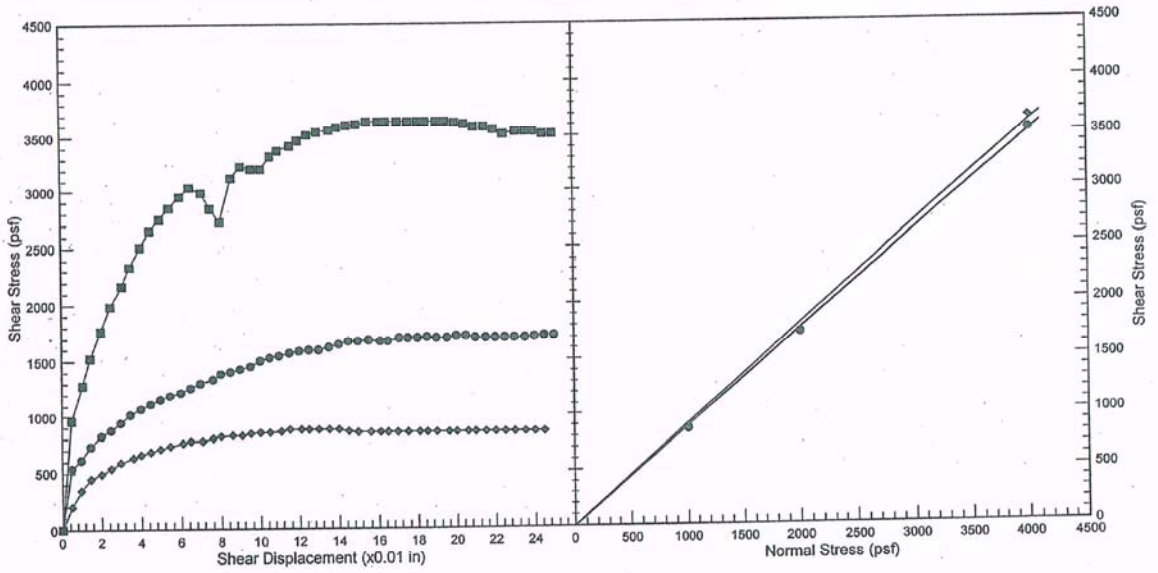
Boring #	Depth(ft)	Soil/Sample Type	γ_d (pcf)	MC (%)	C_{peak} (psf)	φ_{peak} (°)	C_{res} (psf)	φ_{res} (°)
• 1	5	(SM) Silty sand, fine to medium, brown / undisturbed	100	9.4	92	35.1	82	34.8

C·M·J· INCORPORATED

DIRECT SHEAR TEST

Project:	Proposed Cherry VAlley Gateway Project		
Location	Cherry Valey, Riverisde County, CA		
Job Number	04806-3	Enclosure	C-13

CVAR_09769

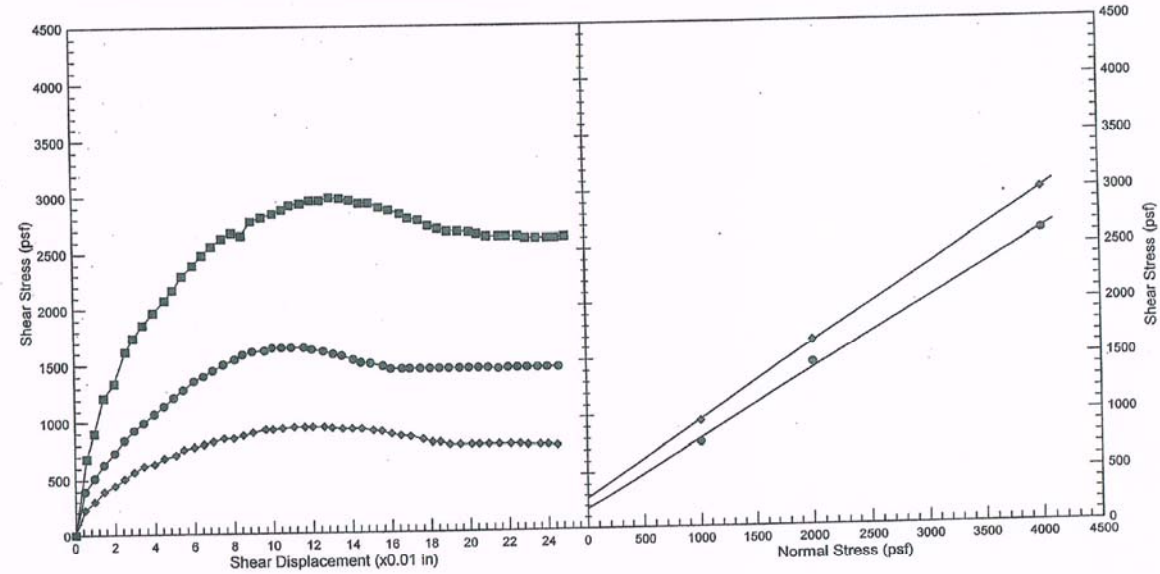


Boring #	Depth(ft)	Soil/Sample Type	γ_d (pcf)	MC (%)	C_{peak} (psf)	φ_{peak} (°)	C_{res} (psf)	φ_{res} (°)
• 17	10	(SM) Silty sand, fint to medium with clay, olive gray	116	10.4	0	41.9	0	41.1

C.H.J. Incorporated

DIRECT SHEAR TEST

Project:	Proposed Cherry Valley Gateway Project		
Location	Cherry Valey, Riverisde County, CA		
Job Number	04806-3	Enclosure	C-16

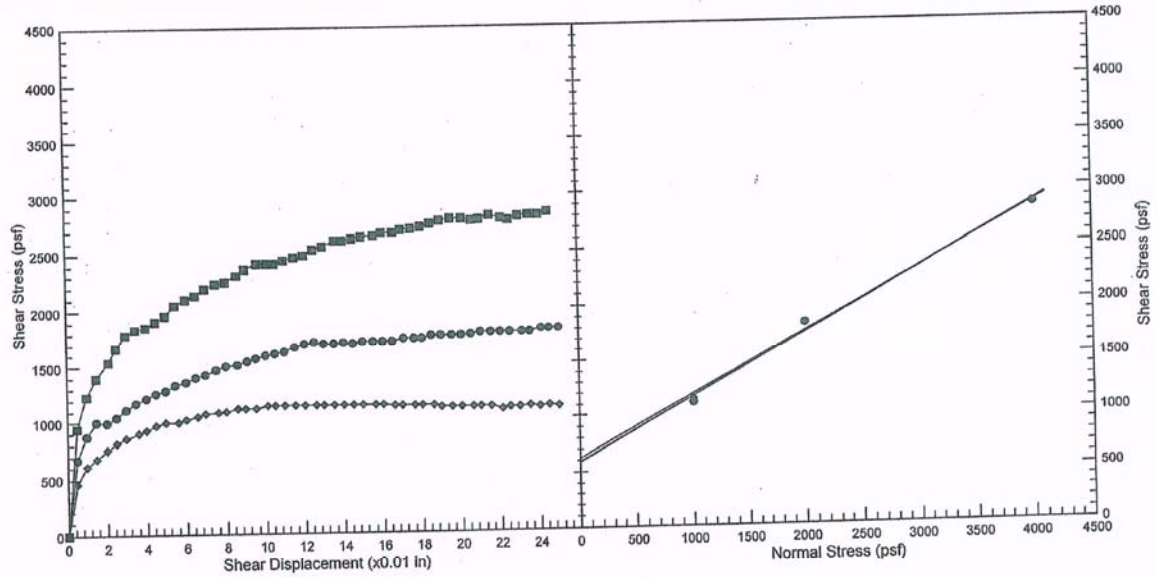


Boring #	Depth(ft)	Soil/Sample Type	γ_d (pcf)	MC (%)	C_{peak} (psf)	φ_{peak} (°)	C_{res} (psf)	φ_{res} (°)
• 13	10	(SM) Silty sand, fint to medium with clay, olive gray	116	10.4	276	34.2	174	31.6

C.H.J. Incorporated

DIRECT SHEAR TEST

Project:	Proposed Cherry Valley Gateway Project		
Location	Cherry Valey, Riverisde County, CA		
Job Number	04806-3	Enclosure	C-15

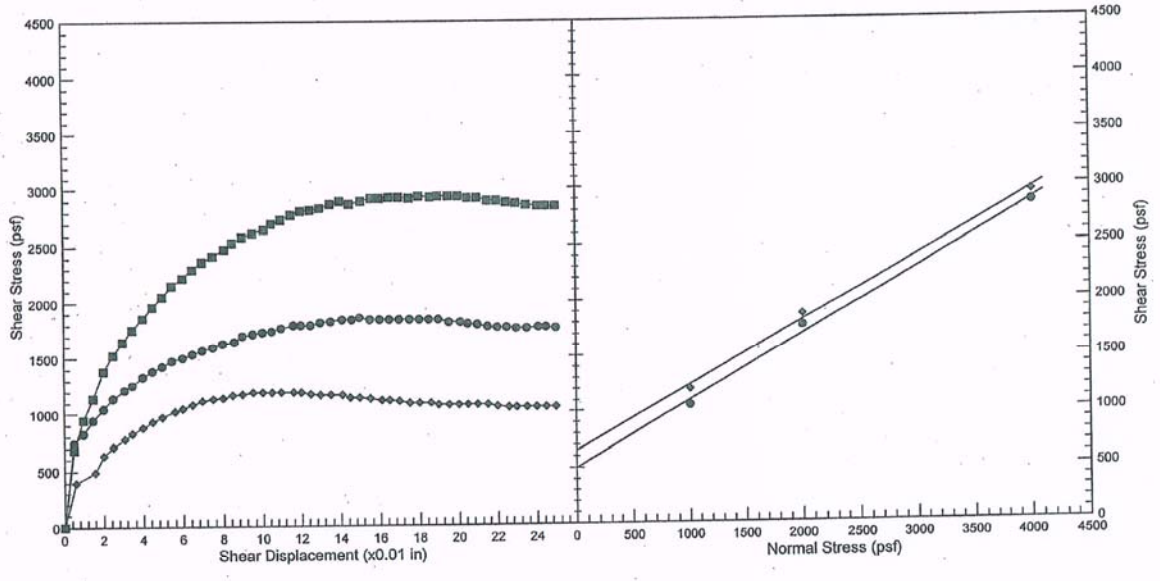


Boring #	Depth(ft)	Soil/Sample Type	γ_d (pcf)	MC (%)	C_{peak} (psf)	φ_{peak} (°)	C_{res} (psf)	φ_{res} (°)
• 25	1	(SM) Silty sand, fine to medium with coarse, olive brown	116	6	624	29.3	588	29.7

C.H.J. Incorporated

DIRECT SHEAR TEST

Project:	Proposed Cherry Valley Gateway Project		
Location	Cherry Valey, Riverisde County, CA		
Job Number	04806-3	Enclosure	C-18

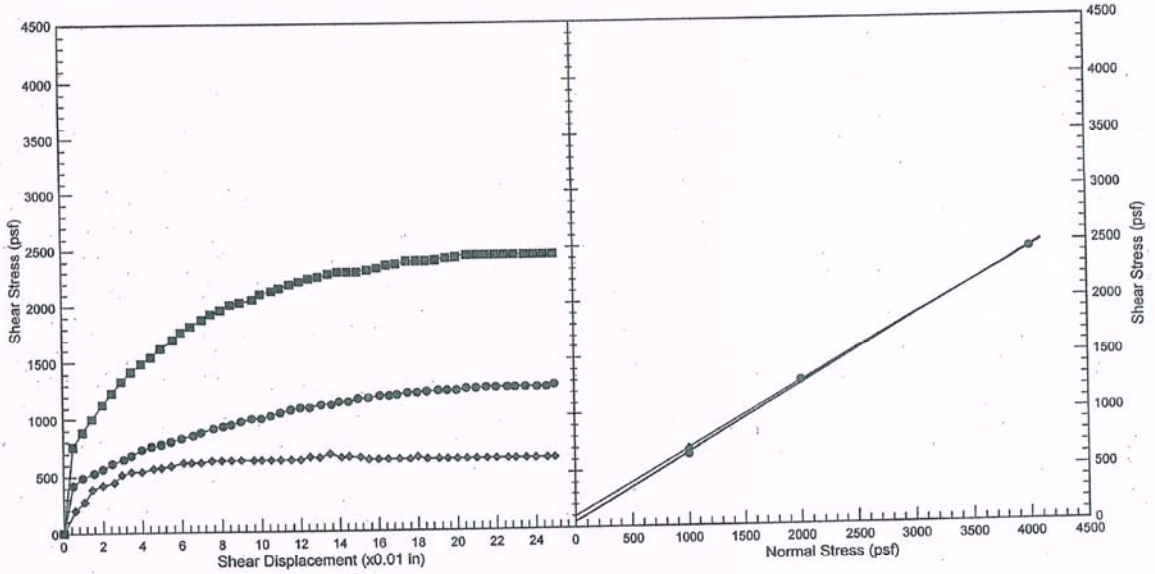


Boring #	Depth(ft)	Soil/Sample Type	γ_d (pcf)	MC (%)	C_{peak} (psf)	φ_{peak} (°)	C_{res} (psf)	φ_{res} (°)
• 22	2	(SM) Silty sand, fine to medium with coarse, olive gray	97	15.6	648	30.0	498	30.6

C.H.J. Incorporated

DIRECT SHEAR TEST

Project:	Proposed Cherry Valley Gateway Project		
Location	Cherry Valey, Riverisde County, CA		
Job Number	04806-3	Enclosure	C-17

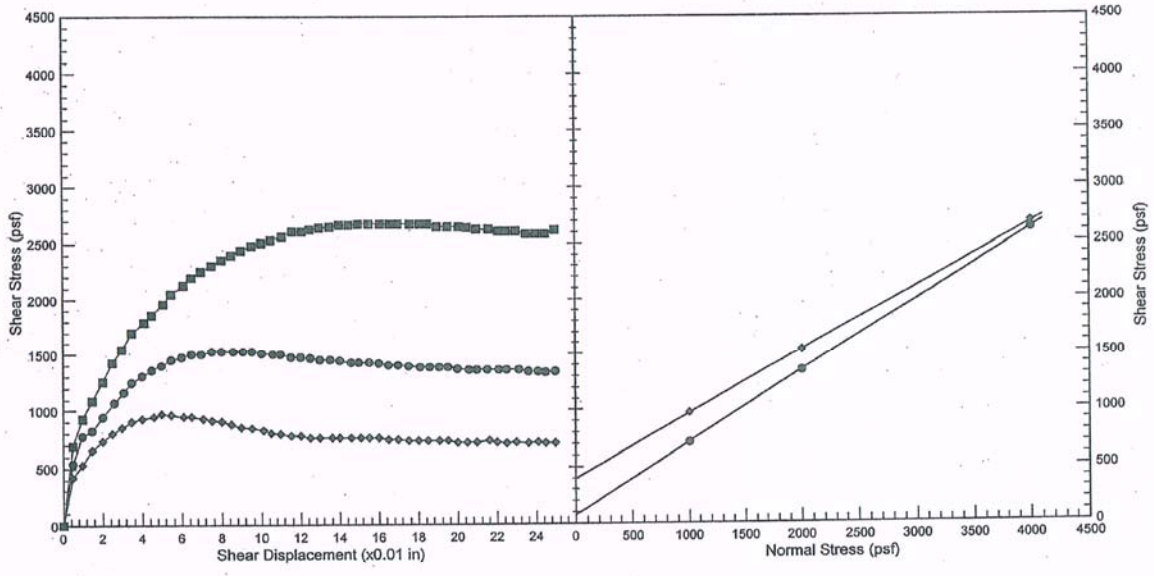


Boring #	Depth(ft)	Soil/Sample Type	γ_d (pcf)	MC (%)	C_{peak} (psf)	φ_{peak} (°)	C_{res} (psf)	φ_{res} (°)
• 34	2	(SM) Silty sand, fint to medium with coarse, red brown	111	6.2	102	30.3	54	30.9

C.H.J. Incorporated

DIRECT SHEAR TEST

Project:	Proposed Cherry Valley Gateway Project		
Location	Cherry Valey, Riverisde County, CA		
Job Number	04806-3	Enclosure	C-20



Boring #	Depth(ft)	Soil/Sample Type	γ_d (pcf)	MC (%)	C_{peak} (psf)	φ_{peak} (°)	C_{res} (psf)	φ_{res} (°)
• 30	7	(SM) Silty sand, fint to medium with coarse, red brown	111	6.2	396	29.6	72	32.5

C.H.J. Incorporated

DIRECT SHEAR TEST

Project:	Proposed Cherry Valley Gateway Project		
Location	Cherry Valey, Riverisde County, CA		
Job Number	04806-3	Enclosure	C-19

M. J. Schiff & Associates, Inc.
Consulting Corrosion Engineers - Since 1959
431 W. Baseline Road
Claremont, CA 91711
Phone: (909) 626-0967 Fax: (909) 626-3316
E-mail lab@mjschiff.com
website: mjschiff.com

Enclosure "C-22"
Job No. 04806-3

Table 1 - Laboratory Tests on Soil Samples

C.H.J., Inc.
TJG Cherry Valley
Your #04806-3, MJS&A #05-1044LAB
29-Jul-05

Sample ID			13	22
Resistivity		**Units**		
as-received		ohm-cm	20,000	11,000
saturated		ohm-cm	5,000	5,900
pH			7.0	7.0
Electrical				
Conductivity		mS/cm	0.10	0.10
Chemical Analyses				
Cations				
calcium	Ca^{2+}	mg/kg	52	40
magnesium	Mg^{2+}	mg/kg	27	39
sodium	Na^{1+}	mg/kg	ND	ND
Anions				
carbonate	CO_3^{2-}	mg/kg	ND	ND
bicarbonate	HCO_3^{1-}	mg/kg	113	113
chloride	Cl^{1-}	mg/kg	20	ND
sulfate	SO_4^{2-}	mg/kg	ND	57
Other Tests				
ammonium	NH_4^{1+}	mg/kg	na	na
nitrate	NO_3^{1-}	mg/kg	na	na
sulfide	S^{2-}	qual	na	na
Redox		mV	na	na

Electrical conductivity in millisiemens/cm and chemical analysis were made on a 1:5 soil-to-water extract.
mg/kg = milligrams per kilogram (parts per million) of dry soil.
Redox = oxidation-reduction potential in millivolts
ND = not detected
na = not analyzed

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E-mail lab@mjschiff.com
website: mjschiff.com

Enclosure "C-21"
Job No. 04806-3

Table 1 - Laboratory Tests on Soil Samples

Cherry Valley Residential Development
Your #04806-3, MJS&A #04-1138LAB
17-Aug-04

Sample ID			1A	7A
Resistivity		**Units**		
as-received		ohm-cm	45,000	86,000
saturated		ohm-cm	9,100	7,500
pH			8.2	7.7
Electrical				
Conductivity		mS/cm	0.06	0.07
Chemical Analyses				
Cations				
calcium	Ca^{2+}	mg/kg	36	60
magnesium	Mg^{2+}	mg/kg	5	12
sodium	Na^{1+}	mg/kg	ND	ND
Anions				
carbonate	CO_3^{2-}	mg/kg	ND	ND
bicarbonate	HCO_3^{1-}	mg/kg	70	73
chloride	Cl^{1-}	mg/kg	ND	15
sulfate	SO_4^{2-}	mg/kg	ND	ND
Other Tests				
ammonium	NH_4^{1+}	mg/kg	na	na
nitrate	NO_3^{1-}	mg/kg	na	na
sulfide	S^{2-}	qual	na	na
Redox		mV	na	na

Electrical conductivity in millisiemens/cm and chemical analysis were made on a 1:5 soil-to-water extract.
mg/kg = milligrams per kilogram (parts per million) of dry soil.
Redox = oxidation-reduction potential in millivolts
ND = not detected
na = not analyzed

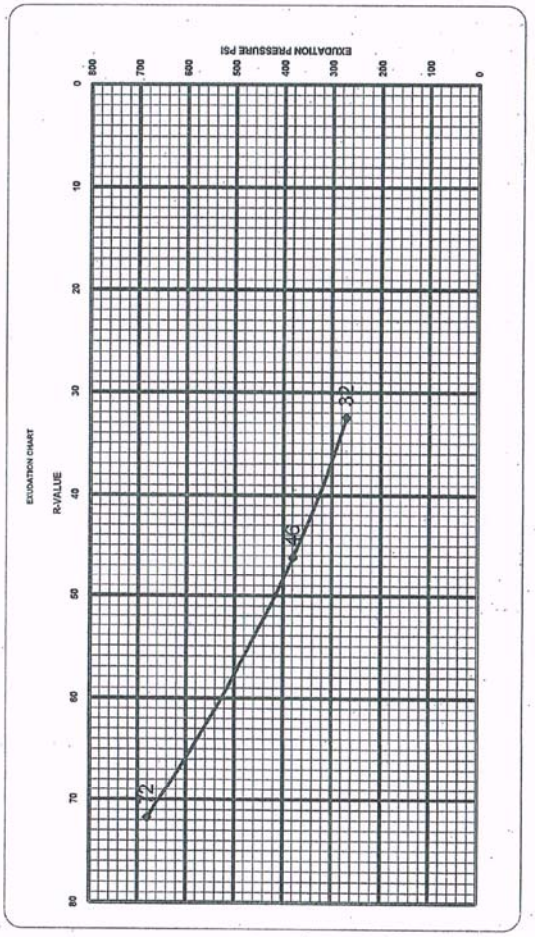
CVAR_09773

Enclosure: "C-23"
Job No. 04806-3

LABORATORY RECORD OF TESTS MADE ON
BASE, SUBBASE, AND BASEMENT SOILS

CLIENT: TSG - Cherry Valley
PROJECT LOCATION: Cherry Valley, Calif.
R-VALUE # : 13A
T.I. : 5.0

	A	B	C	D
COMPACTOR AIR PRESSURE P.S.I.	350	350	350	
INITIAL MOISTURE %	8.3	8.3	8.3	
WATER ADDED, ML	35	40	45	
WATER ADDED %	3.2	3.6	4.1	
MOISTURE AT COMPACTION %	11.5	11.9	12.4	
HEIGHT OF BRIQUETTE	2.46	2.48	2.48	
WET WEIGHT OF BRIQUETTE	1160	1160	1160	
DENSITY LB. PER CU.FT.	128.2	126.6	126.1	
STABILOMETER PH AT 1000 LBS.	14	30	38	
2000 LBS.	31	62	84	
DISPLACEMENT	4.10	4.60	4.70	
R-VALUE	72	46	32	
EXUDATION PRESSURE	680	380	270	
THICK. INDICATED BY STAB.	0.45	0.86	1.08	
EXPANSION PRESSURE	24	12	7	
THICK. INDICATED BY E.P.	0.80	0.40	0.23	



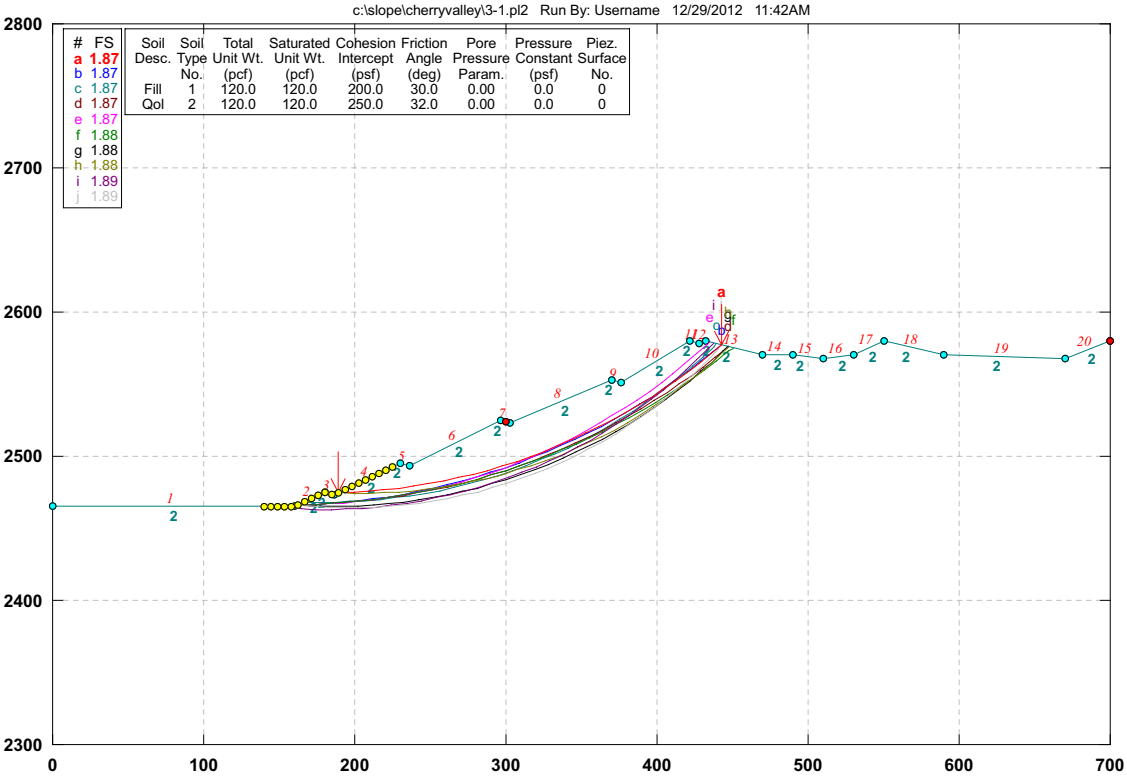
R-Value: 37

Section 3-3', I-10 Gateway Center, PN: 105-03, Static

c:\slope\cherryvalley\3-1.pl2 Run By: Username 12/29/2012 11:42AM

#	FS
a	1.87
b	1.87
c	1.87
d	1.87
e	1.87
f	1.88
g	1.88
h	1.88
i	1.89
j	1.89

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Fill	1	120.0	120.0	200.0	30.0	0.00	0.0	0
Qol	2	120.0	120.0	250.0	32.0	0.00	0.0	0



GSTABL7 v.2 FSmin=1.87
Safety Factors Are Calculated By The Modified Bishop Method

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.2, Jan. 2011 **

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****

SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.

(Includes Spencer & Morgenstern-Price Type Analysis)

Including Pier/Pile, Reinforcement, Soil Nail, Tieback, Nonlinear Undrained Shear Strength, Curved Phi Envelope, Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 12/29/2012
Time of Run: 11:42AM
Run By: Username
Input Data Filename: C:\SLOPE\CherryValley\3-1.in
Output Filename: C:\SLOPE\CherryValley\3-1.OUT
Unit System: English

Plotted Output Filename: C:\SLOPE\CherryValley\3-1.PLT

PROBLEM DESCRIPTION: Section 3-3', I-10 Gateway Center, PN: 105-03, Static

BOUNDARY COORDINATES

20 Top Boundaries
20 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	2465.00	160.00	2465.00	2
2	160.00	2465.00	180.00	2475.00	2
3	180.00	2475.00	186.00	2473.00	2
4	186.00	2473.00	230.00	2495.00	2
5	230.00	2495.00	236.00	2493.00	2
6	236.00	2493.00	297.00	2525.00	2
7	297.00	2525.00	303.00	2523.00	2
8	303.00	2523.00	370.00	2553.00	2
9	370.00	2553.00	376.00	2551.00	2
10	376.00	2551.00	422.00	2580.00	2
11	422.00	2580.00	428.00	2578.00	2
12	428.00	2578.00	432.00	2580.00	2
13	432.00	2580.00	470.00	2570.00	2
14	470.00	2570.00	490.00	2570.00	2
15	490.00	2570.00	510.00	2568.00	2
16	510.00	2568.00	530.00	2570.00	2
17	530.00	2570.00	550.00	2580.00	2
18	550.00	2580.00	590.00	2570.00	2
19	590.00	2570.00	670.00	2568.00	2
20	670.00	2568.00	700.00	2580.00	2

User Specified Y-Origin = 2300.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	200.0	30.0	0.00	0.0	0
2	120.0	120.0	250.0	32.0	0.00	0.0	0

0
1

CVAR_09775

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.

4000 Trial Surfaces Have Been Generated.

200 Surface(s) Initiate(s) From Each Of 20 Points Equally Spaced

Along The Ground Surface Between X = 140.00(ft)
and X = 225.00(ft)

Each Surface Terminates Between X = 300.00(ft)
and X = 700.00(ft)

Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is Y = 0.00(ft)

10.00(ft) Line Segments Define Each Trial Failure Surface.

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By The Modified Bishop Method * *

Total Number of Trial Surfaces Attempted = 4000

Number of Trial Surfaces With Valid FS = 4000

Statistical Data On All Valid FS Values:
FS Max = 6.542 FS Min = 1.865 FS Ave = 3.264
Standard Deviation = 1.004 Coefficient of Variation = 30.76 %

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	189.210	2474.605
2	199.201	2475.045
3	209.177	2475.737
4	219.132	2476.681
5	229.060	2477.877
6	238.955	2479.324
7	248.810	2481.021
8	258.619	2482.967
9	268.375	2485.160
10	278.073	2487.600
11	287.706	2490.284
12	297.268	2493.211
13	306.753	2496.379
14	316.155	2499.787
15	325.467	2503.431
16	334.684	2507.309
17	343.801	2511.420
18	352.810	2515.760
19	361.706	2520.326
20	370.484	2525.117
21	379.138	2530.128
22	387.663	2535.356
23	396.052	2540.798
24	404.301	2546.451
25	412.404	2552.311
26	420.356	2558.374
27	428.153	2564.636
28	435.788	2571.094
29	442.646	2577.198

Circle Center At X = 176.843 ; Y = 2869.520 ; and Radius = 395.108

Factor of Safety
*** 1.865 ***

Individual data on the 37 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	10.0	2730.8	0.0	0.0	0.	0.	0.0	0.0	0.0
2	10.0	8025.3	0.0	0.0	0.	0.	0.0	0.0	0.0

CVAR_09776

3	10.0	12983.5	0.0	0.0	0.	0.	0.0	0.0	0.0
4	9.9	17595.6	0.0	0.0	0.	0.	0.0	0.0	0.0
5	0.9	1896.5	0.0	0.0	0.	0.	0.0	0.0	0.0
6	6.0	11193.6	0.0	0.0	0.	0.	0.0	0.0	0.0
7	3.0	5201.1	0.0	0.0	0.	0.	0.0	0.0	0.0
8	9.9	20059.7	0.0	0.0	0.	0.	0.0	0.0	0.0
9	9.8	23893.3	0.0	0.0	0.	0.	0.0	0.0	0.0
10	9.8	27351.0	0.0	0.0	0.	0.	0.0	0.0	0.0
11	9.7	30429.3	0.0	0.0	0.	0.	0.0	0.0	0.0
12	9.6	33125.6	0.0	0.0	0.	0.	0.0	0.0	0.0
13	9.3	34411.4	0.0	0.0	0.	0.	0.0	0.0	0.0
14	0.3	1023.6	0.0	0.0	0.	0.	0.0	0.0	0.0
15	5.7	20487.3	0.0	0.0	0.	0.	0.0	0.0	0.0
16	3.8	12650.5	0.0	0.0	0.	0.	0.0	0.0	0.0
17	9.4	32382.0	0.0	0.0	0.	0.	0.0	0.0	0.0
18	9.3	32816.7	0.0	0.0	0.	0.	0.0	0.0	0.0
19	9.2	32909.4	0.0	0.0	0.	0.	0.0	0.0	0.0
20	9.1	32668.4	0.0	0.0	0.	0.	0.0	0.0	0.0
21	9.0	32104.4	0.0	0.0	0.	0.	0.0	0.0	0.0
22	8.9	31228.3	0.0	0.0	0.	0.	0.0	0.0	0.0
23	8.3	28418.4	0.0	0.0	0.	0.	0.0	0.0	0.0
24	0.5	1623.0	0.0	0.0	0.	0.	0.0	0.0	0.0
25	5.5	16683.7	0.0	0.0	0.	0.	0.0	0.0	0.0
26	3.1	8574.6	0.0	0.0	0.	0.	0.0	0.0	0.0
27	8.5	23449.1	0.0	0.0	0.	0.	0.0	0.0	0.0
28	8.4	23073.7	0.0	0.0	0.	0.	0.0	0.0	0.0
29	8.2	22387.9	0.0	0.0	0.	0.	0.0	0.0	0.0
30	8.1	21407.0	0.0	0.0	0.	0.	0.0	0.0	0.0
31	8.0	20149.1	0.0	0.0	0.	0.	0.0	0.0	0.0
32	1.6	4033.1	0.0	0.0	0.	0.	0.0	0.0	0.0
33	6.0	12165.1	0.0	0.0	0.	0.	0.0	0.0	0.0
34	0.2	246.7	0.0	0.0	0.	0.	0.0	0.0	0.0
35	3.8	5897.7	0.0	0.0	0.	0.	0.0	0.0	0.0
36	3.8	4549.8	0.0	0.0	0.	0.	0.0	0.0	0.0
37	6.9	3254.1	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 32 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	162.368	2466.184
2	172.361	2466.562
3	182.343	2467.167
4	192.308	2468.000
5	202.252	2469.060
6	212.169	2470.346
7	222.054	2471.859
8	231.901	2473.597
9	241.707	2475.559
10	251.465	2477.744
11	261.171	2480.152
12	270.820	2482.780
13	280.406	2485.628
14	289.924	2488.693
15	299.370	2491.976
16	308.739	2495.472
17	318.025	2499.182
18	327.225	2503.103
19	336.332	2507.232
20	345.343	2511.568
21	354.253	2516.109
22	363.057	2520.852
23	371.750	2525.794
24	380.328	2530.934
25	388.787	2536.268
26	397.121	2541.794
27	405.328	2547.508
28	413.402	2553.408
29	421.339	2559.491
30	429.135	2565.753
31	436.787	2572.192

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32	442.509	2577.235

Circle Center At X = 150.861 ; Y = 2904.083 ; and Radius = 438.051

Factor of Safety
*** 1.866 ***

1

Failure Surface Specified By 32 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	166.842	2468.421
2	176.839	2468.183
3	186.839	2468.223
4	196.834	2468.540
5	206.817	2469.133
6	216.779	2470.004
7	226.713	2471.150
8	236.611	2472.571
9	246.466	2474.266
10	256.271	2476.234
11	266.017	2478.473
12	275.697	2480.981
13	285.305	2483.756
14	294.831	2486.797
15	304.269	2490.101
16	313.613	2493.665
17	322.854	2497.487
18	331.985	2501.564
19	341.000	2505.892
20	349.891	2510.469
21	358.652	2515.290
22	367.276	2520.353
23	375.756	2525.652
24	384.086	2531.185
25	392.260	2536.946
26	400.270	2542.932
27	408.112	2549.138
28	415.778	2555.559
29	423.264	2562.189
30	430.562	2569.025
31	437.669	2576.061
32	439.537	2578.016

Circle Center At X = 180.442 ; Y = 2828.640 ; and Radius = 360.475

Factor of Safety
*** 1.868 ***

Failure Surface Specified By 33 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	162.368	2466.184
2	172.365	2466.447
3	182.353	2466.936
4	192.327	2467.651
5	202.283	2468.591
6	212.215	2469.756
7	222.118	2471.146
8	231.987	2472.759
9	241.817	2474.595
10	251.603	2476.654
11	261.340	2478.933
12	271.022	2481.431
13	280.646	2484.148
14	290.206	2487.083
15	299.697	2490.232
16	309.114	2493.596
17	318.453	2497.171
18	327.709	2500.958
19	336.876	2504.952
20	345.951	2509.153
21	354.929	2513.558
22	363.804	2518.166
23	372.573	2522.972
24	381.231	2527.976
25	389.774	2533.175
26	398.196	2538.565
27	406.495	2544.145
28	414.665	2549.911
29	422.703	2555.860
30	430.604	2561.990
31	438.365	2568.296
32	445.980	2574.777
33	447.318	2575.969

Circle Center At X = 155.749 ; Y = 2908.122 ; and Radius = 441.988

Factor of Safety
*** 1.871 ***

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1

Failure Surface Specified By 32 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	162.368	2466.184
2	172.366	2466.387
3	182.356	2466.846
4	192.330	2467.560
5	202.283	2468.529
6	212.208	2469.751
7	222.099	2471.227
8	231.948	2472.955
9	241.750	2474.934
10	251.499	2477.163
11	261.187	2479.641
12	270.809	2482.365
13	280.358	2485.334
14	289.828	2488.546
15	299.213	2492.000
16	308.506	2495.691
17	317.702	2499.620
18	326.795	2503.781
19	335.779	2508.174
20	344.647	2512.795
21	353.394	2517.642
22	362.015	2522.710
23	370.503	2527.996
24	378.854	2533.498
25	387.061	2539.212
26	395.119	2545.133
27	403.023	2551.258
28	410.769	2557.584
29	418.350	2564.105
30	425.762	2570.818
31	433.000	2577.718
32	434.594	2579.317

Circle Center At X = 159.442 ; Y = 2857.314 ; and Radius = 391.141

Factor of Safety
*** 1.873 ***

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Failure Surface Specified By 33 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	162.368	2466.184
2	172.364	2466.495
3	182.350	2467.023
4	192.322	2467.768
5	202.275	2468.730
6	212.206	2469.909
7	222.108	2471.303
8	231.978	2472.913
9	241.810	2474.737
10	251.600	2476.774
11	261.344	2479.024
12	271.036	2481.486
13	280.672	2484.158
14	290.248	2487.039
15	299.760	2490.127
16	309.201	2493.422
17	318.569	2496.922
18	327.858	2500.624
19	337.064	2504.528
20	346.184	2508.632
21	355.212	2512.932
22	364.144	2517.429
23	372.976	2522.118
24	381.704	2526.999
25	390.324	2532.069
26	398.831	2537.324
27	407.222	2542.764
28	415.493	2548.385
29	423.639	2554.185
30	431.657	2560.161
31	439.544	2566.309
32	447.294	2572.628
33	450.295	2575.186

Circle Center At X = 153.092 ; Y = 2925.577 ; and Radius = 459.486

Factor of Safety
*** 1.879 ***

1

Failure Surface Specified By 33 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	162.368	2466.184
2	172.354	2465.656
3	182.351	2465.405
4	192.351	2465.430
5	202.347	2465.731
6	212.330	2466.308
7	222.294	2467.161
8	232.230	2468.288
9	242.131	2469.690
10	251.990	2471.365
11	261.799	2473.312
12	271.550	2475.528
13	281.236	2478.014
14	290.850	2480.766
15	300.384	2483.782
16	309.831	2487.062
17	319.184	2490.600
18	328.436	2494.396
19	337.579	2498.446
20	346.606	2502.747
21	355.512	2507.296
22	364.288	2512.089
23	372.929	2517.123
24	381.427	2522.394
25	389.776	2527.897
26	397.971	2533.630
27	406.003	2539.586
28	413.868	2545.762
29	421.559	2552.153
30	429.071	2558.754
31	436.398	2565.560
32	443.533	2572.566
33	446.915	2576.075

Circle Center At X = 186.456 ; Y = 2827.270 ; and Radius = 361.888

Factor of Safety
*** 1.880 ***

Failure Surface Specified By 30 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	189.210	2474.605
2	199.207	2474.342
3	209.207	2474.368
4	219.202	2474.686
5	229.183	2475.293
6	239.143	2476.190
7	249.073	2477.376
8	258.963	2478.850
9	268.807	2480.610
10	278.596	2482.656
11	288.321	2484.985
12	297.974	2487.595
13	307.547	2490.485
14	317.033	2493.652
15	326.422	2497.093
16	335.708	2500.805
17	344.881	2504.785
18	353.936	2509.030
19	362.863	2513.536
20	371.656	2518.299
21	380.306	2523.316
22	388.807	2528.582
23	397.152	2534.093
24	405.333	2539.844
25	413.343	2545.830
26	421.177	2552.046
27	428.826	2558.487
28	436.285	2565.147
29	443.548	2572.021
30	447.449	2575.935

Circle Center At X = 203.320 ; Y = 2818.374 ; and Radius = 344.058

Factor of Safety
*** 1.881 ***

1

Failure Surface Specified By 34 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	144.474	2465.000
2	154.433	2464.100
3	164.415	2463.491
4	174.410	2463.173
5	184.409	2463.146
6	194.406	2463.410
7	204.391	2463.965

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8	214.355	2464.810
9	224.290	2465.945
10	234.188	2467.369
11	244.041	2469.081
12	253.839	2471.079
13	263.575	2473.361
14	273.241	2475.926
15	282.827	2478.771
16	292.327	2481.894
17	301.732	2485.292
18	311.034	2488.963
19	320.225	2492.903
20	329.298	2497.108
21	338.244	2501.577
22	347.056	2506.303
23	355.727	2511.285
24	364.250	2516.517
25	372.616	2521.994
26	380.819	2527.713
27	388.853	2533.668
28	396.709	2539.855
29	404.382	2546.268
30	411.865	2552.902
31	419.152	2559.750
32	426.236	2566.808
33	433.112	2574.069
34	437.189	2578.635

Circle Center At X = 180.362 ; Y = 2806.380 ; and Radius = 343.261

Factor of Safety
*** 1.885 ***

Failure Surface Specified By 33 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	162.368	2466.184
2	172.325	2465.254
3	182.306	2464.632
4	192.301	2464.318
5	202.301	2464.313
6	212.296	2464.617
7	222.277	2465.229
8	232.235	2466.150
9	242.159	2467.377
10	252.041	2468.911
11	261.871	2470.749
12	271.639	2472.889
13	281.336	2475.331
14	290.954	2478.071
15	300.482	2481.106
16	309.912	2484.434
17	319.234	2488.052
18	328.441	2491.956
19	337.522	2496.143
20	346.470	2500.608
21	355.275	2505.347
22	363.930	2510.356
23	372.427	2515.630
24	380.756	2521.164
25	388.910	2526.952
26	396.882	2532.990
27	404.664	2539.271
28	412.247	2545.789
29	419.626	2552.538
30	426.793	2559.512
31	433.741	2566.704
32	440.464	2574.107
33	443.018	2577.101

Circle Center At X = 197.459 ; Y = 2788.022 ; and Radius = 323.745

Factor of Safety
*** 1.888 ***

**** END OF GSTABL7 OUTPUT ****

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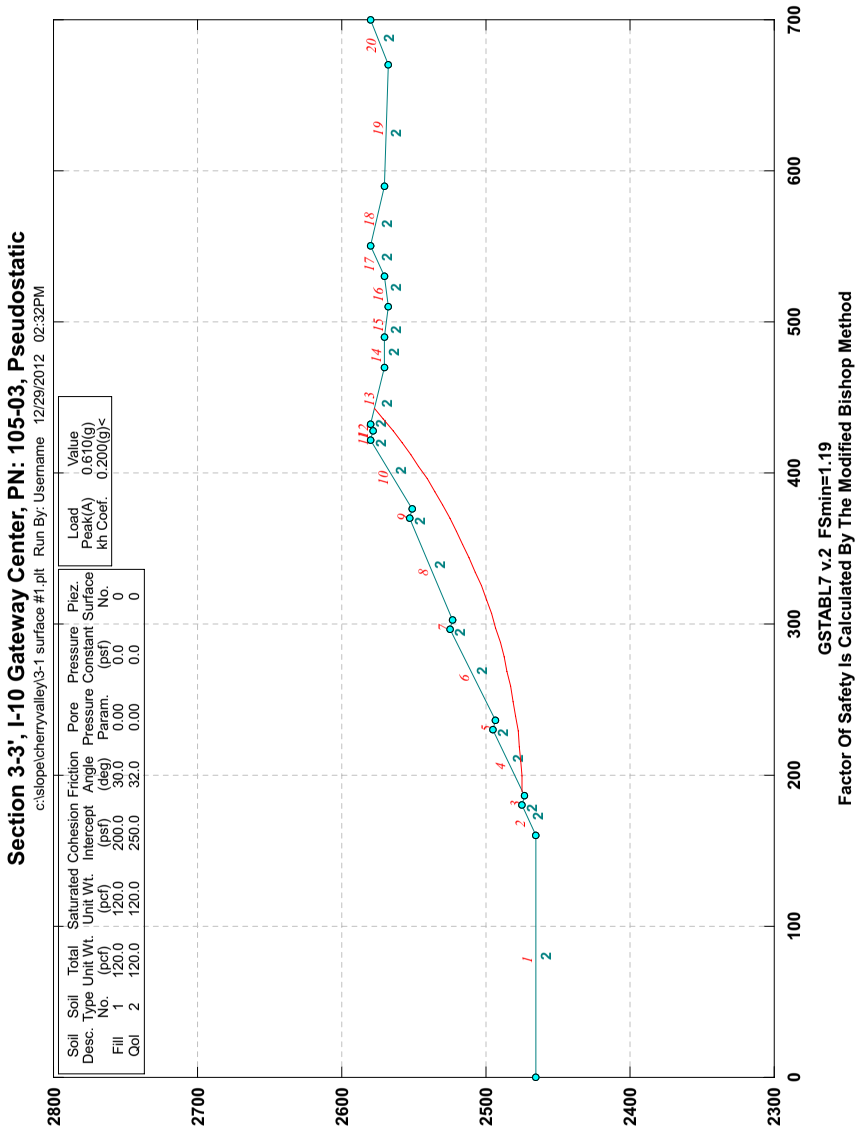


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                                                    ***  GSTABL7  ***

                          ** GSTABL7 by Dr. Garry H. Gregory,
Ph.D.,P.E.,D.GE **

              ** Original Version 1.0, January 1996; Current Ver. 2.005.2,
Jan. 2011 **
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*************************************************************************
********
                              SLOPE STABILITY ANALYSIS SYSTEM
                  Modified Bishop, Simplified Janbu, or GLE Method of
Slices.
                  (Includes Spencer & Morgenstern-Price Type Analysis)
                  Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
                  Nonlinear Undrained Shear Strength, Curved Phi Envelope,
                  Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads,
Water
                  Surfaces, Pseudo-Static & Newmark Earthquake, and
Applied Forces.

*************************************************************************
********


          Analysis Run Date:        12/29/2012
          Time of Run:              02:32PM
          Run By:                   Username
          Input Data Filename:      C:\SLOPE\CherryValley\3-1 surface
#1.in
          Output Filename:          C:\SLOPE\CherryValley\3-1 surface
#1.OUT
          Unit System:              English

          Plotted Output Filename:  C:\SLOPE\CherryValley\3-1 surface
#1.PLT



          PROBLEM DESCRIPTION:  Section 3-3', I-10 Gateway Center,
                                PN: 105-03, Pseudostatic



          BOUNDARY COORDINATES

             20 Top   Boundaries
```

20 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Below Bnd
1	0.00	2465.00	160.00	2465.00	2
2	160.00	2465.00	180.00	2475.00	2
3	180.00	2475.00	186.00	2473.00	2
4	186.00	2473.00	230.00	2495.00	2
5	230.00	2495.00	236.00	2493.00	2
6	236.00	2493.00	297.00	2525.00	2
7	297.00	2525.00	303.00	2523.00	2
8	303.00	2523.00	370.00	2553.00	2
9	370.00	2553.00	376.00	2551.00	2
10	376.00	2551.00	422.00	2580.00	2
11	422.00	2580.00	428.00	2578.00	2
12	428.00	2578.00	432.00	2580.00	2
13	432.00	2580.00	470.00	2570.00	2
14	470.00	2570.00	490.00	2570.00	2
15	490.00	2570.00	510.00	2568.00	2
16	510.00	2568.00	530.00	2570.00	2
17	530.00	2570.00	550.00	2580.00	2
18	550.00	2580.00	590.00	2570.00	2
19	590.00	2570.00	670.00	2568.00	2
20	670.00	2568.00	700.00	2580.00	2

User Specified Y-Origin = 2300.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	200.0	30.0	0.00	0.0	0
2	120.0	120.0	250.0	32.0	0.00	0.0	0

Specified Peak Ground Acceleration Coefficient (A) = 0.610(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.200(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)

Specified Seismic Pore-Pressure Factor = 0.000

1

Trial Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	189.210	2474.605
2	199.201	2475.045
3	209.177	2475.737
4	219.132	2476.681
5	229.060	2477.877
6	238.955	2479.324
7	248.810	2481.021
8	258.619	2482.967
9	268.375	2485.160
10	278.073	2487.600
11	287.706	2490.284
12	297.268	2493.211
13	306.753	2496.379
14	316.155	2499.787
15	325.467	2503.431
16	334.684	2507.309
17	343.801	2511.420
18	352.810	2515.760
19	361.706	2520.326
20	370.484	2525.117
21	379.138	2530.128
22	387.663	2535.356
23	396.052	2540.798
24	404.301	2546.451
25	412.404	2552.311
26	420.356	2558.374
27	428.153	2564.636
28	435.788	2571.094
29	442.646	2577.198

DEFLECTION ANGLE & SEGMENT DATA FOR SPECIFIED SURFACE(Excluding Last Segment)

Angle/Segment No.	Deflection(Deg)	Segment Length(ft)
1	1.45	10.00
2	1.45	10.00
3	1.45	10.00

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4	1.45	10.00
5	1.45	10.00
6	1.45	10.00
7	1.45	10.00
8	1.45	10.00
9	1.45	10.00
10	1.45	10.00
11	1.45	10.00
12	1.45	10.00
13	1.45	10.00
14	1.45	10.00
15	1.45	10.00
16	1.45	10.00
17	1.45	10.00
18	1.46	10.00
19	1.45	10.00
20	1.45	10.00
21	1.45	10.00
22	1.45	10.00
23	1.45	10.00
24	1.45	10.00
25	1.45	10.00
26	1.45	10.00

Circle Center At X = 176.839(ft) ; Y = 2869.529(ft); and Radius = 395.118(ft)

* * Factor Of Safety Is Calculated By The Modified Bishop Method * *

Factor Of Safety For The Preceding Specified Surface = 1.186

Table 1 - Individual Data on the 37 Slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	10.0	2730.9	0.0	0.0	0.0	0.0	546.2	0.0	0.0
2	10.0	8024.7	0.0	0.0	0.0	0.0	1604.9	0.0	0.0
3	10.0	12983.1	0.0	0.0	0.0	0.0	2596.6	0.0	0.0
4	9.9	17594.9	0.0	0.0	0.0	0.0	3519.0	0.0	0.0
5	0.9	1897.2	0.0	0.0	0.0	0.0	379.4	0.0	0.0
6	6.0	11193.6	0.0	0.0	0.0	0.0	2238.7	0.0	0.0
7	3.0	5201.0	0.0	0.0	0.0	0.0	1040.2	0.0	0.0
8	9.9	20059.7	0.0	0.0	0.0	0.0	4011.9	0.0	0.0
9	9.8	23893.4	0.0	0.0	0.0	0.0	4778.7	0.0	0.0
10	9.8	27349.2	0.0	0.0	0.0	0.0	5469.8	0.0	0.0
11	9.7	30429.1	0.0	0.0	0.0	0.0	6085.8	0.0	0.0
12	9.6	33125.0	0.0	0.0	0.0	0.0	6625.0	0.0	0.0
13	9.3	34412.7	0.0	0.0	0.0	0.0	6882.5	0.0	0.0
14	0.3	1022.2	0.0	0.0	0.0	0.0	204.4	0.0	0.0
15	5.7	20488.7	0.0	0.0	0.0	0.0	4097.7	0.0	0.0
16	3.8	12649.6	0.0	0.0	0.0	0.0	2529.9	0.0	0.0
17	9.4	32383.2	0.0	0.0	0.0	0.0	6476.6	0.0	0.0
18	9.3	32814.9	0.0	0.0	0.0	0.0	6563.0	0.0	0.0

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19	9.2	32908.2	0.0	0.0	0.0	0.0	6581.6	0.0
0.0								
20	9.1	32671.9	0.0	0.0	0.0	0.0	6534.4	0.0
0.0								
21	9.0	32104.1	0.0	0.0	0.0	0.0	6420.8	0.0
0.0								
22	8.9	31226.9	0.0	0.0	0.0	0.0	6245.4	0.0
0.0								
23	8.3	28418.6	0.0	0.0	0.0	0.0	5683.7	0.0
0.0								
24	0.5	1622.4	0.0	0.0	0.0	0.0	324.5	0.0
0.0								
25	5.5	16684.0	0.0	0.0	0.0	0.0	3336.8	0.0
0.0								
26	3.1	8574.1	0.0	0.0	0.0	0.0	1714.8	0.0
0.0								
27	8.5	23450.6	0.0	0.0	0.0	0.0	4690.1	0.0
0.0								
28	8.4	23073.0	0.0	0.0	0.0	0.0	4614.6	0.0
0.0								
29	8.2	22388.3	0.0	0.0	0.0	0.0	4477.7	0.0
0.0								
30	8.1	21406.9	0.0	0.0	0.0	0.0	4281.4	0.0
0.0								
31	8.0	20148.3	0.0	0.0	0.0	0.0	4029.7	0.0
0.0								
32	1.6	4033.9	0.0	0.0	0.0	0.0	806.8	0.0
0.0								
33	6.0	12165.1	0.0	0.0	0.0	0.0	2433.0	0.0
0.0								
34	0.2	247.2	0.0	0.0	0.0	0.0	49.4	0.0
0.0								
35	3.8	5897.5	0.0	0.0	0.0	0.0	1179.5	0.0
0.0								
36	3.8	4549.9	0.0	0.0	0.0	0.0	910.0	0.0
0.0								
37	6.9	3254.5	0.0	0.0	0.0	0.0	650.9	0.0
0.0								

Table 2 - Base Stress Data on the 37 Slices

Slice No.	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Mobilized Shear Stress * (psf)
1	2.52	194.21	10.00	411.26	66.42
2	3.97	204.19	10.00	726.10	214.29
3	5.42	214.15	10.00	1014.25	377.52
4	6.87	224.10	10.00	1276.39	553.26
5	8.32	229.53	0.95	1403.06	675.63
6	8.32	233.00	6.06	1314.47	625.11
7	8.32	237.48	2.99	1253.24	590.14
8	9.77	243.88	10.00	1395.29	727.18
9	11.22	253.71	10.00	1604.35	921.41
10	12.67	263.50	10.00	1789.69	1117.39
11	14.12	273.22	10.00	1951.84	1312.46
12	15.57	282.89	10.00	2091.63	1503.21
13	17.02	292.35	9.72	2207.57	1685.76
14	17.02	297.13	0.28	2267.60	1735.69
15	18.47	300.13	6.04	2111.82	1691.69
16	18.47	304.88	3.96	2003.48	1596.56
17	19.92	311.45	10.00	2016.95	1688.81
18	21.37	320.81	10.00	2032.81	1782.64
19	22.82	330.08	10.00	2030.72	1858.21
20	24.27	339.24	10.00	2011.35	1913.77
21	25.72	348.31	10.00	1975.27	1947.70
22	27.17	357.26	10.00	1923.20	1958.56
23	28.63	365.85	9.45	1856.94	1947.16
24	28.63	370.24	0.55	1820.88	1905.40
25	30.07	373.24	6.37	1639.66	1747.95
26	30.07	377.57	3.63	1499.72	1580.49
27	31.52	383.40	10.00	1487.99	1612.10
28	32.97	391.86	10.00	1467.09	1629.52
29	34.42	400.18	10.00	1429.64	1622.11
30	35.87	408.35	10.00	1376.27	1589.47

CVAR_09785

```
  31      37.32       416.38        10.00           1307.78
1531.35
  32      38.77       421.18         2.11           1252.93
1486.36
  33      38.77       425.00         7.70           1065.81
1229.62
  34      38.77       428.08         0.20            884.98
980.92
  35      40.22       430.08         5.04            835.51
930.84
  36      40.22       433.89         4.96            692.07
729.97
  37      41.67       439.22         9.18            372.02
288.28

     Sum of the Resisting Forces (including Pier/Pile, Tieback,
Reinforcing
     Soil Nail, and Applied Forces if applicable) =  425609.75 (lbs)


     Average Available Shear Strength (including Tieback, Pier/Pile,
Reinforcing,
     Soil Nail, and Applied Forces if applicable) =   1524.49(psf)


     Sum of the Driving Forces =   358949.00 (lbs)


     Average Mobilized Shear Stress =    1285.72(psf)


     Total length of the failure surface =     279.18(ft)


          CAUTION - Factor Of Safety Is Calculated By The Modified
Bishop
                    Method. This Method Is Valid Only If The Failure
Surface
                    Approximates A Circular Arc.

                 *** SEISMIC SLOPE DISPLACEMENT DATA ***
          (Note: kv is set = zero for displacement calculations)
          Seismic Yield Coefficient (ky) =  0.2926(g)
          Calculated Newmark Seismic Displacement =   0.257(ft)

          Non-Symmetrical Sliding Resistance Has Been Specified
          for Downhill Sliding.


                        **** END OF GSTABL7 OUTPUT ****
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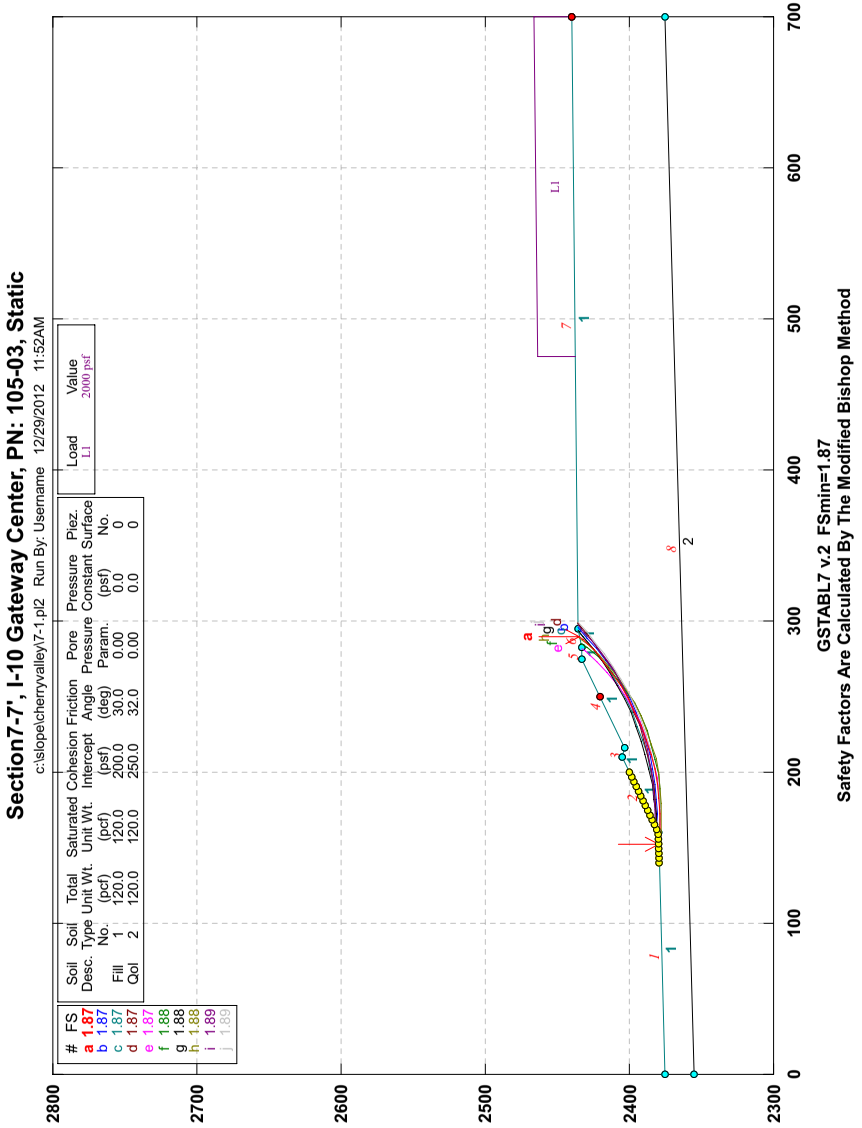

CVAR_09786

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.2, Jan. 2011 **

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****

SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.

(Includes Spencer & Morgenstern-Price Type Analysis)

Including Pier/Pile, Reinforcement, Soil Nail, Tieback, Nonlinear Undrained Shear Strength, Curved Phi Envelope, Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 12/29/2012
Time of Run: 11:52AM
Run By: Username
Input Data Filename: C:\SLOPE\CherryValley\7-1.in
Output Filename: C:\SLOPE\CherryValley\7-1.OUT
Unit System: English

Plotted Output Filename: C:\SLOPE\CherryValley\7-1.PLT

PROBLEM DESCRIPTION: Section7-7', I-10 Gateway Center, PN: 105-03, Static

BOUNDARY COORDINATES

7 Top Boundaries
8 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	2375.00	160.00	2380.00	1
2	160.00	2380.00	210.00	2405.00	1
3	210.00	2405.00	216.00	2403.00	1
4	216.00	2403.00	275.00	2433.00	1
5	275.00	2433.00	283.00	2433.00	1
6	283.00	2433.00	295.00	2436.00	1
7	295.00	2436.00	700.00	2440.00	1
8	0.00	2355.00	700.00	2375.00	2

User Specified Y-Origin = 2300.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Piez. Constant (psf)	Surface No.
1	120.0	120.0	200.0	30.0	0.00	0.0	0
2	120.0	120.0	250.0	32.0	0.00	0.0	0

0
1

BOUNDARY LOAD(S)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)
1	475.00	700.00	2000.0	0.0

CVAR_09787

NOTE - Intensity Is Specified As A Uniformly Distributed
Force Acting On A Horizontally Projected Surface.
1

A Critical Failure Surface Searching Method, Using A Random
Technique For Generating Circular Surfaces, Has Been Specified.

4000 Trial Surfaces Have Been Generated.

200 Surface(s) Initiate(s) From Each Of 20 Points Equally
Spaced
Along The Ground Surface Between X = 140.00(ft)
and X = 200.00(ft)

Each Surface Terminates Between X = 250.00(ft)
and X = 700.00(ft)

Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00(ft)

10.00(ft) Line Segments Define Each Trial Failure Surface.

Following Are Displayed The Ten Most Critical Of The Trial
Failure Surfaces Evaluated. They Are
Ordered - Most Critical First.

* * Safety Factors Are Calculated By The Modified Bishop Method
* *

Total Number of Trial Surfaces Attempted = 4000

Number of Trial Surfaces With Valid FS = 4000

Statistical Data On All Valid FS Values:
FS Max = 10.096 FS Min = 1.867 FS Ave = 4.364
Standard Deviation = 1.979 Coefficient of Variation =
45.36 %

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	152.632	2379.770
2	162.609	2379.092
3	172.608	2379.037
4	182.592	2379.606
5	192.521	2380.795
6	202.357	2382.601
7	212.061	2385.017
8	221.595	2388.032
9	230.924	2391.635
10	240.009	2395.813
11	248.817	2400.548
12	257.312	2405.823
13	265.462	2411.618
14	273.236	2417.909
15	280.602	2424.672
16	287.533	2431.881
17	289.956	2434.739

Circle Center At X = 168.485 ; Y = 2539.396 ; and Radius =
160.411

Factor of Safety
*** 1.867 ***

Individual data on the 21 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	7.4	322.9	0.0	0.0	0.	0.	0.0	0.0	0.0
2	2.6	460.6	0.0	0.0	0.	0.	0.0	0.0	0.0
3	10.0	5687.3	0.0	0.0	0.	0.	0.0	0.0	0.0
4	10.0	11355.8	0.0	0.0	0.	0.	0.0	0.0	0.0
5	9.9	16177.5	0.0	0.0	0.	0.	0.0	0.0	0.0

CVAR_09788

6	9.8	20089.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
7	7.6	17918.5	0.0	0.0	0.	0.	0.0	0.0
0.0								
8	2.1	4920.3	0.0	0.0	0.	0.	0.0	0.0
0.0								
9	3.9	8516.7	0.0	0.0	0.	0.	0.0	0.0
0.0								
10	5.6	11599.8	0.0	0.0	0.	0.	0.0	0.0
0.0								
11	9.3	20578.0	0.0	0.0	0.	0.	0.0	0.0
0.0								
12	9.1	20905.1	0.0	0.0	0.	0.	0.0	0.0
0.0								
13	8.8	20363.4	0.0	0.0	0.	0.	0.0	0.0
0.0								
14	8.5	19023.4	0.0	0.0	0.	0.	0.0	0.0
0.0								
15	8.2	16976.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
16	7.8	14330.8	0.0	0.0	0.	0.	0.0	0.0
0.0								
17	1.8	2928.5	0.0	0.0	0.	0.	0.0	0.0
0.0								
18	5.6	7327.2	0.0	0.0	0.	0.	0.0	0.0
0.0								
19	2.4	2037.6	0.0	0.0	0.	0.	0.0	0.0
0.0								
20	4.5	2199.1	0.0	0.0	0.	0.	0.0	0.0
0.0								
21	2.4	327.5	0.0	0.0	0.	0.	0.0	0.0
0.0								

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	162.105	2381.053
2	172.102	2380.803
3	182.096	2381.151
4	192.051	2382.096
5	201.932	2383.635
6	211.703	2385.762
7	221.330	2388.469
8	230.777	2391.747
9	240.012	2395.584
10	249.001	2399.967
11	257.711	2404.879
12	266.112	2410.303
13	274.174	2416.220
14	281.868	2422.608
15	289.166	2429.445
16	295.377	2436.004

Circle Center At X = 171.300 ; Y = 2547.840 ; and Radius = 167.041

Factor of Safety
*** 1.868 ***

1

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	162.105	2381.053
2	172.102	2381.311
3	182.070	2382.112
4	191.980	2383.451
5	201.802	2385.326
6	211.509	2387.731
7	221.071	2390.658
8	230.460	2394.100
9	239.648	2398.046
10	248.610	2402.484
11	257.317	2407.402
12	265.745	2412.785
13	273.868	2418.616
14	281.663	2424.880
15	289.108	2431.557
16	293.067	2435.517

Circle Center At X = 162.419 ; Y = 2564.984 ; and Radius = 183.931

Factor of Safety
*** 1.868 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	162.105	2381.053
2	172.103	2381.245

CVAR_09789

3	182.079	2381.951
4	192.004	2383.168
5	201.854	2384.894
6	211.602	2387.123
7	221.223	2389.851
8	230.691	2393.069
9	239.982	2396.769
10	249.070	2400.941
11	257.931	2405.575
12	266.543	2410.659
13	274.882	2416.177
14	282.927	2422.117
15	290.655	2428.463
16	298.048	2435.197
17	298.881	2436.038

Circle Center At X = 163.363 ; Y = 2575.627 ; and Radius = 194.578

Factor of Safety
*** 1.873 ***

1

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	155.789	2379.868
2	165.752	2379.002
3	175.751	2378.864
4	185.733	2379.455
5	195.646	2380.773
6	205.437	2382.809
7	215.053	2385.554
8	224.443	2388.993
9	233.557	2393.107
10	242.347	2397.875
11	250.767	2403.271
12	258.770	2409.267
13	266.315	2415.830
14	273.362	2422.925
15	279.872	2430.515
16	281.707	2433.000

Circle Center At X = 172.681 ; Y = 2515.610 ; and Radius = 136.788

Factor of Safety
*** 1.873 ***

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	158.947	2379.967
2	168.881	2378.819
3	178.874	2378.432
4	188.867	2378.809
5	198.802	2379.948
6	208.621	2381.841
7	218.267	2384.477
8	227.684	2387.842
9	236.816	2391.916
10	245.612	2396.675
11	254.018	2402.091
12	261.987	2408.132
13	269.471	2414.764
14	276.428	2421.948
15	282.816	2429.642
16	285.669	2433.667

Circle Center At X = 178.975 ; Y = 2509.075 ; and Radius = 130.652

Factor of Safety
*** 1.877 ***

1

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	162.105	2381.053
2	172.088	2381.636
3	182.030	2382.711
4	191.907	2384.275
5	201.695	2386.323
6	211.370	2388.852
7	220.909	2391.854
8	230.288	2395.322

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9	239.485	2399.248
10	248.478	2403.623
11	257.243	2408.436
12	265.761	2413.675
13	274.011	2419.327
14	281.972	2425.378
15	289.625	2431.815
16	293.809	2435.702

Circle Center At X = 155.353 ; Y = 2583.350 ; and Radius = 202.410

Factor of Safety
*** 1.878 ***

Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	149.474	2379.671
2	159.379	2378.295
3	169.355	2377.609
4	179.355	2377.617
5	189.330	2378.318
6	199.233	2379.710
7	209.015	2381.786
8	218.630	2384.535
9	228.031	2387.944
10	237.172	2391.998
11	246.011	2396.676
12	254.503	2401.955
13	262.609	2407.812
14	270.289	2414.216
15	277.507	2421.137
16	284.226	2428.543
17	288.902	2434.475

Circle Center At X = 174.242 ; Y = 2521.588 ; and Radius = 144.062

Factor of Safety
*** 1.882 ***

1

Failure Surface Specified By 16 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	165.263	2382.632
2	175.262	2382.506
3	185.252	2382.960
4	195.199	2383.993
5	205.068	2385.601
6	214.829	2387.778
7	224.446	2390.518
8	233.888	2393.810
9	243.124	2397.645
10	252.122	2402.008
11	260.852	2406.886
12	269.284	2412.261
13	277.390	2418.117
14	285.143	2424.433
15	292.517	2431.187
16	297.217	2436.022

Circle Center At X = 172.483 ; Y = 2554.542 ; and Radius = 172.062

Factor of Safety
*** 1.885 ***

Failure Surface Specified By 18 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	146.316	2379.572
2	156.289	2378.845
3	166.288	2378.654
4	176.282	2379.000
5	186.243	2379.881
6	196.142	2381.294
7	205.952	2383.237
8	215.643	2385.703
9	225.188	2388.685
10	234.559	2392.175
11	243.730	2396.162
12	252.673	2400.636
13	261.364	2405.582
14	269.777	2410.988
15	277.888	2416.837

CVAR_09791

```
          16        285.674     2423.112
          17        293.112     2429.796
          18        299.355     2436.043

       Circle Center At X =   164.863 ; Y =  2564.915 ; and Radius =
186.268


            Factor of Safety
           ***    1.886   ***



              **** END OF GSTABL7 OUTPUT ****
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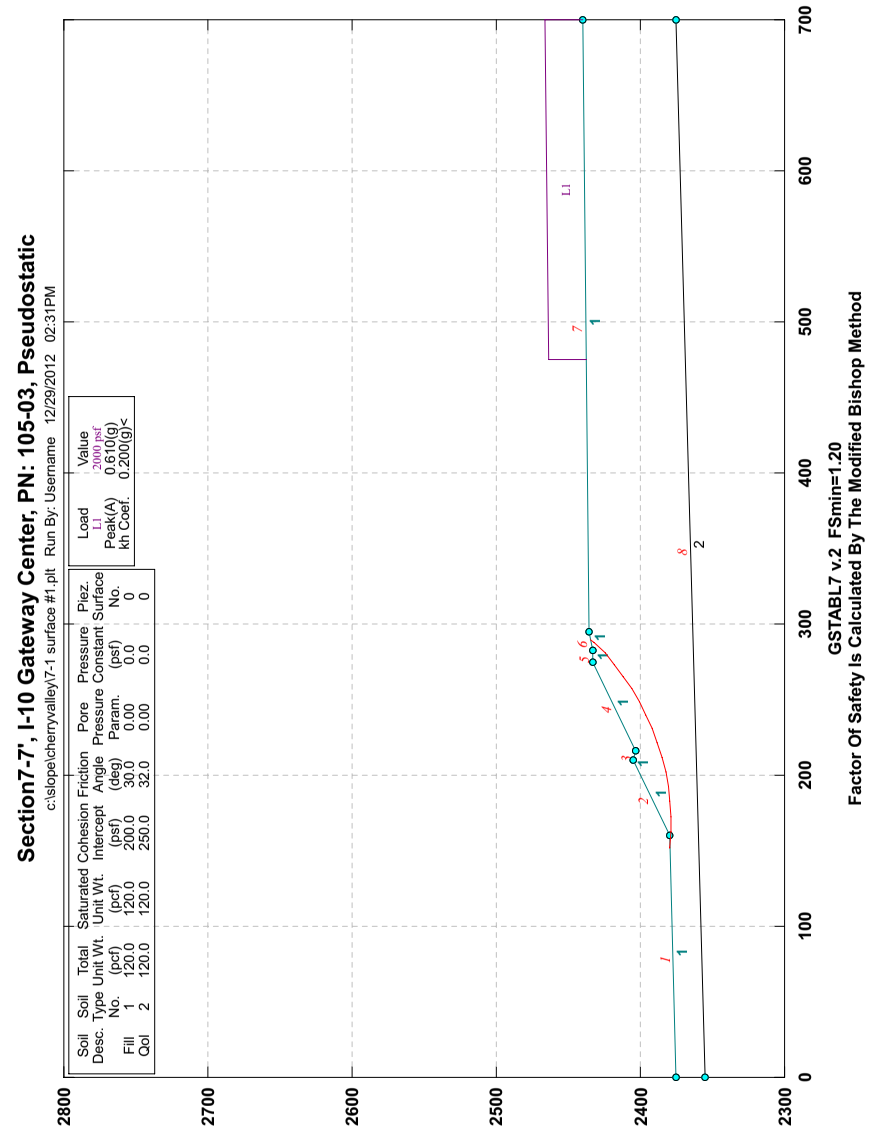

*** GSTABL7 ***

** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **

** Original Version 1.0, January 1996; Current Ver. 2.005.2, Jan. 2011 **

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****

SLOPE STABILITY ANALYSIS SYSTEM

Modified Bishop, Simplified Janbu, or GLE Method of Slices.

(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 12/29/2012
Time of Run: 02:31PM
Run By: Username
Input Data Filename: C:\SLOPE\CherryValley\7-1 Surface #1.in
Output Filename: C:\SLOPE\CherryValley\7-1 Surface #1.OUT
Unit System: English

Plotted Output Filename: C:\SLOPE\CherryValley\7-1 Surface #1.PLT

PROBLEM DESCRIPTION: Section7-7', I-10 Gateway Center,
PN: 105-03, Pseudostatic

BOUNDARY COORDINATES

7 Top Boundaries

8 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Below Bnd	Type
1	0.00	2375.00	160.00	2380.00	1	
2	160.00	2380.00	210.00	2405.00	1	
3	210.00	2405.00	216.00	2403.00	1	
4	216.00	2403.00	275.00	2433.00	1	
5	275.00	2433.00	283.00	2433.00	1	
6	283.00	2433.00	295.00	2436.00	1	
7	295.00	2436.00	700.00	2440.00	1	
8	0.00	2355.00	700.00	2375.00	2	

User Specified Y-Origin = 2300.00(ft)

Default X-Plus Value = 0.00(ft)

Default Y-Plus Value = 0.00(ft)

1

ISOTROPIC SOIL PARAMETERS

2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	200.0	30.0	0.00	0.0	0
2	120.0	120.0	250.0	32.0	0.00	0.0	0

0
1

BOUNDARY LOAD(S)

1 Load(s) Specified

Load No.	X-Left (ft)	X-Right (ft)	Intensity (psf)	Deflection (deg)

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1	475.00	700.00	2000.0	0.0

NOTE - Intensity Is Specified As A Uniformly Distributed
Force Acting On A Horizontally Projected Surface.

Specified Peak Ground Acceleration Coefficient (A) = 0.610(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.200(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)

Specified Seismic Pore-Pressure Factor = 0.000

1

Trial Failure Surface Specified By 17 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	152.632	2379.770
2	162.609	2379.092
3	172.608	2379.037
4	182.592	2379.606
5	192.521	2380.795
6	202.357	2382.601
7	212.061	2385.017
8	221.595	2388.032
9	230.924	2391.635
10	240.009	2395.813
11	248.817	2400.548
12	257.312	2405.823
13	265.462	2411.618
14	273.236	2417.909
15	280.602	2424.672
16	287.533	2431.881
17	289.956	2434.739

DEFLECTION ANGLE & SEGMENT DATA FOR SPECIFIED SURFACE(Excluding Last Segment)

Angle/Segment No.	Deflection(Deg)	Segment Length(ft)
1	3.57	10.00
2	3.58	10.00
3	3.56	10.00
4	3.58	10.00
5	3.58	10.00
6	3.57	10.00
7	3.57	10.00
8	3.58	10.00
9	3.57	10.00
10	3.58	10.00
11	3.58	10.00
12	3.56	10.00
13	3.58	10.00
14	3.57	10.00

Circle Center At X = 168.484(ft) ; Y = 2539.399(ft); and Radius = 160.415(ft)

* * Factor Of Safety Is Calculated By The Modified Bishop Method * *

Factor Of Safety For The Preceding Specified Surface = 1.203

Table 1 - Individual Data on the 21 Slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	7.4	322.9	0.0	0.0	0.0	0.0	64.6	0.0	0.0
2	2.6	460.8	0.0	0.0	0.0	0.0	92.2	0.0	0.0
3	10.0	5687.1	0.0	0.0	0.0	0.0	1137.4	0.0	0.0
4	10.0	11355.7	0.0	0.0	0.0	0.0	2271.1	0.0	0.0
5	9.9	16177.5	0.0	0.0	0.0	0.0	3235.5	0.0	0.0
6	9.8	20090.8	0.0	0.0	0.0	0.0	4018.2	0.0	0.0

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7	7.6	17918.4	0.0	0.0	0.0	0.0	3583.7	0.0
0.0								
8	2.1	4920.7	0.0	0.0	0.0	0.0	984.1	0.0
0.0								
9	3.9	8516.1	0.0	0.0	0.0	0.0	1703.2	0.0
0.0								
10	5.6	11598.4	0.0	0.0	0.0	0.0	2319.7	0.0
0.0								
11	9.3	20579.7	0.0	0.0	0.0	0.0	4115.9	0.0
0.0								
12	9.1	20903.9	0.0	0.0	0.0	0.0	4180.8	0.0
0.0								
13	8.8	20364.3	0.0	0.0	0.0	0.0	4072.9	0.0
0.0								
14	8.5	19022.9	0.0	0.0	0.0	0.0	3804.6	0.0
0.0								
15	8.1	16975.5	0.0	0.0	0.0	0.0	3395.1	0.0
0.0								
16	7.8	14332.1	0.0	0.0	0.0	0.0	2866.4	0.0
0.0								
17	1.8	2928.1	0.0	0.0	0.0	0.0	585.6	0.0
0.0								
18	5.6	7327.2	0.0	0.0	0.0	0.0	1465.4	0.0
0.0								
19	2.4	2037.6	0.0	0.0	0.0	0.0	407.5	0.0
0.0								
20	4.5	2199.2	0.0	0.0	0.0	0.0	439.8	0.0
0.0								
21	2.4	327.4	0.0	0.0	0.0	0.0	65.5	0.0
0.0								

Table 2 - Base Stress Data on the 21 Slices

Slice No.	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	-3.89	156.32	7.38	232.90	5.75
2	-3.89	161.30	2.62	312.14	23.06
3	-0.31	167.61	10.00	529.78	108.95
4	3.26	177.60	10.00	833.86	284.65
5	6.83	187.56	10.00	1078.70	499.87
6	10.41	197.44	10.00	1267.56	736.71
7	13.98	206.18	7.88	1387.71	963.43
8	13.98	211.03	2.12	1409.94	980.63
9	17.55	214.03	4.13	1257.37	991.46
10	17.55	218.80	5.87	1212.76	951.56
11	21.12	226.26	10.00	1243.17	1101.75
12	24.70	235.47	10.00	1252.05	1228.28
13	28.26	244.41	10.00	1220.02	1298.52
14	31.84	253.06	10.00	1150.08	1304.65
15	35.42	261.39	10.00	1045.66	1242.01
16	38.98	269.35	10.00	910.67	1110.61
17	42.56	274.12	2.39	804.01	996.54
18	42.56	277.80	7.61	662.97	786.99
19	46.13	281.80	3.46	460.61	503.55
20	46.13	285.27	6.54	320.23	288.15
21	49.71	288.74	3.75	177.51	77.89

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing
Soil Nail, and Applied Forces if applicable) = 145424.06 (lbs)

Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing,
Soil Nail, and Applied Forces if applicable) = 945.87(psf)

Sum of the Driving Forces = 120905.06 (lbs)

Average Mobilized Shear Stress = 786.39(psf)

Total length of the failure surface = 153.75(ft)

CAUTION - Factor Of Safety Is Calculated By The Modified Bishop
Method. This Method Is Valid Only If The Failure Surface

CVAR_09795

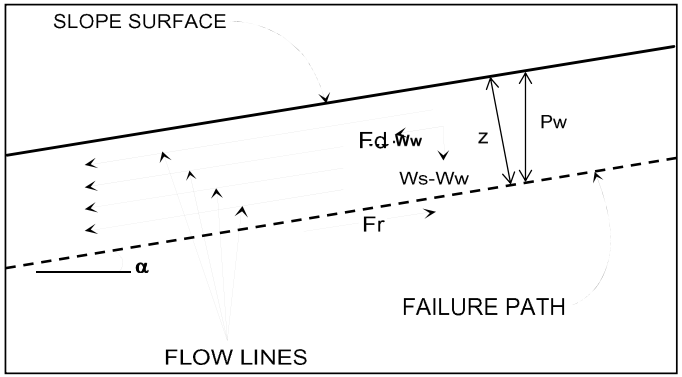
```
        Approximates A Circular Arc.

      *** SEISMIC SLOPE DISPLACEMENT DATA ***
(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) =  0.3046(g)
Calculated Newmark Seismic Displacement =   0.237(ft)

Non-Symmetrical Sliding Resistance Has Been Specified
for Downhill Sliding.


            **** END OF GSTABL7 OUTPUT ****
```

SURFICIAL SLOPE STABILITY



Assume: (1) Saturation To Slope Surface
(2) Sufficient Permeability To Establish Water Flow

P_w = Water Pressure Head=(z)(cos^2(α))
W_s = Saturated Soil Unit Weight
W_w = Unit Weight of Water (62.4 lb/cu.ft.)
u = Pore Water Pressure=(W_w)(z)(cos^2(α))
z = Layer Thickness
α = Angle of Slope
phi = Angle of Friction
c = Cohesion
F_d = (0.5)(z)(W_s)(sin(2α))
F_r = (z)(W_s-W_w)(cos^2(α))(tan(phi)) + c
Factor of Safety = F_r/F_d

Engineered Fill Slope

Given:

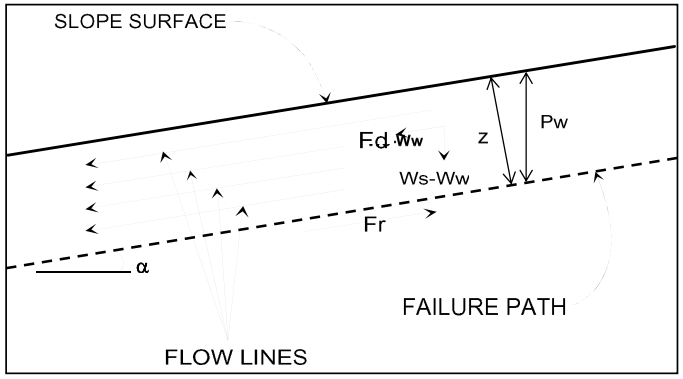
W_s (pcf)	c (psf)	ϕ (degrees)	z (ft)	Slope Ratio:	α (degrees)
120	200	30	4	2.0 :1	26.5

Calculations:

P_w	u	F_d	F_r	**Factor of Safety**
3.20	199.97	191.58	306.57	**1.60**

CVAR_09796

SURFICIAL SLOPE STABILITY



Assume: (1) Saturation To Slope Surface
(2) Sufficient Permeability To Establish Water Flow

P_w = Water Pressure Head=(z)(cos^2(α))
W_s = Saturated Soil Unit Weight
W_w = Unit Weight of Water (62.4 lb/cu.ft.)
u = Pore Water Pressure=(W_w)(z)(cos^2(α))
z = Layer Thickness
α = Angle of Slope
phi = Angle of Friction
c = Cohesion
F_d = (0.5)(z)(W_s)(sin(2α))
F_r = (z)(W_s-W_w)(cos^2(α))(tan(phi)) + c
Factor of Safety = F_r/F_d

Cut Slope in Older Alluvium

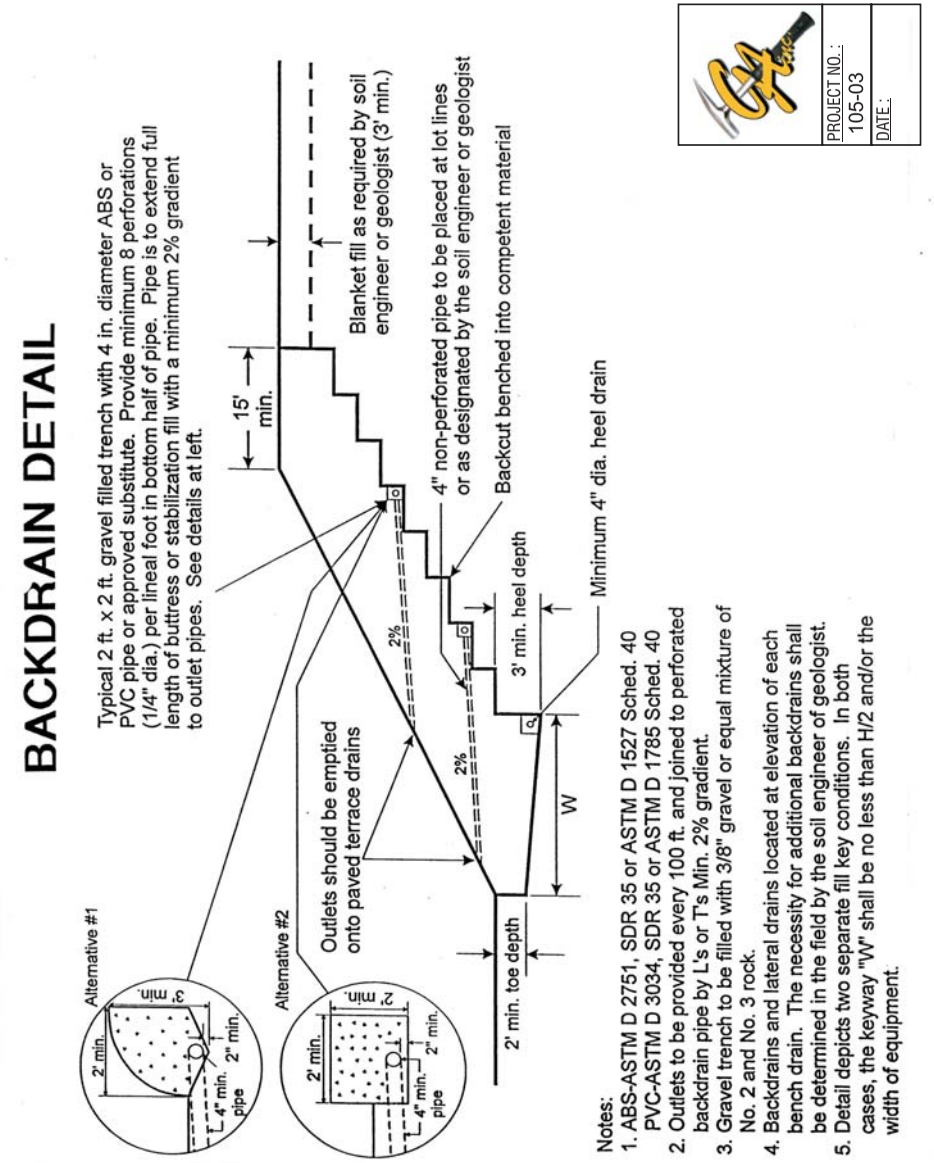
Given:

W_s (pcf)	c (psf)	ϕ (degrees)	z (ft)	Slope Ratio:	α (degrees)
120	250	32	4	2.0 :1	26.5

Calculations:

P_w	u	F_d	F_r	**Factor of Safety**
3.20	199.97	191.58	365.35	**1.91**

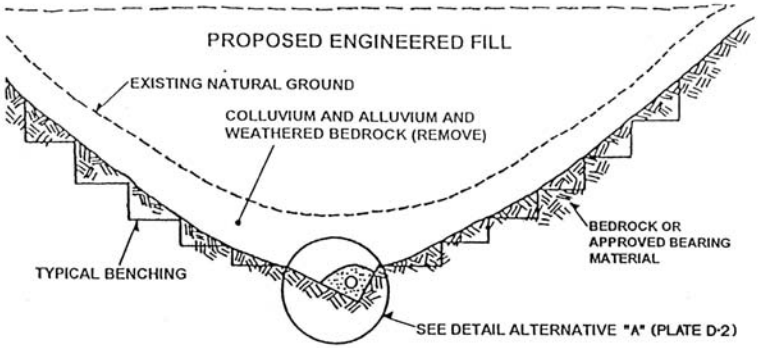
CVAR_09797



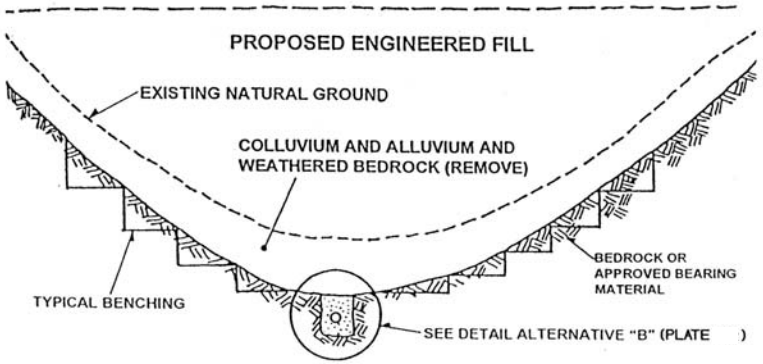
CANYON SUBDRAIN DETAIL

TYPE A

NOT TO BE USED FOR FILLS EXCEEDING 60 FEET



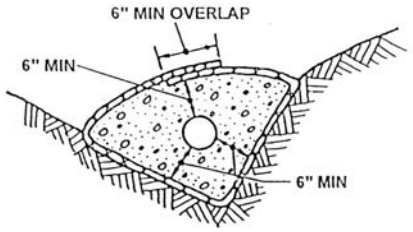
TYPE B



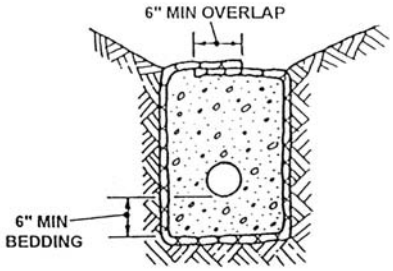
PROJECT NO. : 105-03
DATE :

CVAR_09798

CANYON SUBDRAIN DETAIL



ALTERNATIVE "A"



ALTERNATIVE "B"

Perforated Pipe Surrounded with Rock & Filter Fabric

FILTER MATERIAL: Minimum volume of 9 cu. ft. per lineal ft. of ¾ in. maximum rock.

PIPE: ABS or PVC pipe or approved substitute with a minimum of 8 ¼ in. perforations per lineal ft. in bottom half of pipe.

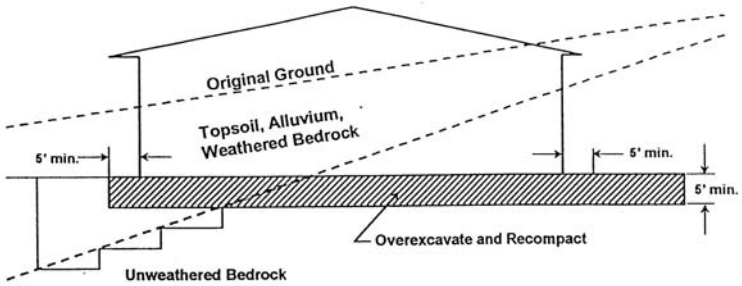
ASTM D2751, SDR 35 or ASTM D1527, SCHD. 40	ASTM D3034, SDR 35 or ASTM D1785, SCHD. 40

NOTE: For continuous run less than 500 ft. use 6 in. dia. pipe
For contiuous run in excess of 500 ft. use 8 in. dia. pipe
For continuous run in excess of 1000 ft. use 10 in. dia. pipe

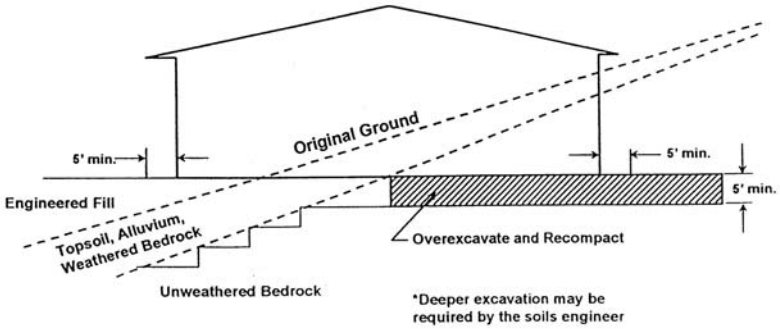
FILTER FABRIC: Mirafi 140 filter fabric or approved equivalent.

PROJECT NO. : 105-03
DATE :

CUT LOT

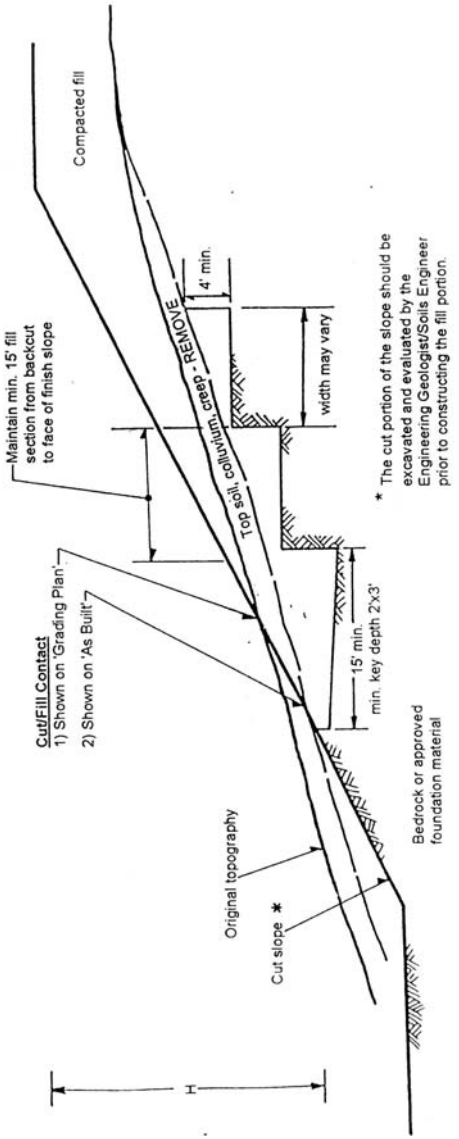


CUT-FILL LOT (Transition)



PROJECT NO. :
105-03
DATE :

FILL OVER CUT DETAIL

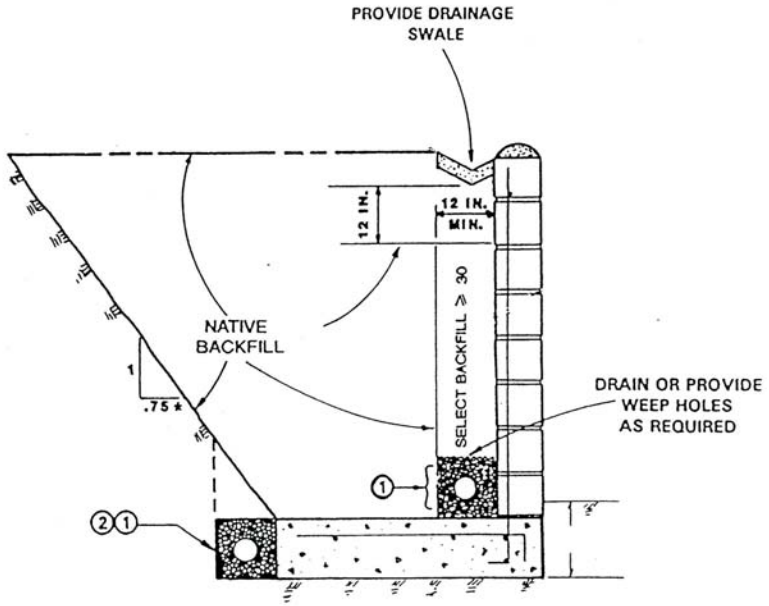


PROJECT NO. :
105-03
DATE :

CVAR_09799

TYPICAL

RETAINING WALL BACKFILL



* OR AS REQUIRED FOR SAFETY

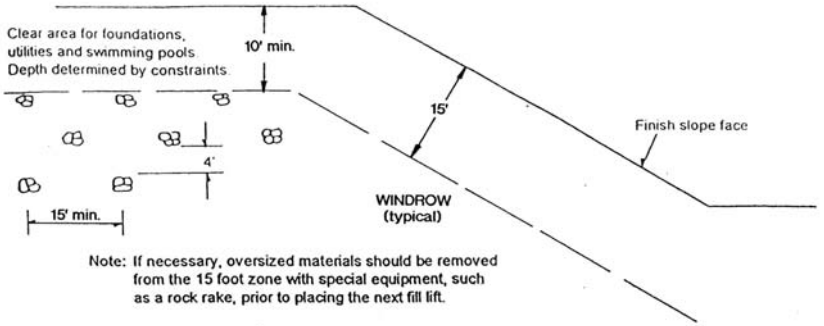
(1) 4-INCH PERFORATED PVC, SCHEDULE 40 OR APPROVED ALTERNATE. PLACE PERFORATION DOWN AND SURROUND WITH A MINIMUM OF 1 CUBIC FOOT PER LINEAL FOOT(1 FT^3/FT.) OF 3/4 INCH ROCK OR APPROVED ALTERNATE AND WRAPPED IN FILTER FABRIC.

(2) PLACE DRAIN AS SHOWN WHERE MOISTURE MIGRATION THROUGH THE WALL IS UNDESIRABLE.

NOT TO SCALE

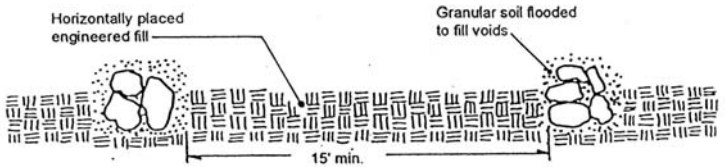
PROJECT NO. :
105-03
DATE :

ROCK DISPOSAL DETAIL



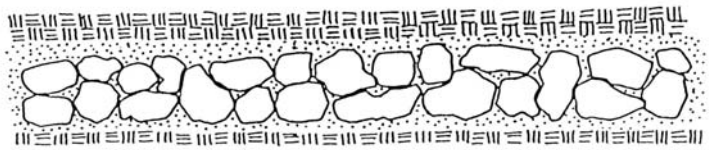
Note: If necessary, oversized materials should be removed from the 15 foot zone with special equipment, such as a rock rake, prior to placing the next fill lift.

TYPICAL WINDROW DETAIL (END VIEW)



Note: Engineered fill shall be brought up at a higher elevation along windrow so granular soil can be flooded in a "trench condition".

PROFILE VIEW



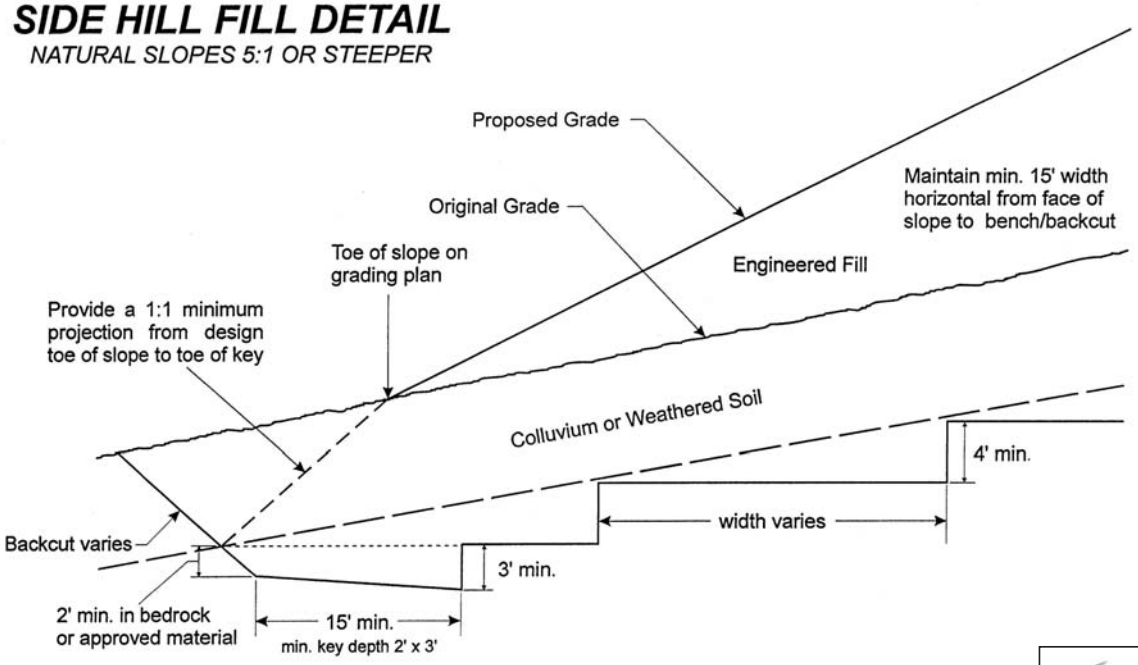
Note: In some situations, rock blankets may be utilized.

PROJECT NO. :
105-03
DATE :

CVAR_09800

SIDE HILL FILL DETAIL

NATURAL SLOPES 5:1 OR STEEPER



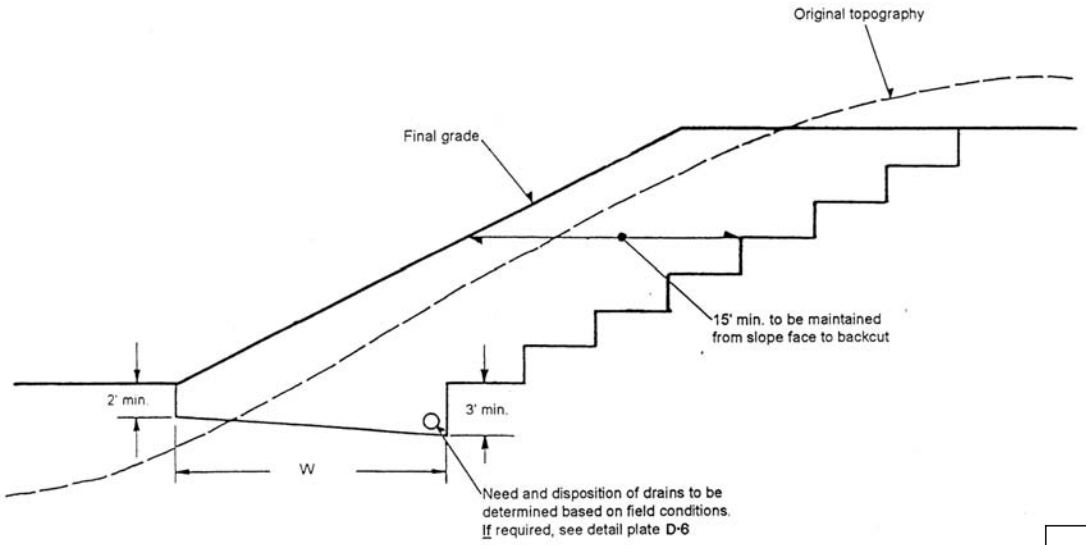
1) Where the natural slope approaches or exceeds the design slope ratio, special recommendations will be provided by the soil engineer.

2) The need for and disposition of drains will be determined by the soil engineer based upon exposed conditions.

PROJECT NO. : 105-03

DATE :

SKIN FILL ON NATURAL GROUND

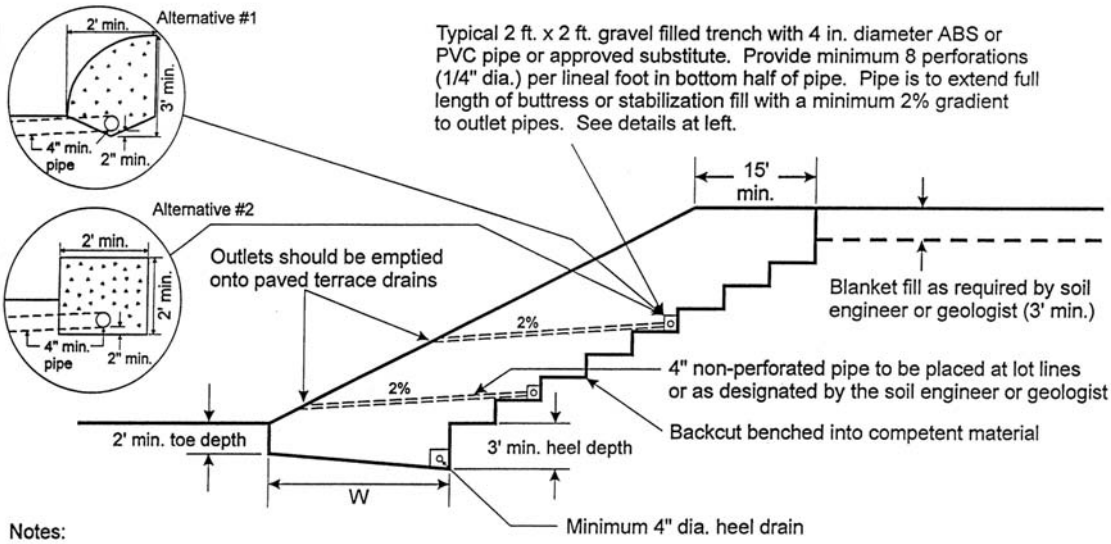


Note 1) The keyway "W" shall be no less than H/L and/or the width of equipment.
2) Bottom if keyway evaluation may need reconditioning.

PROJECT NO. : 105-03

DATE :

STABILIZATION / BUTTRESS FILL DETAIL



Notes:

1. ABS-ASTM D 2751, SDR 35 or ASTM D 1527 Sched. 40 PVC-ASTM D 3034, SDR 35 or ASTM D 1785 Sched. 40
2. Outlets to be provided every 100 ft. and joined to perforated backdrain pipe by L's or T's Min. 2% gradient.
3. Gravel trench to be filled with 3/8" gravel or equal mixture of No. 2 and No. 3 rock.
4. Backdrains and lateral drains located at elevation of each bench drain. The necessity for additional backdrains shall be determined in the field by the soil engineer of geologist.
5. Detail depicts two separate fill key conditions. In both cases, the keyway "W" shall be no less than H/2 and/or the width of equipment.

PROJECT NO. :
105-03
DATE :

PROJECT NO 950129-003 DRILL HOLE NO. B-12/00
PROJECT NAME York / Filiorum LOCATION Rancho Palos Verdes
RE SIZE HQ GROUND ELEVATION 530' HOLE DIAMETER 3 7/8 inches
BEARING N/A TOTAL DEPTH 341' DATE STARTED 4/24/00 DATE FINISHED 4/28/00
WATER LEVEL (DEPTH/ELEVATION/DATE) LOGGED BY TJG
DRILLING CO. Layne Christensen DRILLER Eric Sandoval SHEET 10 OF 10

ANGLE DEPTH ELEVATION SIZE BOX NO.	REC. REQ	GRAPHIC LOG	CLASSIFICATION & PHYSICAL CONDITION	Approx Dip	REMARKS (WATER LOSS & COLOR, CASING RECORD, TIME OF DRILLING, ETC.)
330	100 / 96		321.0 - 339.0 BASALT, as above		@0930 start run 69
335	100 / 100		339.0 - 344.0 BASALT, as above		@1025 start run 70
340	100 / 96		Total Depth 349' Finished drilling on 4/28/00 Set well to 250' screened from 40'-250'		@1110 start run 71
345	100 / 100				
350					

Box # 34 35 36 Run # 69 70 71

CVAR_09802

PROJECT NO. 950129-003 DRILL HOLE NO. B-12/00

PROJECT NAME York / Filiorum LOCATION Rancho Palos Verdes

SIZE HQ GROUND ELEVATION 530'± HOLE DIAMETER 3 7/8 inches

BEARING N/A TOTAL DEPTH 349' DATE STARTED 4/24/00 DATE FINISHED 4/28/00

WATER LEVEL (DEPTH/ELEVATION/DATE) LOGGED BY DRJ / TJG

DRILLING CO. Layne Christensen DRILLER Eric Sandoval SHEET 2 OF 10

ANGLE DEPTH ELEVATION SIZE BOX NO.	REC / ROD	GRAPHIC LOG	CLASSIFICATION & PHYSICAL CONDITION	Apparent Dip	REMARKS (WATER LOSS & COLOR, CASING RECORD, TIME OF DRILLING, ETC.)
50	100 / 100		50.5-51.0' BENTONITE, light brown, soft to stiff, moist, waxy. @ 49-51' gypsum along bedding		@ 1040 start run 12
4 11					@ 1105 change bit
12	100 / 50		51' BEDROCK: MONTEREY FORMATION - ALTAMIRA SHALE MEMBER (Tma)		
55			51.0-54.0 Interbedded SILICEOUS : BENTONITIC SILTSTONE : BENTONITE, light brown to gray, stiff to mod hard, fractures, slight gypsum along bedding, beds ½" to 2" thick		@ 1110 start run 13
13	100 / 50		54.0-59.0 BENTONITIC SILTSTONE, light green to brown, mod hard, gypsum along bedding, occasional black staining, iron oxide staining	@ 20°	
60			59.0-64.0 BENTONITIC SILTSTONE, light olive green and gray, hard, gypsum along some bedding, occasional iron oxide staining	@ 10-20°	@ 1200 start run 14
5 14	96 / 86				
65			64.0-68.4 BENTONITIC SILTSTONE, light to dark gray, light olive green, very stiff to hard, iron oxide staining, some gypsum		@ 1240 start run 15
15	100 / 94				
			68.4-69.0 BENTONITE, light green, stiff, iron oxide staining		
70			69.0-70.0 BENTONITIC SILTSTONE / SILTSTONE, light to dark gray / light brown, mod hard, occasional gypsum along bedding, iron oxide staining, soft sediment deformation		@ 1310 start run 16
6 16	100 / 78		70' Portuguese Tuff (Pt)		
			BENTONITIC TUFF, light to dark gray, mod hard, soft sediment deformation	B 15-20°	@ 1345 start run 17
75	100 / 90				
17			79.0-84.0 BENTONITIC TUFF, gray, mod hard, fine to med grained		@ 1413 start run 18
80			@ 82.7-0.2' thick zone w/ green tinted horizons		
7 18	100 / 100				
			84.0-89.0 BENTONITIC TUFF, light gray, mod hard, med grained, massive w/ occasional laminations		@ 1445 start run 19
85					

Box # Run #

HA

PROJECT NO. 950129-003 DRILL HOLE NO. B-12/00

PROJECT NAME York / Filiorum LOCATION Rancho Palos Verdes

SIZE HQ GROUND ELEVATION 530' HOLE DIAMETER 3 7/8 inches

BEARING N/A TOTAL DEPTH 349' DATE STARTED 4/24/00 DATE FINISHED 4/28/00

WATER LEVEL (DEPTH/ELEVATION/DATE) LOGGED BY DRJ / TJG

DRILLING CO. Layne Christensen DRILLER Eric Sandoval SHEET 1 OF 10

ANGLE DEPTH ELEVATION SIZE BOX NO.	REC / ROD	GRAPHIC LOG	CLASSIFICATION & PHYSICAL CONDITION	Apparent Dip	REMARKS (WATER LOSS & COLOR, CASING RECORD, TIME OF DRILLING, ETC.)
					4/24/00 Advance casing to 20' w/ tricone bit.
20			20' Qels: Old Slide Debris		
1	63 / 13		20-20.7' SILICEOUS SILTSTONE, gray to brown, damp, mod hard to hard, highly fractured		
			20.7-22.5' CLAYEY SILTSTONE, orange brown, damp to moist, very stiff to mod hard		
			22.5-24.0' No Recovery		
25			24.0-26.5' Interbedded SILICEOUS SILTSTONE and CLAYEY SILTSTONE, light to med brown, damp to slightly moist, stiff to mod hard, highly fractured		
2	50 / 0		26.5-29.0' No Recovery		
					4/25/00
30			29.0' CLAYEY SANDY SILTSTONE, red brown, damp to moist, stiff		@ 0710 start run 3
3	20 / 0		29.5-31.5' No Recovery		
			31.5-32.5 BASALT, light brown, mod hard, damp, fractured, iron oxide staining		@ 0740 start run 4
4	40 / 0		32.5-34.0 No Recovery		
35			34.0-34.3 CHERT, med gray and brown, damp, mod hard to hard,		@ 0800 start run 5
5	17 / 0		34.3-36.5' No Recovery		
			36.5-38.0 BASALT, light brown orange, stiff, damp, fractured, chaotic		@ 0820 start run 6
6	100 / 40		38.0-41.5 BASALT, med brown, stiff, slightly moist, fractured, iron oxide staining		@ 0840 start run 7
7	100 / 100				@ 0860 start run 8
40					
8	100 / 40		41.5-43.8 BASALT, dark yellow orange and light brown, soft, moist, fine-grained	C.S. ~25°	@ 0905 start run 9
9	92 / 60		43.8-44.0 No Recovery		
			44.0-45.7 BASALT, light brown, stiff, moist		
45			45.7-46.9 BASALT, med brown, soft, moist		@ 0920 start run 10
10	58 / 52		46.9-49.0 No Recovery		
			49.0-50.5' SILICEOUS SILTSTONE and BENTONITIC SILTSTONE, brown and gray, very stiff to hard, damp, laminations ¼" to 1" thick	B 15°	@ 1015 start run 11
50					

Box # Run #

HA

CVAR_09803

PROJECT NO 750179-003 DRILL HOLE NO B-12/00

PROJECT NAME York / Filiorum LOCATION Rancho Palos Verdes

SIZE HQ GROUND ELEVATION 530' ± HOLE DIAMETER 3 7/8 inches

BEARING N/A TOTAL DEPTH 349' DATE STARTED 4/24/00 DATE FINISHED 4/28/00

WATER LEVEL (DEPTH, ELEVATION, DATE) LOGGED BY DRJ / TJG

DRILLING CO. Layne Christensen DRILLER Eric Sandoval SHEET 4 OF 10

ANGLE DEPTH ELEVATION SIZE BOX NO.	REC. / ROD	GRAPHIC LOG	CLASSIFICATION & PHYSICAL CONDITION	Apparent Dip	REMARKS (WATER LOSS & COLOR, CASING RECORD, TIME OF DRILLING, ETC.)
120			121.2 - 122.0 Interbedded CLAYEY : BENTONITIC SILTSTONE, dark olive gray, mod hard, occasional fractures	B 25°	
11 26	100 / 70		@ 122.0 0.4' thick BENTONITE, dark gray, stiff @ 122.4 0.2' thick SILTSTONE 122.6 - 123.3 BENTONITE, as @ 122.0		
125			BASE OF PORTUGUESE TUFF MONTEREY FORMATION - ALTAMIRA SHALE (Tma)		@ 0922 start run 27
12 27	100 / 76		123.3 - 129.0 Interbedded SILTSTONE : BENTONITIC TUFF, med to dark gray, mod. hard. some fractures, bentonite is very waxy		
130			129.0 - 134.0 Interbedded SILTSTONE, CLAYEY SILTSTONE, BENTONITIC TUFF, : BENTONITE, light to dark gray, damp, mod. hard. bentonite is waxy - thin bentonite layers @ 129.6, 132.6 : 132.2		@ 0950 start run 28
28	100 / 94				
135			134.6 Interbedded BENTONITIC SILTSTONE, DEBRIS FLOW, and BENTONITE, light to dark gray, mod. hard. Some fractures, DEBRIS FLOW from 134.6 - 135.6 and 176.6 - 138.8.		@ 1010 start run 29
13 29	100 / 80		@ 135.2 - 0.3' thick BENTONITE @ 136.5 - 0.3' thick BENTONITE	B 20°	
140			139.0 - 140.5 Interbedded SILTSTONE, BENTONITIC SILTSTONE : MUDSTONE, hard. pyrite	B 45°	@ 1030 start run 30
30	60 / 50		140.5 - 141.5 BENTONITE 141.5 - 142.0, as @ 139.0' 142.0 - 144.0 No Recovery		
145			144.0 - 147.8 Interbedded BENTONITIC SILTSTONE / BENTONITE, gray, hard, laminated		@ 1055 start run 31
14 31	100 / 86		147.8 - 149.0 Interbedded SILTSTONE, MUDSTONE : BENTONITE, gray to olive gray, hard. beds 1/4" to 2" thick		
150			149.0 - 151.0 Interbedded SILTSTONE, MUDSTONE, : SANDSTONE, damp. hard		@ 1120 start run 32
32	100 / 100		151.0 - 151.6 MUDSTONE, dark gray, hard 151.6 - 152.0, as @ 149.0 152.0 - 154.0 as @ 151.0'		
155					@ 1209 start run 33

Box # Run #

PROJECT NO 750179-003 DRILL HOLE NO. B-12/00

PROJECT NAME York / Filiorum LOCATION Rancho Palos Verdes

SIZE HQ GROUND ELEVATION 530' ± HOLE DIAMETER 3 7/8 inches

BEARING N/A TOTAL DEPTH 349' DATE STARTED 4/24/00 DATE FINISHED 4/28/00

WATER LEVEL (DEPTH, ELEVATION, DATE) LOGGED BY DRJ / TJG

DRILLING CO. Layne Christensen DRILLER Eric Sandoval SHEET 3 OF 10

ANGLE DEPTH ELEVATION SIZE BOX NO.	REC. / ROD	GRAPHIC LOG	CLASSIFICATION & PHYSICAL CONDITION	Apparent Dip	REMARKS (WATER LOSS & COLOR, CASING RECORD, TIME OF DRILLING, ETC.)
85				B 15°	
19	100 / 100				
90			89.0 - 94.0 BENTONITIC TUFF, light gray, mod. hard, fine to coarse grained, massive, rare fractures w/ green halos		@ 1511 start run 20
8 20	100 / 94				
95			94.0 - 99.0 BENTONITIC TUFF, light to med. gray, mod hard, occasional gypsum joints, few fractures w/ green halo, fine to med. grained	B 15°	@ 1535 start run 21
21	100 / 100				
100			99.0 - 104.0 BENTONITIC TUFF, light gray, mod. hard, fractures as above		@ 1555 start run 22 @ 1600 lose circulation @ 1605 return circulation
22	100 / 94				
105			104.0 - 109.0 BENTONITIC TUFF, as @ 99' w/ bentonite pods to 1/2" long, white to light gray		@ 1624 start run 23 @ 1650 H_2O truck run End drilling - shut down for day 4/26/00
23	90 / 80				
110			109.0 - 114.0 BENTONITIC TUFF, gray, mod hard, massive, some dark flecks		@ 0710 start run 24
10 24	100 / 100				
115			114.0 - 119.0 BENTONITIC TUFF, as above, some dark brown veins to 1/4" by 1" shear surface @ 119', polished, striated		@ 0830 start run 25
11 25	98 / 98			S 40°	
120			119.0 - 121.2' BENTONITIC TUFF, as @ 109.0'		@ 0900 start run 26

Box # Run #

CVAR_09804

ROCK BORING LOG

PROJECT NO. 950129-003 DRILL HOLE NO. B-12/00

PROJECT NAME York / Filiorum LOCATION Rancho Palos Verdes

SIZE HQ GROUND ELEVATION 530± HOLE DIAMETER 3 7/8 inches

BEARING N/A TOTAL DEPTH 349' DATE STARTED 4/24/00 DATE FINISHED 4/28/00

WATER LEVEL (DEPTH, ELEVATION, DATE): LOGGED BY DRJ / TJG

DRILLING CO. Layne Christensen DRILLER Eric Sandoval SHEET 6 OF 10

ANGLE, DEPTH, ELEVATION, SIZE, BOX NO.	REC. ROD	GRAPHIC LOG	CLASSIFICATION & PHYSICAL CONDITION	Apparent Dip	REMARKS (WATER LOSS & COLOR, CASING RECORD, TIME OF DRILLING, ETC.
190					
19 40	88 60		191.2-192.4 SILTSTONE/MUDSTONE, as @ 188.2		
			192.4-192.9 DEBRIS FLOW, gray, tuffaceous, matrix w/ bentonite clasts up to ¼"		
195			192.9-193.4 SILTSTONE, as @ 188.2		
41	100 90		193.4-194.0 No Recovery		@ 1535 start run 41
			194.0-200.9 MUDSTONE, interbedded black/brown hard, dense, thinly bedded	B: 15°	
200			200.6-200.8 BENTONITE, brown, soft, unsheared		
20 42	100 100		200.9-201.3 BENTONITIC TUFF, gray, med. hard, massive		@ 1600 start run 42
			201.3-204.0 MUDSTONE, as @ 194.0 w/ minor shearing	B: 8-10°	
205			204.0-206.5 MUDSTONE, interbedded gray to olive gray		@ 1650 start run 43
43	100 84		206.5-207.3 MUDSTONE, gray, med. hard		
			207.3-208.3 as @ 204'		
			208.3-209.0 as @ 206.5'		End drilling @ 1700 4/27/00
210			209.0-212.0 MUDSTONE, interbedded black and gray, med. hard to hard, occasional shale; bentonitic tuff layers, rare phosphate nodules, bentonitic tuff layers up to 2" thick, thinly bedded	B: 15°	@ 0700 start run 44
21 44	100 84				
215					@ 0735 start run 45
45	100 76		217.0-217.7 SILICEOUS SILTSTONE, gray, hard, fractured	B: 20°	
			217.7-221.0 MUDSTONE, brown to black, hard, thinly bedded, occasional phosphate nodule, interbedded w/ BENTONITIC TUFF from 220-220.2		@ 0810 start run 46
220			BENTONITE from 221.3-221.6, d. gray, very soft, plastic		
22 46	100 70		from 219.0-222.0 - med. fractured and emits strong organic odor		
225					@ 0833 start run 47

JX # Run #



CVAR_09805

ROCK BORING LOG

PROJECT NO. 950129-003 DRILL HOLE NO. B-12/00

PROJECT NAME York / Filiorum LOCATION Rancho Palos Verdes

SIZE HQ GROUND ELEVATION 530± HOLE DIAMETER 3 7/8 inches

BEARING N/A TOTAL DEPTH 349 DATE STARTED 4/24/00 DATE FINISHED 4/28/00

WATER LEVEL (DEPTH, ELEVATION, DATE): LOGGED BY DRJ / TJG

DRILLING CO. Layne Christensen DRILLER Eric Sandoval SHEET 5 OF 10

ANGLE, DEPTH, ELEVATION, SIZE, BOX NO.	REC. ROD	GRAPHIC LOG	CLASSIFICATION & PHYSICAL CONDITION	Apparent Dip	REMARKS (WATER LOSS & COLOR, CASING RECORD, TIME OF DRILLING, ETC.
155					
15 33	100 60		154.0-159.0 Interbedded SILTSTONE, MUDSTONE, CLAYSTONE, w/ occasional SANDSTONE, olive gray to light gray, mod. hard, slightly fractured, rare polished & striated surfaces	5-20°	
160			159.0-164.0 BENTONITIC TUFF/SILTSTONE, gray, mod. soft to mod. hard, gritty, soft sed. deformation, minor shearing	B: 5°	@ 1225 start run 34
16 34	100 76				
165			164.0-166.0' BENTONITIC TUFF, gray, hard, some clay pods ¼" to 1", massive		@ 1250 start run 35
35	72 60		166.0-168.5 BENTONITIC TUFF, as above, finely laminated		
			168.5-171.0 BENTONITIC TUFF, gray, mod. soft, laminated		@ 1325 start run 36
170					
36	100 50		171.0-173.5 MUDSTONE, olive-gray, hard	B: 15°	
			173.5-174.0 BENTONITE, gray, soft, waxy		
17			174.0-175.5 BASALT, dark gray, mod. hard, very dense, massive, lacks vesicles		@ 1345 start run 37
175 37	94 50		175.5-176.1 MUDSTONE w/ BENTONITE rip-ups, dark gray, mod. hard		
			176.1-178.0 BASALT, as @ 174.0		
			178.0 SILTSTONE and BENTONITIC TUFF		
			178.7 TUFFACEOUS BRECCIA, clasts to 3/8", gray, mod. hard, minor sandstone		
180			179.0 MUDSTONE, dark gray, mod. hard, gypsum veins		@ 1415 start run 38
38	100 80		180.0-188.2 BASALT, mod. gray, mod. hard, carbonate filled amygdules, scarce vesicles, scarce plag. crystals		
18			188.2-189.2 Interbedded MUDSTONE & SILTSTONE, light to med. gray, mod. hard, 1/16" - 1" thick		@ 1440 start run 39 @ 172' loss circulation
185 39	100 84				
			189.2-191.2 BASALT, as @ 180' w/ abundant vesicles		@ 1506 start run 40
190					

JX # Run #



PROJECT NO. 950129-003 DRILL HOLE NO. B-12/00

PROJECT NAME York / Filiorum LOCATION Rancho Palos Verdes

HOLE SIZE HQ GROUND ELEVATION 530'± HOLE DIAMETER 3 7/8 inches

BEARING N/A TOTAL DEPTH 349' DATE STARTED 4/24/00 DATE FINISHED 4/28/00

WATER LEVEL (DEPTH,ELEVATION,DATE) LOGGED BY TJG

DRILLING CO. Layne Christensen DRILLER Eric Sandoval SHEET 8 OF 10

ANGLE DEPTH ELEVATION SIZE BOX NO.	REC. ROD	GRAPHIC LOG	CLASSIFICATION & PHYSICAL CONDITION	Apparent Dip	REMARKS (WATER LOSS & COLOR, CASING RECORD, TIME OF DRILLING, ETC.)
260					
26	92		259.0 - 269.0 MUDSTONE/SILTSTONE, dark brown/black, mod. soft, interbedded w/ gray SANDSTONE layers <½" thick. sandstone is mod. hard, massive		@ 1130 H2O truck run
54	88				
265					
27	100		As above. w/ SANDSTONE layer @ 267.8 - 268.2, dark gray, mod. hard, massive		@ 1145 start run 55
55	84				
270					
	100		269.0 - 275.0 MUDSTONE, dark brown, mod. hard, massive, vertical fracturing, interbedded w/ rare sandstone layers. SANDSTONE is gray, fine-grained, well-cemented, layers 3/4" to 2"		@ 1205 start run 56
56	52				
275					
	48		275.0 - 276.4 SILICEOUS SILTSTONE, gray, hard, massive, occasional shears		@ 1220 start run 57
57	0		276.4 - 279.0 No Recovery		@ 1240 core dropped in hole
					@ 1310 pulled out of hole
280					
	100		279.0 - 282.1 SANDSTONE, light gray, mod. hard to hard, fine to med. grained		@ 1410 start run 58
58	30		282.1 - 284.0 MUDSTONE/SHALE, dark brown/black, mod. hard, fractured to very fractured		
29			284.0 - 289.0 MUDSTONE/SHALE, dark brown-black, mod. hard, few fractures. SANDSTONE interbeds approx. every 3' to 8'. minor shearing, fish scales	8.5-10°	@ 1435 start run 59
285	100				
59	88				
290					
	100		289.0 - 294.0 MUDSTONE/SHALE, dark gray to black, w/ light gray interbeds, mod. hard, minor fractures and shears, interbeds are ~ 1/4" - 3/4" thick, approx. every 2'		@ 1455 start run 60
30	90				
60					@ 1516 start run 61
295					

Box # Run #

PROJECT NO. 950129-003 DRILL HOLE NO. B-12/00

PROJECT NAME York / Filiorum LOCATION Rancho Palos Verdes

HOLE SIZE HQ GROUND ELEVATION 530'± HOLE DIAMETER 3 7/8 inches

BEARING N/A TOTAL DEPTH 349' DATE STARTED 4/24/00 DATE FINISHED 4/28/00

WATER LEVEL (DEPTH,ELEVATION,DATE) LOGGED BY TJG

DRILLING CO. Layne Christensen DRILLER Eric Sandoval SHEET 7 OF 10

ANGLE DEPTH ELEVATION SIZE BOX NO.	REC. ROD	GRAPHIC LOG	CLASSIFICATION & PHYSICAL CONDITION	Apparent Dip	REMARKS (WATER LOSS & COLOR, CASING RECORD, TIME OF DRILLING, ETC.)
225					
47	100		224.0 - 229.0 MUDSTONE, dark brown, hard, thinly bedded, occasional phosphate nodules		
	100			B 15-20	
230			229.0 - 235.5 MUDSTONE, as above except w/ abundant fish scales		@ 0900 start run 48
23 48	100				
	90			B 20°	
235					
49	100		235.5 - 235.9 BENTONITIC TUFF, gray, mod. soft, slightly waxy		@ 0930 start run 49
	80		235.9 - 245.6 MUDSTONE, brown, mod. soft to mod. hard, massive, occasional to abundant fish scales, occasional shear surfaces		@ 0945 H2O truck run
240					
50	100				@ 0954 start run 50
	90				
245					
51	100		245.6 - 246.1 SANDSTONE, gray, mod. soft, massive very fine grained		@ 1012 start run 51
	75		246.1 - 250.7 MUDSTONE/SHALE, as @ 235.9' w/ slight organic odor		
25 250					
	100		250.7 - 251.5 SANDSTONE, grey, mod. soft, massive, fine-grained		@ 1027 start run 52
52	80		251.5 - 256.3 MUDSTONE, brown, mod. soft, massive, occasional fish scales		
255					
	100		256.3 - 259.0 SILTSTONE, brown, mod soft, massive, interbedded w/ two <½" thick brown sandstone beds		@ 1100 start run 53
26 53	100				
260					@ 1120 start run 54

Box # Run #

CVAR_09806

PROJECT NO. 950129-003 DRILL HOLE NO. B-12/00

PROJECT NAME York / Filiorum LOCATION Rancho Palos Verdes

SIZE HQ GROUND ELEVATION 530' HOLE DIAMETER 3 7/8 inches

BEARING N/A TOTAL DEPTH 349' DATE STARTED 4/24/00 DATE FINISHED 4/28/00

WATER LEVEL (DEPTH, ELEVATION, DATE) LOGGED BY TJG

DRILLING CO. Layne Christensen DRILLER Eric Sandoval SHEET 9 OF 10

ANGLE DEPTH ELEVATION SIZE BOX NO.			REC. RQD	GRAPHIC LOG	CLASSIFICATION & PHYSICAL CONDITION	Apparent Dip	REMARKS (WATER LOSS & COLOR, CASING RECORD, TIME OF DRILLING, ETC.)
30	61	295	100 / 60		294.0-299.0 MUDSTONE/SHALE, dark gray/black, hard, massive w/ few light gray laminations, some light gray flecks		
31	62	300	100 / 94		299.0-309.0 MUDSTONE, dark gray, hard, massive, rare light gray siltstone layer, occasional to abundant fish scales, siliceous.	B 7-8	@ 1545 start run 62 H_2O truck run
	63	305	100 / 48				@ 1600 start run 63
32	64	310	100 / 88		309.0-315.5 MUDSTONE, as above, siliceous, w/ abundant fish scales		@ 1615 start run 64
	65	315	100 / 52		315.5-319.0 SILTSTONE/SANDSTONE, med. gray, mod. soft, massive, slightly tuffaceous, interbedded w/ occasional black mudstone layer, siltstone/sandstone is friable and fractured		@ 1635 start run 65
33	66	320	100 / 70		319.0-324.4 MUDSTONE, gray brown, mod. hard to hard, massive, slightly siliceous.		@ 1700 start run 66 @ 1730 End Drilling
					TERTIARY BASALT (Tb)		4/28/00
34	67	325	100 / 100		324.4-329.0 BASALT, gray, hard, massive, dense, abundant white veins, minor pyrite, plag x-tals		@ 0720 start run 67 Drilling very slow
		330					@ 0815 start run 68

Box # Run #

E.2 - Fault Investigation

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FAULT INVESTIGATION
TENTATIVE TRACT NO. 30545,
GEO NO. 1442
CHERRY VALLEY AREA,
COUNTY OF RIVERSIDE,
CALIFORNIA,
NORTHEAST OF CHERRY VALLEY BOULEVARD AND INTERSTATE 10

Project No. 665-000-02
September 22, 2008

Prepared For:
TSG CHERRY VALLEY, LP.
C/O THE SHOPOFF GROUP
8951 RESEARCH DRIVE
IRVINE, CA. 92618

Prepared By:
NEBLETT & ASSOCIATES, INC.
4911 Warner Avenue, Suite 218
Huntington Beach, CA 92649

Neblett&Associates

TSG Cherry Valley, L.P.
c/o The Shopoff Group
8951 Research Drive
Irvine, CA. 92618

September 22, 2008
Project No.: 665-000-02

Attention: Mr. Brian Rupp

Dear Mr. Rupp:

Pursuant to your request, Neblett & Associates, Inc. have completed the fault investigation for your site in the Cherry Valley area in the County of Riverside. The results, conclusions and recommendations of this investigation are attached herein.

A cursory review of your conceptual plans indicate the plan will be feasible and the approximate building footprint can be positioned within the buildable area of the site.

We appreciate the opportunity to provide our services and are looking forward to reviewing the forthcoming grading plan.

Respectfully Submitted,
NEBLETT & ASSOCIATES, INC.

By: _____
David H. Ginter, P.G. 6771
CEG 2250, Reg. Expires 6/30/08
Chief Geologist

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FIGURES AND PLATES

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Figure 2 Site Location Map

Figure 3 Summary of Local Faults Mapped by Previous Workers

Figure 4 Riverside County Fault Hazard Management Zone Map

Figure 5 The San Gorgonio Pass Viewing West-Northwest from the Coachella Valley, 1931

Figure 6 Photograph of Deflected Drainages at Cherry Valley Fault Zone within and near the Subject Site

Figure 7 Major Fault Systems in the Vicinity of the Subject Site

Figure 8 A portion of the Geologic Map of the EL Casco Quadrangle by T.W. Dibblee Jr., 2003

Figure 8a Legend for Figure 8

Figure 9 Aerial Photo Lineaments within Subject Site Boundaries.

Figure 10 Oblique View to Northwest of Aerial Photo Lineaments shown in Figure 9

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Figure 17 Graphic Log of Fault Trench NT-5 (in pocket)

Figure 18 Graphic Log of Fault Trench NT-6 (in pocket)

Figure 19 Graphic Log of East Road Cut RC-1 (in pocket)

PLATES: APPENDIX 1

Plate 1 Photos of Trenching Operations

Plate 2 Photo of South Branch CHFZ at Trench NT-2

Plate 3 Photo of South Branch CHFZ at Trench NT-5

Plate 4 Photo of South Branch CHFZ at Trench NT-6

Plate 5 Photo of South Branch CHFZ at Trench NT-6

Plate 6 Photo of shattered upper plate at Trench NT-6

Plate 7 Photo of North Branch CHFZ at CHJ Road Cut SC-4

Plate 8 Photo of South Branch CHFZ at CHJ Road Cut SC-1

Plate 9 Photo of South Branch CHFZ at CHJ Road Cut SC-3

Plate 10 Photo of South Branch CHFZ 450' NW of property

Plate 11 Photo of red older alluvial material outcropping near east PL

Neblett&Associates

TSG Cherry Valley, L.P.
c/o The Shopoff Group
8951 Research Drive
Irvine, CA. 92618

September 22, 2008
Project No.: 665-000-02

1.0 Introduction:

This report has been prepared to present our findings and conclusions of our (N&A) fault investigation performed in June and July of 2008 as well as to summarize and incorporate findings of the previous fault investigations and letter transmittals by the former geotechnical consultant – C.H.J. Incorporated (Aug. 3, 2005 through Sept. 15, 2006).

After our review of the former consultant's reports, our review of CDMG FER-235 (Treiman, 1994) and supplement No.1 (Treiman, 1995), our review of Riverside County's Fault Hazard Management Zone, our preliminary site reconnaissance, and our review of the site's structural geology, stratigraphy, and geomorphology, some issues arose that warranted resolution from a geotechnical standpoint. Paramount among these was the determination of precise fault location, particularly for the South Branch of the Cherry Valley Fault Zone (CVFZ).

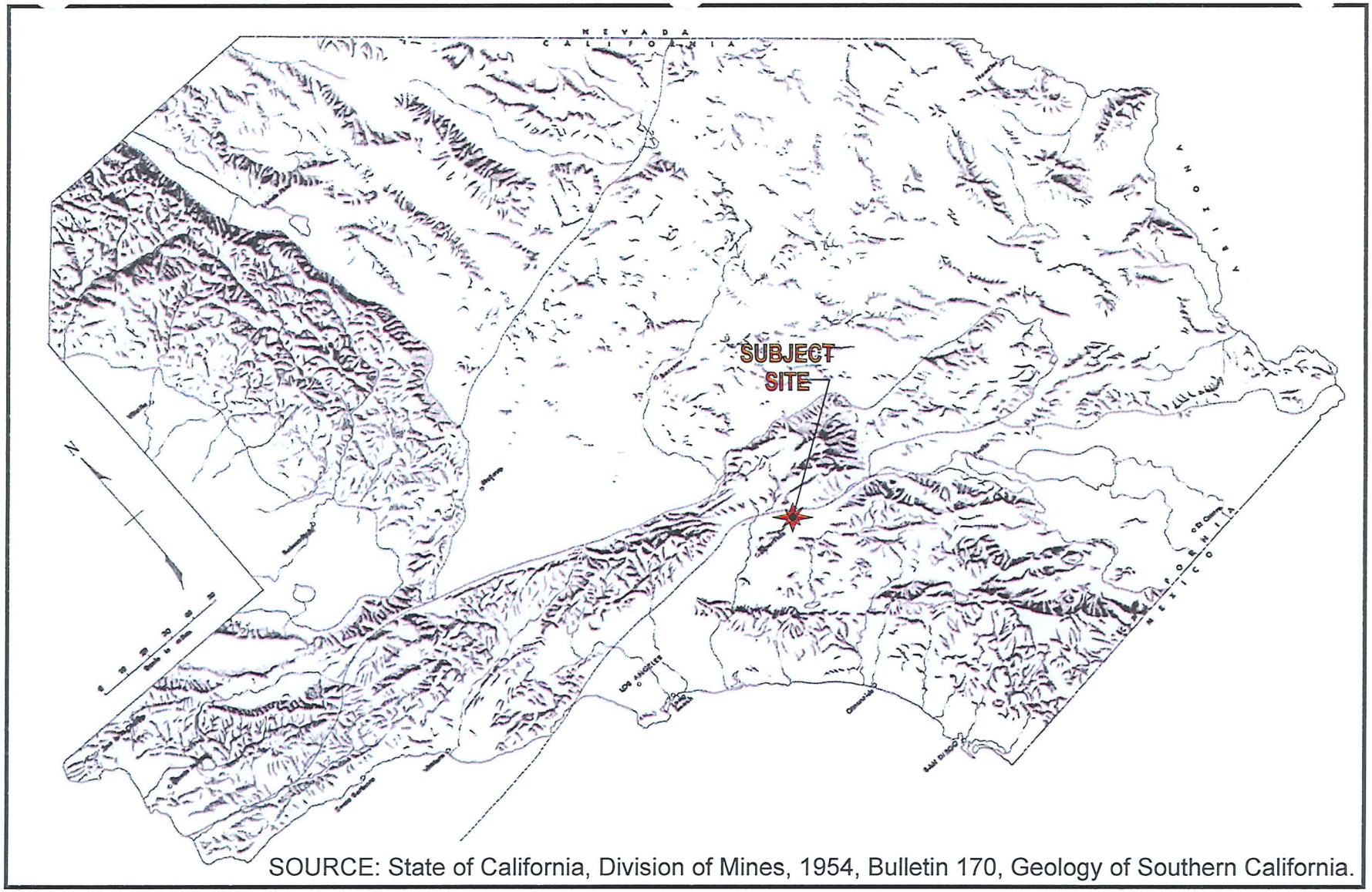
1.1 Site Description:

The site has an irregular rectangular shape consisting of 395 acres and is located in the San Timoteo Badlands near the western portion of the San Gorgonio Pass and the southern flank of the San Bernardino Mountains (Figure 1). It is located just east of the Interstate 10 on the north side of Cherry Valley Boulevard. The site is accessible via unpaved, graded roads (Figure 2).

The northern half of the site is characterized by badlands topography with narrow ridgelines, steep flanks and narrow valleys trending northeast-southwest.

The southern half is relatively flat with subdued ridgelines in the north trending west-southwest merging into a flat alluvial plain trending east-west.

Vegetation consists predominately of native grasses with sage scrub and occasional scrub oak in the north. The southern portion of the site appears to have been cultivated for agriculture in the past.



SOURCE: State of California, Division of Mines, 1954, Bulletin 170, Geology of Southern California.

Figure 1
SUBJECT SITE'S LOCATION NEAR THE BOUNDARY OF THE TRANSVERSE RANGES AND PENINSULAR RANGES NATURAL PROVINCES.

NEBLETT & ASSOCIATES
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA 92649
PHONE: (714) 840-8286 FAX: (714) 840-9796

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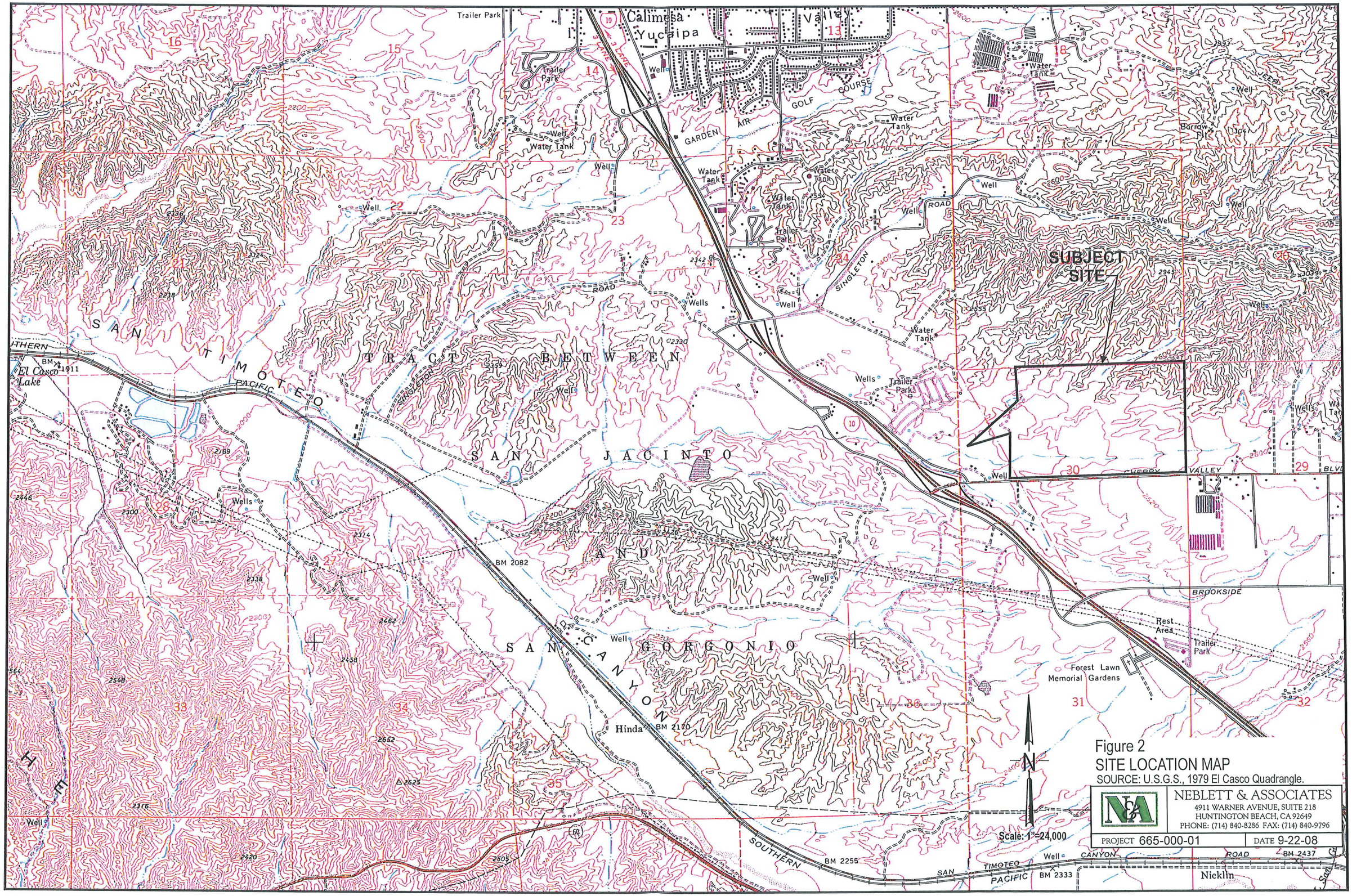

Figure 2
SITE LOCATION MAP
SOURCE: U.S.G.S., 1979 El Casco Quadrangle.

NEBLETT & ASSOCIATES
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA 92649
PHONE: (714) 840-8286 FAX: (714) 840-9796

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CVAR_09817

A water line and fiber optic cable traverse the northern portion of the site in an east-west trend with several utility vaults. Some cuts, fills and roadways are associated with this easement.

1.2 Purpose and Scope of Investigation:

Paramount among our objectives was the refinement of the location of the South branch of the Cherry Valley Fault Zone – especially in the eastern portion of the site where potential structural setback zones from faulting could affect proposed development. The significant extrapolation distances between fault outcrops in CHJ's roadcuts and fault trenches and their highly variable measurements of the fault's strike and dip warranted additional subsurface fault trenches.

In brief, the scope of this fault investigation included the following:

- A thorough review of available documents and maps from federal, state and local authorities.
- Perform an aerial photo lineament analysis.
- Perform a site reconnaissance.
- Develop Structure Contour based on CHJ's measured outcrops on the South Branch of the CVFZ.
- Excavate and log six fault trenches.
- Log roadcut along east property line.
- Provide a report of findings, conclusions and recommendations.

1.3 Summary of Previous Investigations:

Various geologists have indicated essentially two parallel strands of the Cherry Valley Fault Zone that traverse the site from the northwest to the southeast. Treiman has summarized their work in the CDMG, FER-235, Plate Ia (1994) and their fault strand locations are primarily based on aerial photo interpretation (see Plate Ia. Attached as Figure 3). Treiman (1994) depicts these faults mapped by Shuler (1953) as two sub-parallel normal faults which merge to

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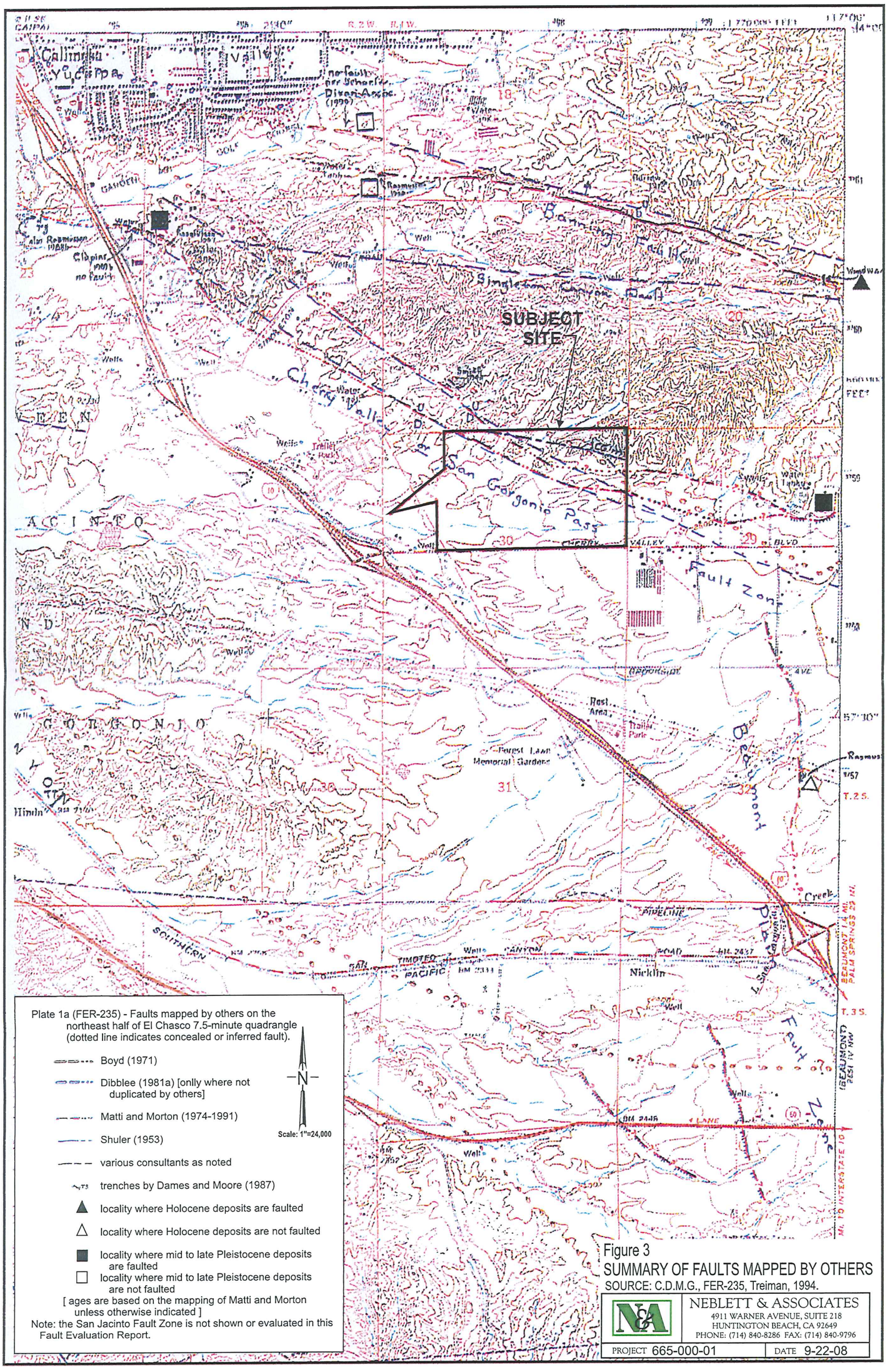


Figure 3
SUMMARY OF FAULTS MAPPED BY OTHERS
SOURCE: C.D.M.G., FER-235, Treiman, 1994.

NEBLETT & ASSOCIATES
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA 92649
PHONE: (714) 840-8286 FAX: (714) 840-9796

PROJECT 665-000-01 DATE 9-22-08

form one trace and Shuler shows the fault zone juxtaposing terrace deposits (on the south side) against San Timoteo Formation. Bloyd's trace (1971) showed only one concealed trace approximately coincident with Shuler's northern trace. Bloyd indicated the Cherry Valley Fault is a "postulated fault" based on groundwater data. Matti and Morton (1974-1991) show two traces similar to Shuler's and consider the Cherry Valley Fault Zone in the vicinity of the subject site as the western extension of the San Gorgonio Pass Fault Zone. The Preliminary Fault Activity map of California (Jennings, 1992) indicates the Cherry Valley Fault Zone to have late Quaternary displacement (past 700,000 years).

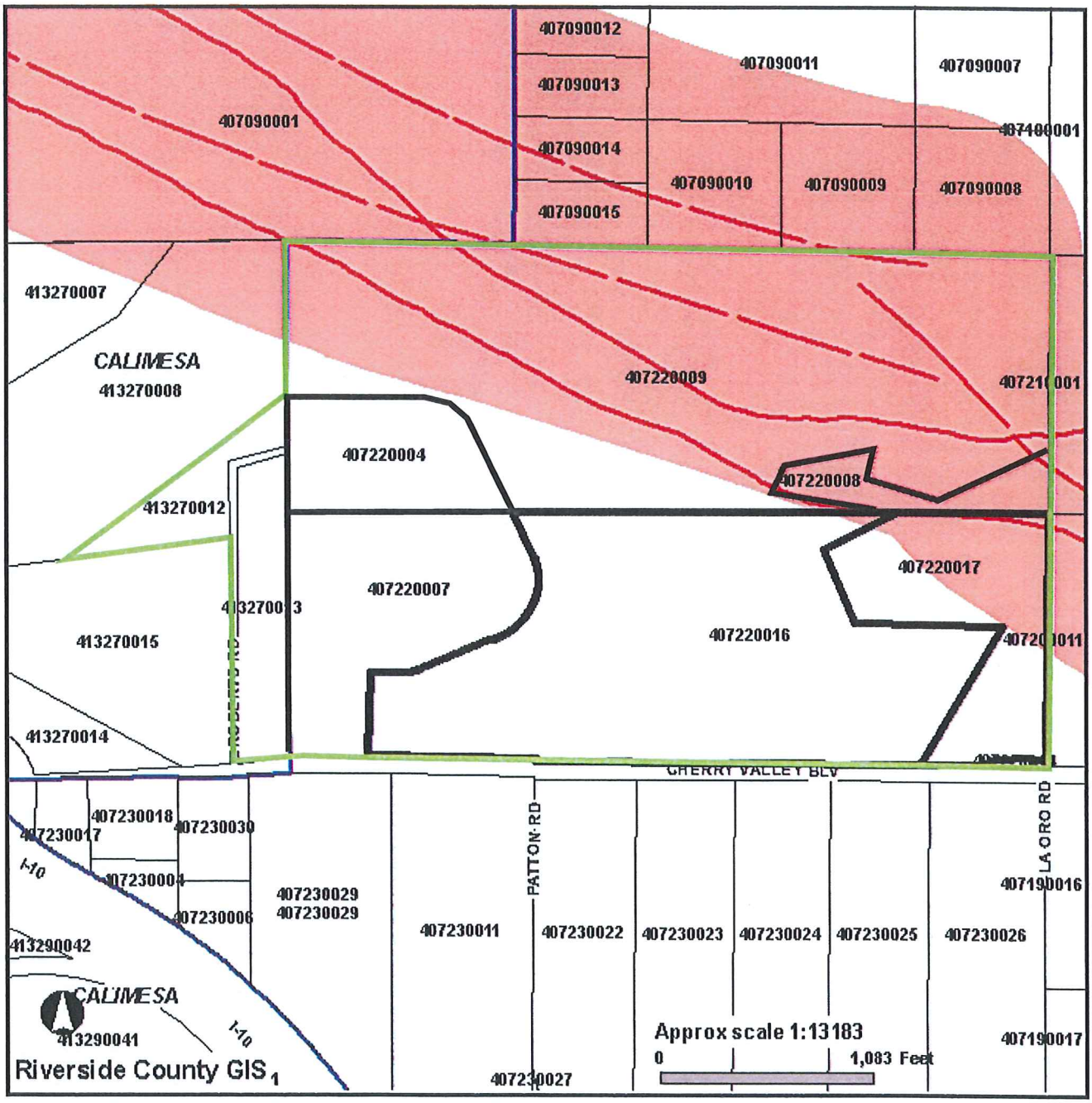
The County of Riverside (1990) has established a Fault Hazard Management Zone for the Cherry Valley Fault Zone within and in the vicinity of the site for planning purposes. They depict three strands of the Cherry Valley Fault Zone in the northeast portion of the site (Figure 4). Two of these appear coincident with Shuler (1953) and Matti et al. (1992). The third northwesterly-trending strand may be coincident with the fault mapped by ICG (1990).

CHJ Inc. performed a site specific subsurface investigation of faulting with a report dated Aug. 3, 2005. They utilized aerial photo lineament analyses, geologic field mapping, excavation of 5 trenches totaling 2,215 lineal feet from 15 to 21 feet deep, and 4 slope cuts totaling 2,600 lineal feet. The results of this investigation identified two fault splays associated with the Cherry Valley Fault Zone trending northwest to southeast across the site. They determined the southern branch of the two faults to be inactive. The age of activity of the north branch could not be determined.

As a result, for the North Branch Fault and the northeastern portion of the site beyond the areas covered by their explorations, they recommended a Restricted Use Zone to mitigate the potential for surface rupture (CHJ, 2005).

Immediately east of the subject site, Leighton Consulting, Inc., 2004) and Leighton and Associates, Inc. (2006) conducted geotechnical investigations and fault investigations for the Danny Thomas Portion of the Sunny-Cal Egg Ranch Project (~122 acres). Their fault investigations included their designated Fault B (CHJ's and this firm's North branch extension) and Fault A (CHJ's and N&A's South Branch extension).

In July of 2004, Earth Consultants International (ECI) provided Leighton and Associates, Inc. with a report titled "Report, Age Estimates of the Near-Surface Deposits in Support of a Fault



Source: Riverside County Geographic Information System : http://www3.tlma.co.riverside.ca.us/pa/rclis/index.html

RIVERSIDE COUNTY GIS FAULT ZONE MAP

EXPLANATION

- Riverside County Fault Zone, per Riverside County GIS Database
- Approximate Location of Possible Fault Traces per Riverside County GIS Database
- Approximate Property Limits

Figure 4

NEBLETT & ASSOCIATES
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA 92649
PHONE: (714) 840-8286 FAX: (714) 840-9796

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Trenching Study Conducted by Leighton and Associates". This report was included in Leighton Consulting, Inc. fault investigation report dated Aug. 3, 2004. They utilized investigative techniques including aerial photo lineament analyses, the excavation and logging of 8 fault trenches to intersect the South Branch of the Cherry Valley Fault Zone, soil stratigraphic age analyses (ECI) and radio carbon age-dating.

Based on the report and soil stratigraphic analyses by ECI, the South Branch of the Cherry Valley Fault Zone on the Danny Thomas portion of the Sunny-Cal Egg Ranch is inactive (their designated Fault A).

In August of 2006, Leighton and Associates, Inc. provided a supplemental fault investigation report concerning the location and activity of the North Branch of the Cherry Valley Fault Zone (their designated Fault B) within the Danny Thomas portion of the Sunny-Cal Egg Ranch. They utilized logging of a road cut (335 lineal feet) and 7 fault trenches totaling 660 lineal feet from 4 to 15 feet deep. They conclude the North Branch of the Cherry Valley Fault Zone (their designated Fault B) as inactive.

According to Leighton & Associates (2006), their review of a faulting investigation by James R. Evans (2005) located approximately ½ mile east of their Danny Thomas site indicated he probably intercepted the South Branch of the Cherry Valley Fault Zone where he established a 100 ft. wide structural setback zone for that fault.

In September of 2006, C.H.J. Inc. issued an update to their subsurface investigation of faulting report (2005) for the subject site. Based on the evidence from Leighton's investigation (2006), they "conclude that the fault (Fault B) mapped by this firm are the same geologic feature. Additionally, based on the soil age estimates of the alluvial soils reported by Leighton of un-ruptured soils across the fault trace, we conclude that the Cherry Valley Fault-North Branch mapped at the subject site is considered inactive as defined by the State of California and are recommending that the RRUZ associated with the Cherry Valley Fault-North Branch be removed."

This firm's review comments regarding these investigative reports is provided in Section 6.0 of this report.

2.0 Geomorphic Setting:

The subject site is located at the western end of a relatively broad east-west trending trough known as the San Gorgonio Pass between the San Jacinto Mountains on the south and the San Bernardino Mountains to the North (Figure 5). This pronounced morphologic feature is predominately due to the tectonics of the area consisting of complex faulting, folding and uplift. The erosional and depositional processes have played a minor role in the geomorphology of the area when compared to the tectonic processes.

The San Gorgonio Pass is the lowest topographic break in southern California through the mountains to the inland deserts, separating Mt. San Gorgonio (elevation 11,502 ft.) and Mt. San Jacinto (elevation 10,786 ft.), the two highest mountains in southern California. The crest of the pass is the headwaters of three major drainage basins: the interior-draining Whitewater River-Salton Trough to the east; the generally interior-draining San Jacinto basin to the south; and the Santa Ana basin to the west.

The flanks and the floor of the trough contain dissected old alluvial fan deposits, old alluvial gravel and sand sediments, and recent alluvial gravel and sand of stream channels that have formed relatively flat prediments sloping gently to the trough's axis.

The subject site is located at the western end of this trough on the north flank. The site and its vicinity are within the San Timoteo Badlands characterized by northeast to southwest trending narrow ridges and valleys that provides the source for the older alluvial fan deposits and younger alluvial sands and gravels to the south.

Within the subject site, the typical northeast-southwest trending ridges and valley drainages changes direction at the Cherry Valley Fault Zone (north and south branch) to east-northeast to west-southwest trending ridges and valley drainages. (Figure 6). The modern drainage of the recent alluvial plain in the south again changes direction from east-northeast to west-southwest immediately south of the Cherry Valley Fault Zone to east-west in the southern portion of the site.

These changes in drainage flow direction suggest that they are predominately controlled by fault movements and uplift.

3.0 Geologic Setting:

3.1 Regional Geologic Setting

The site is located near the boundary of the northeastern Peninsular Ranges and the southeastern Transverse Ranges consisting of the San Jacinto Mountains and the San Bernardino Mountains respectively. The northeastern Peninsular Ranges are part of the Southern California Batholith which is comprised of Paleozoic to Mesozoic age igneous, metasedimentary and metavolcanic rock types overlain unconformably by non marine clastic sediments of late tertiary and Quaternary age.

The northwesterly trend of elongate ranges and valleys of this portion of the province are terminated abruptly by the general east-west grain of the Transverse Ranges.

The southeastern portion of the Transverse Range contain the San Bernardino Mountains which have been uplifted along the San Andreas and Banning Faults on the south and along several steeply dipping reverse faults on the north.

The subject site is situated at the juncture of the Transverse Range and the Peninsular Range in the western end of the San Gorgonio Pass Area. (Figure 7). In this area, the Mojave Desert segment and the Coachella Valley segment of the San Andreas Fault Zone step left from each other and this fault zone becomes a complex combination of strike-slip faults and thrust and tear faults that include the Banning Fault and the San Gorgonio Valley Fault Zone. The Cherry Valley Fault Zone of the subject area is considered a western extension of the San Gorgonio Pass Fault Zone (Matti and Morton (1993).

The site is also located in the "Badlands" area of relatively low hills southeast of Calimesa characterized by narrow ridge lines and steep-walled flanks comprised predominately of the San Timoteo Formation within the Peninsular Ranges province (Figure 8). This Plio-Pleistocene age sedimentary unit consists of fluviatile sandstones, and gravels with minor lacustrine siltstones. The floor and edges of the San Gorgonio Pass trough consist of dissected old alluvial terrace deposits and younger alluvial sands and gravels. These units are present in the southern portion of the subject site.

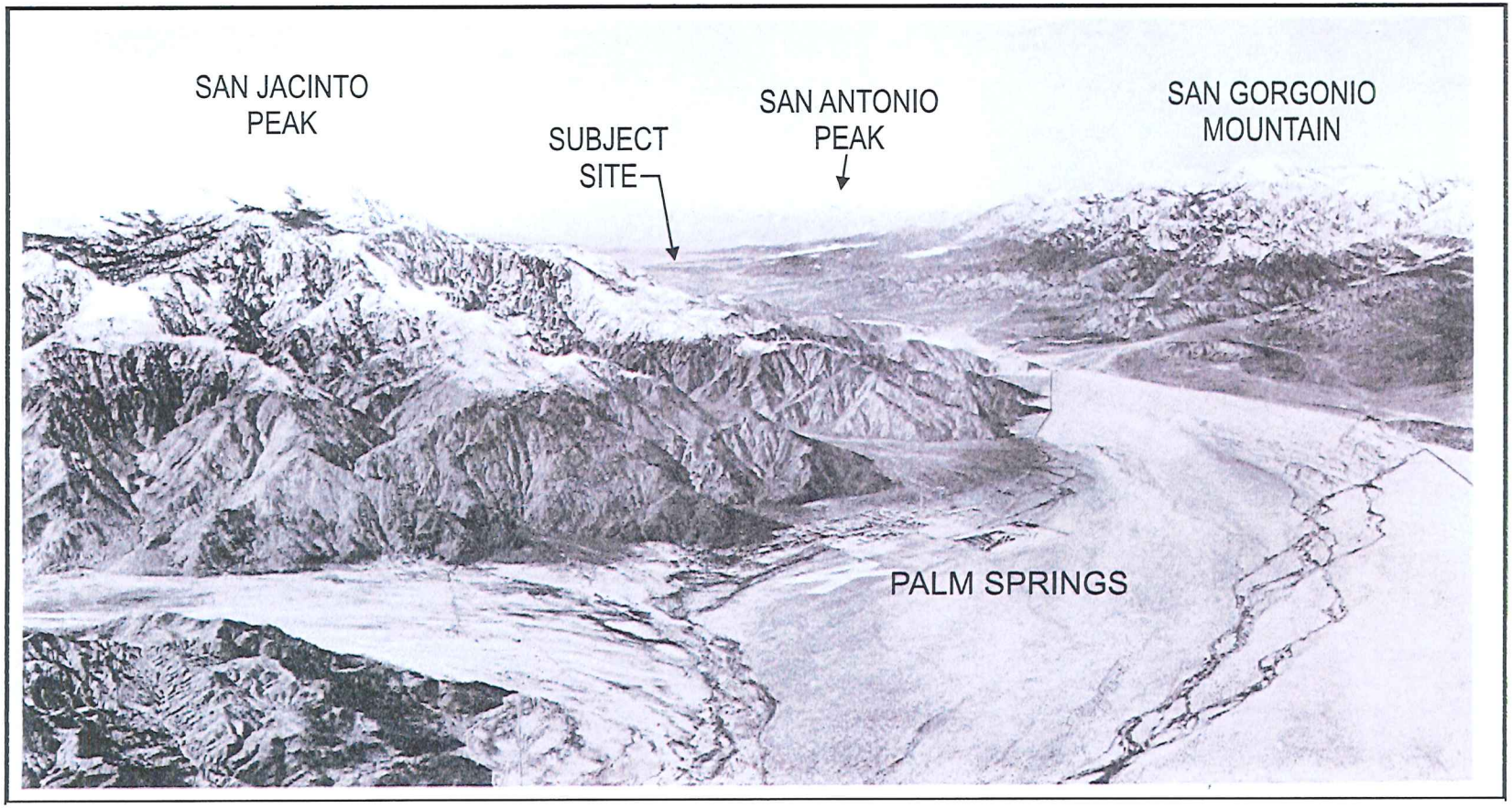

Figure 5
THE SAN GORGONIO PASS VIEWING WEST-NORTHWEST FROM THE COACHELLA VALLEY IN 1931. SAN JACINTO PEAK (SAN JACINTO MOUNTAINS), SAN GORGONIO MOUNTAIN (SAN BERNARDINO MOUNTAINS), AND SAN ANTONIO PEAK (SAN GABRIEL MOUNTAINS) SHOWN ALONG WITH THE APPROXIMATE SUBJECT SITE.

SOURCE: STATE OF CALIFORNIA, DIVISION OF MINES, BULLETIN 170, 1954.

NEBLETT & ASSOCIATES
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA 92649
PHONE: (714) 840-8286 FAX: (714) 840-9796

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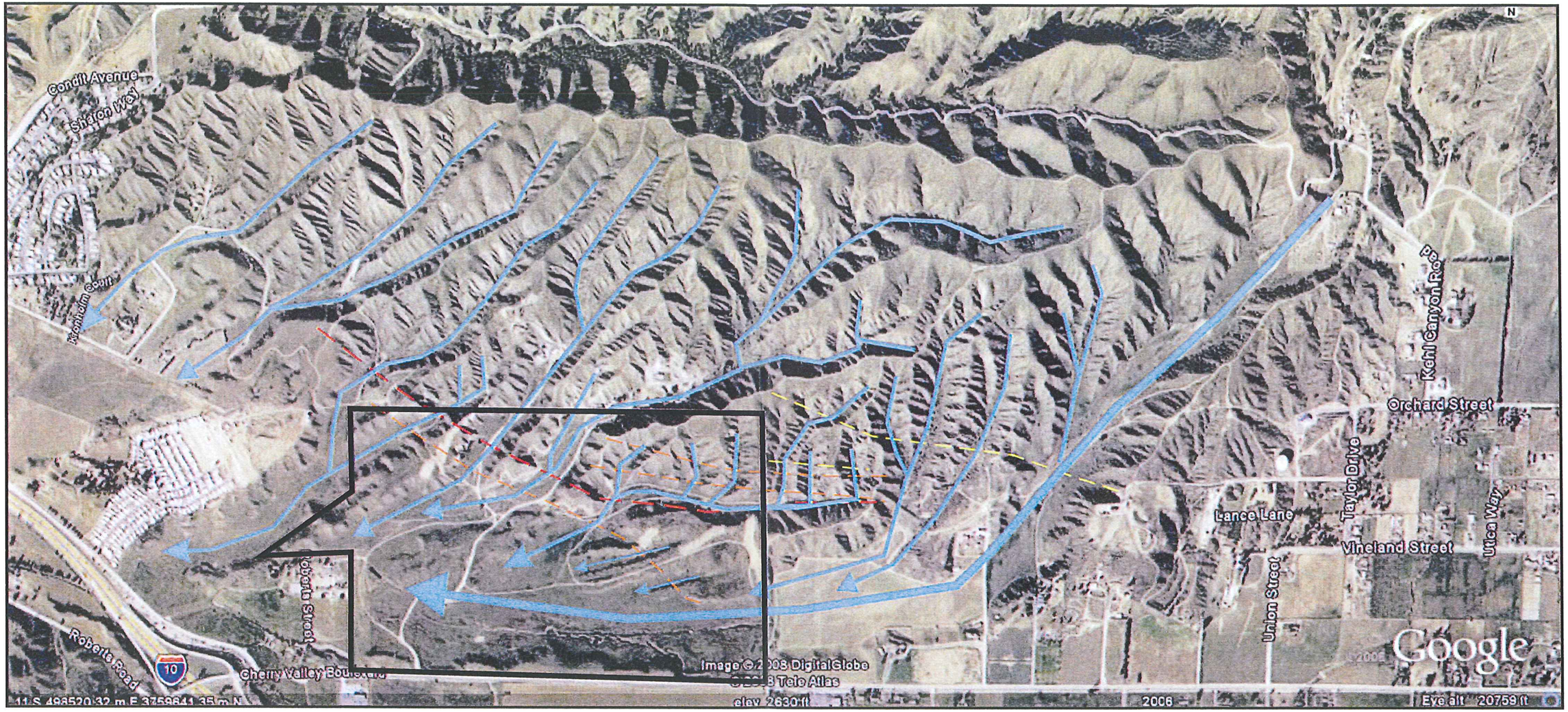

LEGEND

- VALLEY DRAINAGES
- STRONG LINEAMENT (NORTH BRANCH CHERRY VALLEY FAULT)
- MODERATELY STRONG LINEAMENT
- WEAK LINEMENT
- APPROXIMATE SITE BOUNDARY

Figure 6
PHOTOGRAPH OF DEFLECTED DRAINAGES AT CHERRY VALLEY FAULT ZONE WITHIN AND IN THE VICINITY OF THE SUBJECT SITE.

NEBLETT & ASSOCIATES
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA 92649
PHONE: (714) 840-8286 FAX: (714) 840-9796

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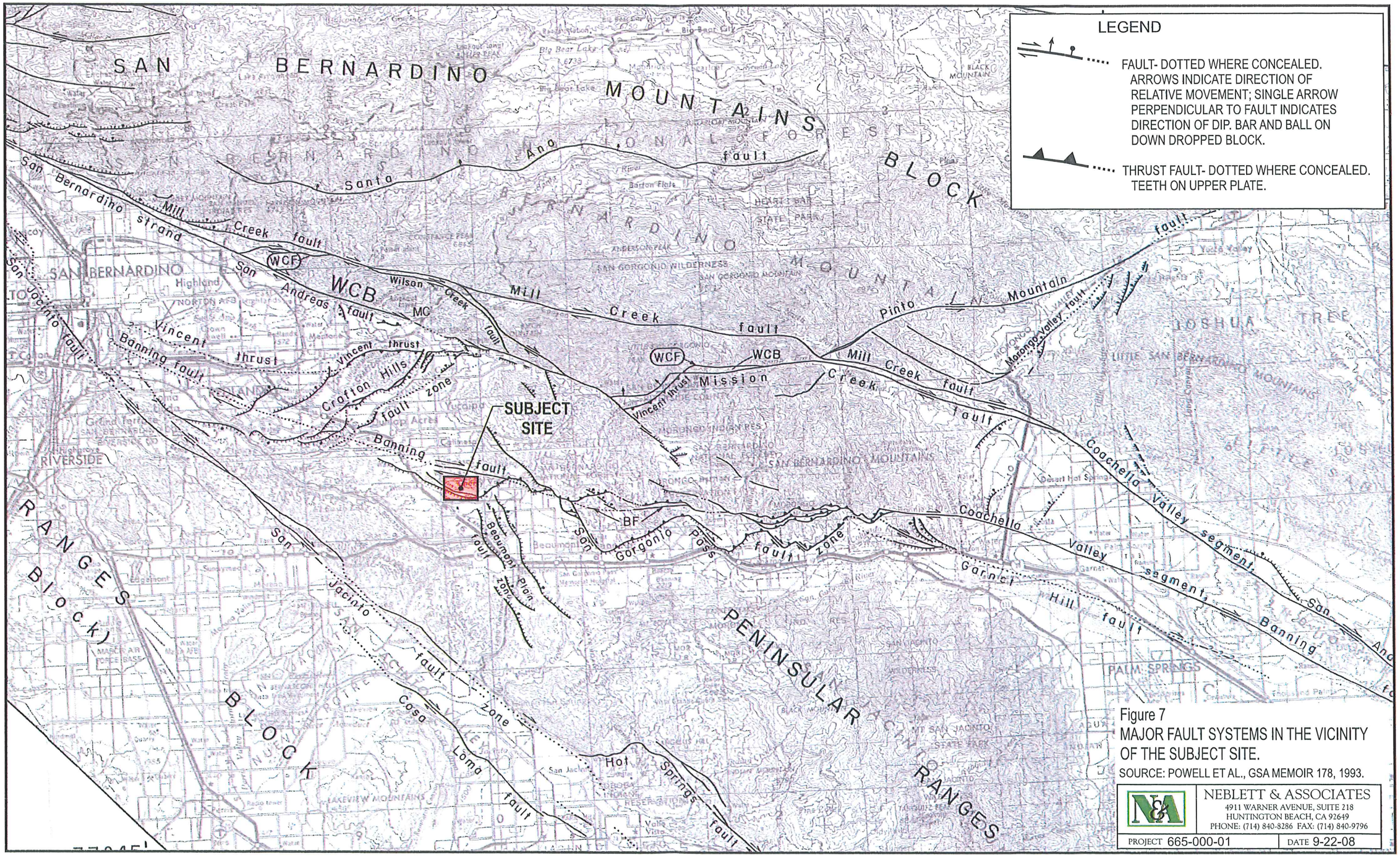

Figure 7
MAJOR FAULT SYSTEMS IN THE VICINITY OF THE SUBJECT SITE.
SOURCE: POWELL ET AL., GSA MEMOIR 178, 1993.

NEBLETT & ASSOCIATES
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA 92649
PHONE: (714) 840-8286 FAX: (714) 840-9796

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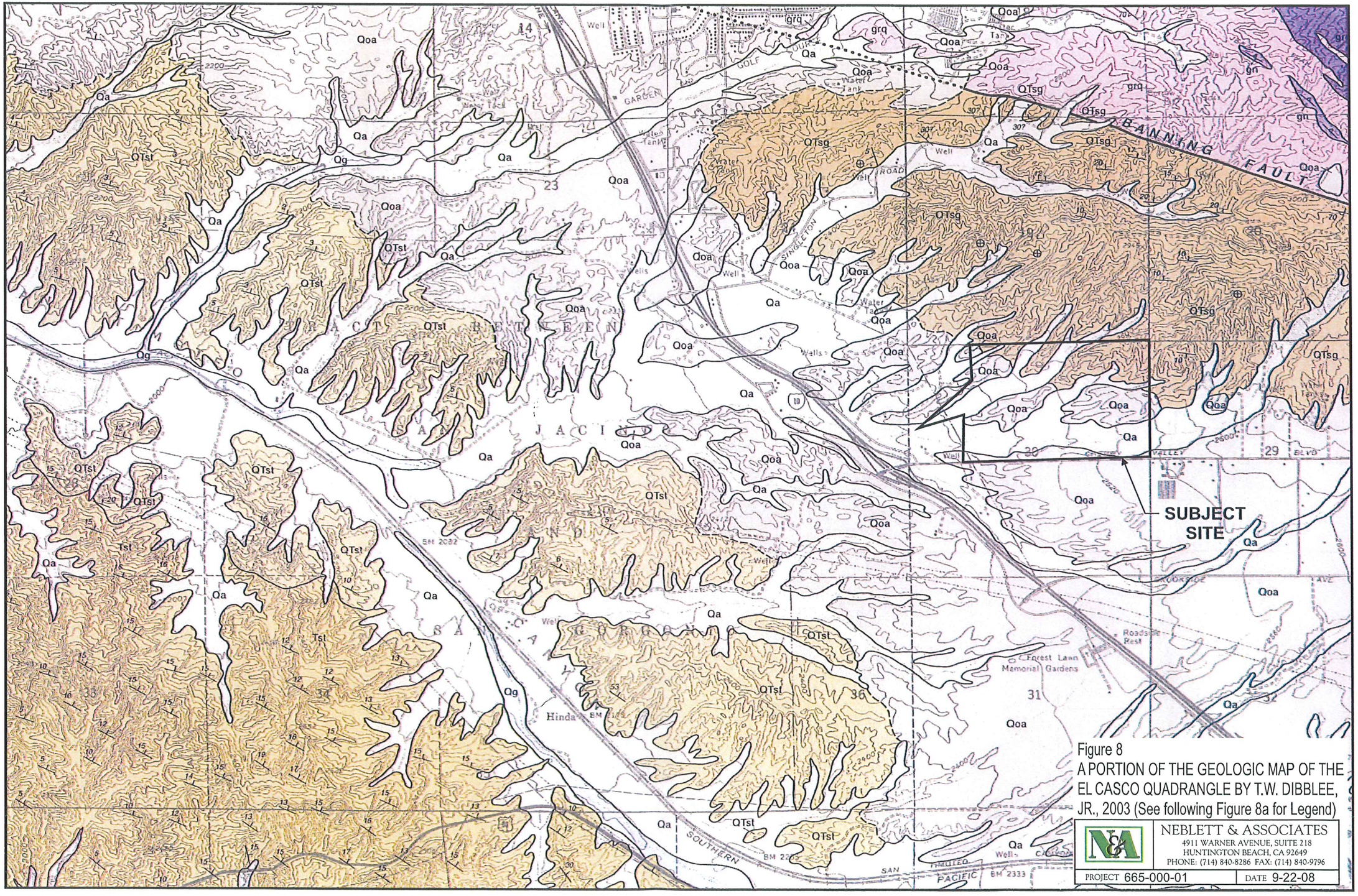

Figure 8
A PORTION OF THE GEOLOGIC MAP OF THE EL CASCO QUADRANGLE BY T.W. DIBBLEE, JR., 2003 (See following Figure 8a for Legend)

NEBLETT & ASSOCIATES
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA 92649
PHONE: (714) 840-8286 FAX: (714) 840-9796

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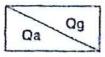
EL CASCO MAP (DF-113)

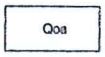
LEGEND



SURFICIAL SEDIMENTS
Unindurated, undissected

Qg *Alluvial gravel and sand of stream channels*
Qa *Alluvial sand, gravel and clay of level areas, covered by residual soil*

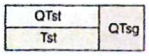
— UNCONFORMITY —



OLDER SURFICIAL SEDIMENTS
Weakly indurated alluvial fan deposits derived from local terrains

Qoa *Alluvial gravel and sand, light reddish brown and of granitic and gneissic detritus of San Bernardino Mountains in north areas, brownish gray in south area; top surface slopes slightly from source terrains*

— UNCONFORMITY —



SAN TIMOTEO FORMATION
(San Timoteo Beds of Frick, 1921) Stream laid alluvial sediments of detritus derived from plutonic and metamorphic rocks of San Bernadino Mountains NE of Banning Fault and deposited on plutonic and meta-sedimentary rocks of Peninsular Ranges NE of San Jacinto Fault zone; weakly indurated; upper part yielded vertebrate fauna diagnostic of Blancan Stage, Plio-Pleistocene (Frick, 1921, Savage et. al. 1954) or Irvingtonian Stage, earliest Pleistocene, (Repenninga 1987) lower or main part inferred to be of Pliocene age (Morton and Matti, 2001)

QTst *Upper part, sandstone, light gray to tan, fine to coarse grained arkosic and minor conglomerate of mostly granitic detritus, some gneissic and quartzitic detritus; includes thin layers of soft greenish to light reddish silty claystone, overlain by older alluvium*
QTsg *Conglomerate/conglomerate, brownish gray, crudely bedded, of poorly sorted subrounded clasts of granitic and gneissic detritus in sandy matrix, base unexposed, overlain by older alluvium; probably proximal facies of upper part (QTst); exposed adjacent to Banning fault*
Tst *Main part (middle part of Morton and Matti, 2001) sandstone, minor conglomerate and claystone, similar to those of upper part; conformably overlain by upper part (QTst), conformably underlain by Mount Eden Formation (Tme), but thins and buttresses eastward onto basement rocks as shown.*



MOUNT EDEN FORMATION
(of Frazier, 1931), present only near and SE of Mount Eden, stream laid sediments, clasts derived from basement rocks of Peninsular Ranges, moderately lithified, conformable below San Timoteo Formation, overlies basement rocks; mostly sandstone, lithified divided into 4 members by Morton and Matti 2001; one member contains vertebrate fauna diagnostic of late Hemphillian Stage, middle Miocene, dated about 5.3 MA (Morton and Matti 2001)

Tme *Sandstone, medium grained, arkosic, includes interbeds of micaceous silty shale, strata light gray to light reddish maroon, locally contains concretions*
Tmg *Granitic conglomerate, composed of subrounded to subangular boulders and cobbles of light gray massive biotite-hornblende quartz diorite (tonalite), unsorted; form lenses within and at top of unit Tme, derived from quartz diorite to NE (Morton and Mattei, 2001)*

— UNCONFORMITY —



PLUTONIC ROCKS
medium grained holocrystalline granitic rocks; age, Cretaceous

gr *Granitic rock of Mount Eden, granite to monzo-granite (Morton and Matti, 2001) composed of quartz, potassic feldspar and sodic plagioclase feldspar in nearly equal amounts but with somewhat more potassic feldspar, scattered flakes of white mica and almost no mafic minerals, nearly white, massive; intrusive into meta-sedimentary rocks; exposed only near and SE of Mount Eden*
qdi *Granodiorite of east area; composed of quartz, potassic feldspar and sodic plagioclase feldspar in nearly equal amounts but with somewhat more sodic plagioclase feldspar, minor biotite, light gray, massive to very faintly gneissoid*
qdx *Quartz diorite (Bonzal Tonalite of Larsen, 1948) composed of about 1/3 quartz, 2/3 sodic plagioclase feldspar, minor potassic feldspar and 5-10% biotite and hornblende, light gray gneissoid, with abundant dark gray discoid inclusions (xenoliths) parallel to gneissoid foliation; exposed only at SW corner of quadrangle*
grq *Granitic rock exposed NE of Banning fault at NE corner, of quartz monzonite composition, of quartz, potassic feldspar and sodic plagioclasefeldspar in nearly equal amounts and about 5-10% biotite as evenly scattered flakes, light gray, massive, somewhat incoherent*



HORNBLENDE DIORITE GABBRO

hdg *Mafic rock exposed at NE corner of quadrangle NE of Banning fault; gray-black, medium grained, massive, composed of about 75% hornblende, 0-30% plagioclase feldspar, locally contains green epidote as secondary veinlets; age Mesozoic (Cretaceous)*



METASEDIMENTARY ROCKS
Remnants of metasedimentary petrolith of San Jacinto Mountains, exposed only near and SE of Mount Eden in this quadrangle; age inferred to be Paleozoic (Morton and Matti; 2001)

ms *Mica schist-phyllite, composed of biotite mica, feldspar and quartz, ranges to fine grained gneiss, locally includes calcsilicate skarn, dark gray, foliated along relict bedding planes*
ml *Marble, of calcite and dolomite, pale gray to white, medium to coarse grained, indistinctly bedded, locally contains skarn of diopside, wollastonite, tosterite, garnet and graphite (Morton and Matti 2001) occurs as layers and lenses in unit ms*
mig *Mixture of metasedimentary rocks (schist-gneiss-ms) with quartz diorite (qdx); complexly migmatized, at southwest corner*



GNEISS

gn *Gray quartz-feldspar-biotite gneiss, thin bedded, hard but brittle; age, Precambrian (?), occurs as small pendant remnants engulfed in unit grq NE of Banning fault*

Holocene
Pleistocene
QUATERNARY
Pliocene
Miocene
TERTIARY
CENOZOIC
CRETACEOUS
MESOZOIC
PALEOZOIC (?)
PRECAMBRIAN (?) TO MESOZOIC

DF-113 GEOLOGY EL CASCO QUADRANGLE

Figure 8a
LEGEND FOR Figure 8- GEOLOGIC MAP OF THE EL CASCO QUADRANGLE BY T.W. DIBBLEE, JR., 2003

NEBLETT & ASSOCIATES
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA 92649
PHONE: (714) 840-8286 FAX: (714) 840-9796

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3.2 Regional Tectonic Setting:

The tectonic setting of southern California is dominated by the northwest-trending San Andreas Fault and its sister faults which have a right-lateral movement pattern between the North American Plate and the Pacific Plate. Local compression and/or extension as a result of the translational motion along this plate boundary has formed left-lateral, reverse, normal and blind thrust faults.

3.2.1 San Andreas Fault:

The main strand of the San Andreas Fault in southern California has been divided into two segments – the Mojave Desert segment separating the San Bernardino Mountains from the San Gabriel Mountains, and the Coachella Valley segment separating the Peninsular Ranges from the San Bernardino Mountains (Matti and Morton, 1993). The main strand deflects west in the San Gorgonio Pass area where the fault zone becomes more complex and does not have a clean, currently active, throughgoing fault break but is a combination of older strike-slip faults and newer thrust and tear faults (Treiman, 1994). The Banning and San Gorgonio Pass faults – including the Cherry Valley Fault Zone, are part of this complex fault system in the San Gorgonio Pass area.

The Coachella Valley segment splits into two principal strands as it approaches the San Bernardino Mountains. The most northern has been designated as the North Branch of the San Andreas Fault by Diblee (1975), the Mission Creek Fault by Allen (1957), and the Coachella Valley Segment of the San Andreas Fault by Matti et al. (1992). This strand merges to the northwest into the Mill Creek and Mission Creek faults (Figure 7). The southern strand of the Coachella Valley segment is designated as the South Branch of the San Andreas Fault by Dibblee (1975), the Banning Fault by Allen (1957), and the Coachella Valley segment of the Banning Fault by Matti et al. (1992). Upon its approach into the San Gorgonio Pass it veers westward (Figure 7).

3.2.2 San Gorgonio Pass Fault Zone:

This zone is characterized by discontinuous reverse and thrust faults and associated tear faults (Treiman, 1994) generally located at the base of the San Bernardino Mountains (Figure 7). The San Gorgonio Pass Fault Zone includes, from the west to east, the Cherry Valley Fault Zone, a fault along the toe of the Banning Bench, and a northeast-trending segment crossing the lower part of the Millard Canyon Fan.

The Cherry Valley Fault Zone in the subject site's vicinity has been mapped by Matti and Morton (1974-91) as two traces. This fault zone has been mapped by various workers (Figure 3) predominately as two sub-parallel faults which merge to the east to form one trace near the eastern property boundary (Figure 7) and then veers northeast, displacing remnants of a mid – to late – Pleistocene fan (Treiman, 1994).

East of the subject site, the Cherry Valley fault becomes the San Gorgonio Pass Fault Zone and is characterized as a sinuous trace forming several discontinuous scarps on the older fan mid-Pleistocene fan surfaces (Matti and Morton, 1993), Farther east, the fault steps southward from the range from forming the Highland Springs scarp and the toe of the Banning Bench. Matti et al. (1993) infer northwest-trending, right-lateral tear faults in this area. (Figure 7). This fault zone continues northeast as a thrust fault where it eventually merges with the Banning Fault near Gorgonio Canyon.

3.2.3 Banning Fault:

The Banning Fault is considered an ancestral trace of the San Andreas Fault (Allen, 1957; Matti et al., 1992) which has been inferred from the Indio Hills to the San Jacinto Fault (Figure 7). During late Cenozoic time the Banning Fault was principally a right-lateral fault, but it has since responded mainly to compressional tectonics in Gorgonio Pass and continuing as a strike-slip fault only to the east (Matti and Morton 1993).

This fault is located approximately ¼ mile north of the subject site where it consists of a prominent high-angle trace which separates Pleistocene San Timoteo Formation on the south from granitic rock to the north (Figure 8). Displacement in this area is indicated as a strike-slip by Matti et al. (1992).

East of Cabazon, the Banning Fault represents a branch of the Coachella Valley segment of the San Andreas Fault and is considered active.

3.2.4 Mill Creek Fault:

This branch of the San Andreas Fault (the "North Branch" of Diblee, 1964) is a major structural boundary of basement rock types separating predominately granitic rocks along the northeast side from predominately gneissic rocks on the southwest side. The Mill Creek Fault is located approximately 10 miles north of the subject (Figure 7). Matti et al. (1993) believe that this strand is no longer an active part of the San Andreas Fault Zone, although it may have been locally reactivated by dip-slip movement.

3.2.5 Beaumont Plain Fault Zone:

Matti et al. (1993) identified four north-northwest trending normal faults which terminate near the southeast corner of the subject site (Figure 7). They are considered an extensional zone of faults irregularly expressed as scarps in mid-Pleistocene and older surfaces and are considered inactive (Treiman, 1994).

3.2.6 San Jacinto Fault:

The San Jacinto Fault is located approximately 6 miles southwest of the site (Figure 7) and consists of a system of northwest-trending, right-lateral, strike-slip faults. This fault traverses rocks of Peninsular Ranges type and the alluviated San Bernardino Valley before entering the southeastern San Gabriel Mountains (Figure 7). There the fault splays into several sub-parallel strands that traverse rocks of Peninsular Ranges type and San Gabriel Mountains type (Matti and Morton, 1993).

The San Jacinto Fault is the closest known active fault to the site and is considered the most influential with respect to ground shaking and rupture. More large historic earthquakes have occurred on the San Jacinto Fault than any other fault in Southern California (Working Group on California Earthquake Probabilities, 1988).

3.2.7 Historical Seismicity:

A large earthquake ruptured the northern reaches of the San Bernardino segment of the San Andreas Fault on Dec. 8, 1812 which has been inferred by Jacoby et al. (1987) using dendrochronological evidence, and by fault trenching by Fumal et al. (1993) at Wrightwood. This event may have ruptured into the San Bernardino Valley (Fumal, 1993).

Another major event known as the great 1857 Fort Tejon earthquake ruptured the Mojave segment of the San Andreas Fault. In 1948, a magnitude 6.5 earthquake ruptured the Coachella Valley segment of the San Andreas Fault in the Desert Hot Springs area.

An earthquake of magnitude 5.9 occurred on July 8, 1986, 10 km. northwest of North Palm Springs. Kahle and others (1987) indicated the epicenter near the Mission Creek fault with most of the associated surface faulting occurring along the Banning Fault with minor ruptures along Mission Creek and Garnet Hill Faults.

The Working Group of California Earthquake Probabilities (1988) indicate 7 magnitude 6.0 or greater earthquakes occurring on the San Jacinto Fault since 1899. Two of theses include the magnitude 6.5 earthquake near Lytle Creek in 1899 and 6.2 magnitude event in Loma Linda in 1923.

Figure 7 (from Matti et al. 1992) presents the modern tectonic regime illustrating relations between faults and crustal blocks in the vicinity of the south-central Transverse Ranges.

3.3 Site Geology:

The main geologic units within the site include the Plio-Pleistocene San Timoteo formation in the northeast, and in the southwest old alluvium of an old dissected alluvial fan, with young alluvium along the valley floors. Structurally, the site is dominated by two splays of the Cherry Valley Fault – the North Branch and the South Branch which transect the site in a northwest to southeast trend (Figure 11). The South Branch generally places the San Timoteo Formation in fault contact with the older alluvium, except in the southeast where it juxtaposes older alluvial units against one another.

In some of our fault trenches, the old alluvium can be separated into a younger and older unit. These have not been differentiated on the geologic map (Figure 11).

Colluvium is the loose heterogeneous, and incoherent mass of soil material and rock fragments deposited by sheetwash, or slow continuous downslope creep collecting at the base of gentle slopes and hillslides. Colluvium mantles the slope of the site but is generally less than 2ft. in thickness and therefore has not been delineated on Figure 11.

Undocumented artificial fill is present as backfill for the fault trenches of former investigations as well as this investigation. Artificial fill is also present with and in the vicinity of the San Gorgonio Pass Water Agency Pipeline easement that transgresses the northern portion of the site. Some of our fault trenches indicate that past agricultural activities and trenching have spilled fill along the edges of the flat-topped ridges in the southern half of the site.

The geologic units mapped at the site are discussed below in order from youngest to oldest.

3.3.1 Undocumented Fill (afu):

This unit has been delineated as shown on Figure 11. Where observed, this unit consists of a heterogeneous mixture of pebbly sand, silty sand, sandy silt, and coarse sand with cobbles and an occasional boulder. In addition to the minor undocumented fills within the fault trenches, spill fills associated with the former investigator's slope cuts are evident downslope. Historic aerial photo analyses and trenching have revealed that an east-west trending ridge located near the eastern property boundary has been cut and "flat-topped" for agricultural purposes. This grading occurred near CHJ Trench "T-4" and extends westerly to the ridge terminus, west of Neblett Trench NT-2. In addition, a significant undocumented canyon fill was placed south-southeast of NT-5. This fill was likely placed concurrently with aforementioned ridge-top cut and used the spoils generated from same.

3.3.2 Younger Alluvium (Qya):

Younger alluvial units outcrop in the active drainages which generally trend southerly to southwesterly onsite. The materials were only exposed in one of the Fault study trenches (NT-4, at its westerly end)). In NT-4, these younger alluvial materials consisted of silty sands and

lesser gravelly sands. Local outcrops within active drainages reveal a highly variable lithology for this unit, which is consistent with the deposition of finer materials during relatively quiescent periods and very coarse materials during periodic storm events.

3.3.3 Older Alluvium (Qoa):

Older alluvial units onsite consist of reddish brown clayey sands and yellowish brown silty sands. Both units have frequent gravel and gravelly sand lenses. The reddish brown clayey sands are highly oxidized and re-mineralized, suggesting a significant difference in age. In the fault trenches, where these units could be differentiated, they have been denoted as Qoa_1 and Qoa_2. These units are usually massive to poorly bedded with localized well-bedded gravels. Where bedded, the units displayed horizontal or near horizontal bedding except where proximal to faulting, where dips of up to 45 degrees were observed.

3.3.4 San Timoteo Formation (Qtst):

The San Timoteo Formation is located primarily northeast of the South Branch of the Cherry Valley Fault (Figure 9) and consists predominately of cobble-boulder conglomerate with minor interbedded fine to medium sandstones. The conglomerate matrix is generally moderately to well-cemented and the interbedded sandstones are relatively thin compared to the thick massive conglomerates. Clasts are moderately weathered to decomposed and consist of granodiorite, greenstone, quartzite and monzogranite from the adjacent Transverse Ranges. The unit is generally matrix supported with localized clast supported lenses, and is massive to poorly bedded.

Structurally, beds dip at shallow angles to the southwest except near the North Branch of the Cherry Valley Fault and other faults in the northeast portion of the site where beds dip nearly vertical.

These fluviatile sediments were deposited during the Pliocene and Pleistocene time when the depositional basin was subsiding, uplift of the San Bernardino and San Jacinto Mountains was occurring, and movements within the San Andreas and San Jacinto fault systems was taking place (Morton & Matti, 1993).

3.4 Site Faults:

Two main faults, the north and south branches of the Cherry Valley Fault Zone (CVFZ) have been mapped onsite. Though these two main breaks help define the zone, lineaments and geomorphic evidence suggest a zone of faulting and deformation associated with the CVFZ that may be as wide as 500-700 feet.

North Branch CVFZ

The North Branch has been exposed onsite in one trench by CHJ (T-1B) and two CHJ road cuts (SC-2 and SC-4). The north branch is characterized by steeply dipping (near vertical) faulting that is located roughly 200-300 feet north-northeast of, and roughly parallel to, the South Branch. The fault generally juxtaposes massive conglomeratic sandstone units within the San Timoteo Formation making relative offset difficult to determine. This fault was not trenched for this report due to its location, over 200 feet north of the conceptual development footprint.

South Branch CVFZ

This fault has been exposed in CHJ trenches (T-1B, T-2, T-3, T-4) and road cuts (SC-1, SC-2 and SC-3) and in Neblett Trenches (NT-2, NT-3A, NT-5, NT-6) and in road cut RC-1. It is characterized by a northwest to east-west trending, north dipping reverse fault. Dips are low to moderate angle (10-45 degrees). Drag folding along the main rupture observed and logged by both CHJ and N&A indicate reverse/thrust kinematics. Relative offsets were not measurable in exposures and trenches but are significant, as the fault juxtaposes older San Timoteo (Plio-Pleistocene) over relatively younger alluvial units. Significant changes in stratigraphy, topography, geomorphology, and streamflow direction, are present along the entire mapped trace of this fault. This fault was the central focus of this report, due to its potential effect on the conceptual development footprint.

4.0 Investigative Techniques:

4.1 Aerial Photo Lineament Analysis:

A total of 5 stereo-pair Aerial Photographs from the Fairchild Collection at Whittier College were analyzed using a Sokkia MS27 stereoscope. In addition, various online satellite images from Google Earth were also utilized.

LIST OF REVIEWED STEREOSCOPIC AERIAL PHOTOGRAPHS

FLIGHT NUMBER	FRAME NUMBER	DATE
C-6060	150	12/7/39
C-12095	1:106 through 1:107	8/24/48
C-16123	1:29 through 1:30	2/15/51
C-23023	9:09 through 9:11	2/26/58

The lineaments were categorized into three types – strong, moderately strong, and weak lineaments. The following provides the basis for characterizing each type:

Strong Lineaments:

This type is characterized by a strong alignment of offset or deformed ridgelines, beheaded streams, faceted spurs on ridgelines, well defined alignment of topographic breaks, and a pronounced alignment of change in topography.

Moderately Strong Lineaments:

This type of lineament is a less pronounced alignment of topographic breaks and ridgeline offsets which often coincide with some faceted spurs and slight drainage deflections.

Weak Lineaments:

Weak lineaments are recognized as alignments of subtle changes in topography and ridgeline offsets. Slight tonal changes are sometimes recognizable from changes in bedrock lithology and/or vegetation.

Aerial Photo Analysis: Our aerial photo analysis revealed many moderate to strong lineaments that were not observed or denoted by previous workers. In addition, unusual geomorphology/topography in the form of bent drainages, beheaded box canyons and uplifted terrace surfaces were also noted by geologists from this firm.

4.2 Field Reconnaissance Mapping:

During the fault trenching, the slope cuts by CHJ and other exposures were observed and mapped in the vicinity of the South Branch of the Cherry Valley Fault. A road cut near the eastern property line denoted as RC-1 was cleaned and logged in detail.

4.3 Fault Trenching:

A total of six fault trenches were excavated during this investigation utilizing a Hitachi ZX450H Excavator (Plate 1). The trenches varied in length from 120 ft. to 970 ft.± and averaged 12 to 15 ft.± in depth. Both walls of the trenches were "stepped" with a 5 ft.± horizontal bench for safety purposes and to facilitate logging. All trenches were logged by geologists from this firm at a scale of 1 inch = 5 feet. In addition to the six trenches an existing road cut located near the eastern property line (RC-1) was also re-exposed/cleaned with a ZX450H Excavator and detail-logged by geologists from this firm.

The trenches were strategically located between the CHJ trenches to decrease the extrapolation distance between fault exposures, and to determine if the moderately strong lineament trenching southeast in the east-central portion of the property was fault related. This lineament also coincided with the structure contour of the South Branch of the Cherry Valley Fault.

5.0 Results of Investigation:

5.1 Aerial Photo Lineament Analysis:

Google Earth Images facilitated the delineation of the various lineaments within and near the subject site. Figure 9 depicts the strong, moderately strong, and weak lineaments within and adjacent to the site boundaries.

The Strong lineament mimics the North Branch of the Cherry Valley Fault of CHJ and this firm as shown on Figure 9 and Figure 10. Distinct topographic breaks across ridgelines are aligned in the northwest portion of the site and a linear trough with deflected ridgelines and drainages are aligned in the central and east-central portion of the site.

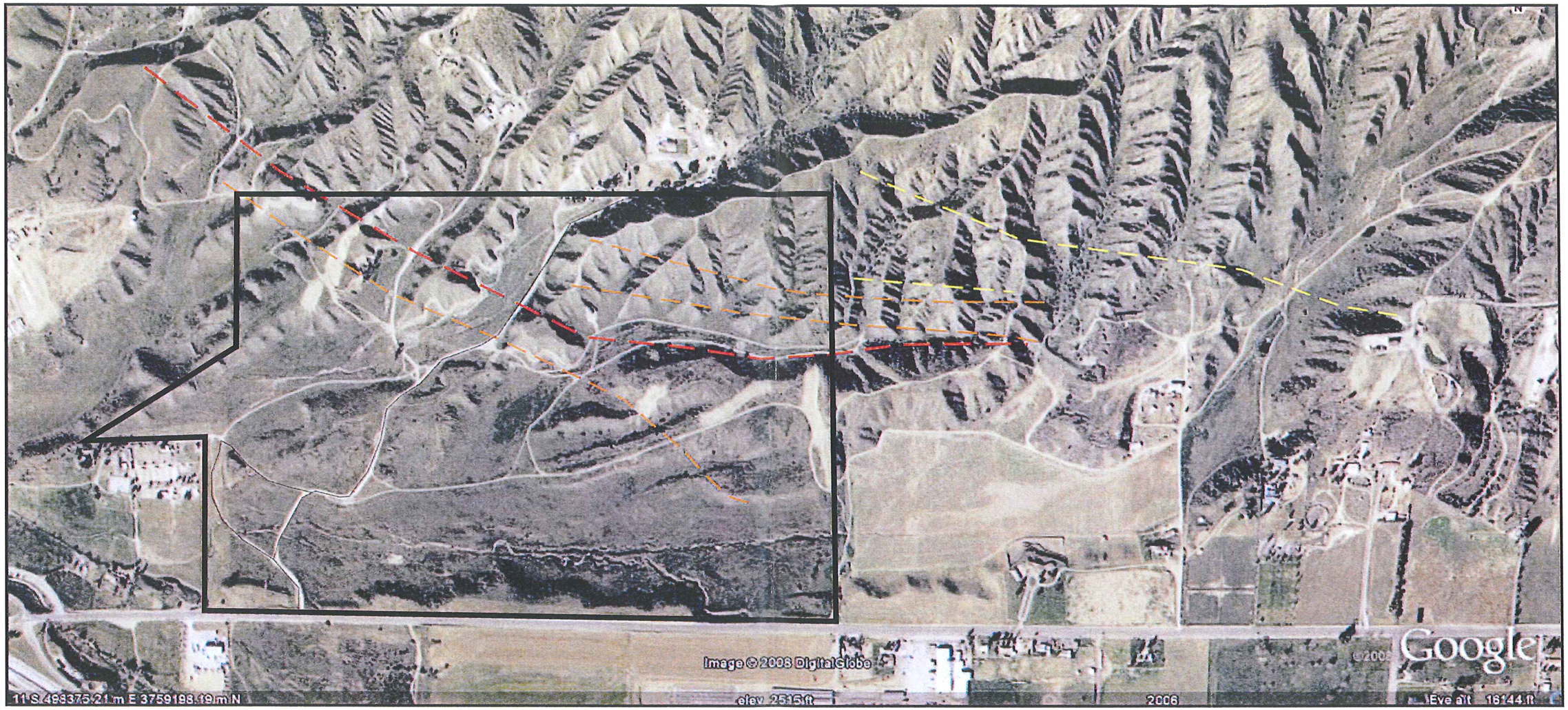
Southwest of the strong lineaments is a moderately strong lineament which mimics the location of the South Branch of the Cherry Valley Fault across ridgelines in the northwest and towards the southeast where the lineament veers southeast of the known location of the South Branch of the Cherry Valley Fault in the eastern portion of the site.

Two parallel moderately strong lineaments are recognized in the northeast portion of the site north of the North Branch of the Cherry Valley Fault. Topographic changes and deflections of ridgeline are aligned, which suggest possible faulting.

Two weak lineaments are recognized northeast of the site which may or may not be fault related.

5.2 Fault Trench NT-1:

FT-1 was excavated along a spur ridge just southeast of the south branch of the CVFZ located in CHJ Road Cut 3. This trench crossed both the structure contour developed using the strike and dip from CHJ's south branch measurements at Road Cuts1-3, and the topographic/geomorphic anomalies recognized by this firm. NT-1 exposed unfaulted Older Alluvium (Qoa) for its entire length. These older alluvial materials consisted of fine-grained silty sands with lesser gravelly sands and clayey sands, generally in the 7.5YR to 10YR range hues. The units observed ranged from massive to poorly stratified. Main lithologic units were observed to be unbroken along the entire length of the trench (Figure 13, in map pocket).



LEGEND

- STRONG LINEAMENT (NORTH BRANCH CHERRY VALLEY FAULT)
- MODERATELY STRONG LINEAMENT
- WEAK LINEMENT
- APPROXIMATE SITE BOUNDARY

Figure 9
AERIAL PHOTO LINEAMENTS WITH SITES VICINITY
SOURCE: GOOGLE IMAGE, 2008

NEBLETT & ASSOCIATES
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA 92649
PHONE: (714) 840-8286 FAX: (714) 840-9796

PROJECT 665-000-01 DATE 9-22-08

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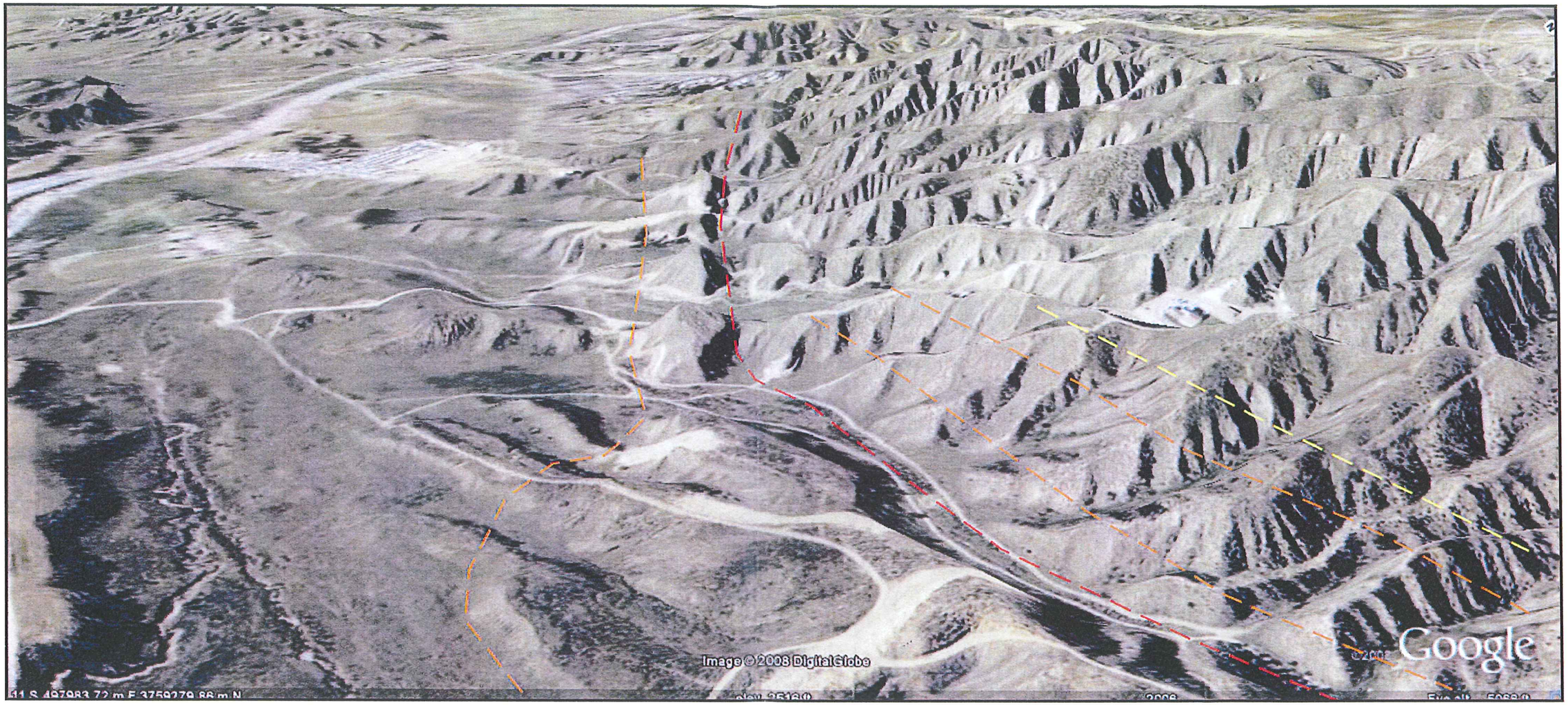

LEGEND

- STRONG LINEAMENT (NORTH BRANCH CHERRY VALLEY FAULT)
- MODERATELY STRONG LINEAMENT
- WEAK LINEMENT

Figure 10
OBLIQUE VIEW TO THE NORTHWEST OF AERIAL PHOTO LINEAMENTS SHOWN IN Figure 9.
SOURCE: GOOGLE IMAGE, 2008

NEBLETT & ASSOCIATES
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA 92649
PHONE: (714) 840-8286 FAX: (714) 840-9796

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5.3 Fault Trench NT-2:

NT-2 was excavated near CHJ trench FT-2, and exposed the south branch of the CVFZ near station 0+45 (Plate 2). San Timoteo formation is in erosional contact with older alluvium on the north side of the fault, which is in reverse fault contact with underlying similar older alluvium on the south side. The measured strike and dip of the main fault surface of the south branch at NT-2 is roughly east-west and dipping 28 to 29 degrees north. The proximity of the San Timoteo formation, the low-angle faulting, the characteristic reddish brown clayey sand gouge (observed in CHJ roadcuts SC1-SC3), and the reverse kinematics (reverse drag-folding, particularly distinct along upper plate lithologic units) strongly supports that the fault exposed is the south branch of the CVFZ. (Figure 14, in map pocket). Analyses of historic aerial photographs confirm that the lack of soil development and unusually flat terrain in the vicinity of NT-2 is due to prior grading or agricultural use.

5.4 Fault Trenches NT-3 and NT-3A:

Trenches NT-3 and NT-3A crossed both the structure contour developed using the strike and dip from CHJ's south branch measurements at Road Cuts SC-1 SC-2 and SC-3, and the topographic/geomorphic anomalies recognized by this firm.. It was extended to the north as Trench NT-3A in order to expose the south branch of the CVFZ. Trenches NT-3and NT-3A exposed Older Alluvial (Qoa) materials consisting of silty sands, coarse gravel and gravelly sands. The South Branch of the CVFZ was exposed near STA 0+75 in Trench FT-3A. The South Branch at FT-3A differed from other trenches in that the faulted materials were relatively unbedded/massive and therefore did not display the drag folding observed in other excavations. (Figure 15, in map pocket).

Analyses of historic aerial photographs confirm that the lack of soil development and unusually flat terrain in the vicinity of NT-3A is due to prior grading or agricultural use.

5.5 Fault Trench NT-4:

This trench crossed both the structure contour developed using the strike and dip from CHJ's south branch measurements at Road Cuts SC1 through SC3, and the topographic/geomorphic anomalies recognized by this firm. NT-4 exposed unbroken older alluvium for its entire

length. These materials consisted of silty sands, and lesser coarse gravel and gravelly sands. Younger alluvium (Qya) was exposed at the westerly end of NT-4. (Figure 16, in map pocket)

5.6 Fault Trench NT-5:

This trench was excavated west of trench NT-3 and exposed the south branch of the CVFZ near station 1+15 (Plate 3). At this trench location, the south branch of the CVFZ places older alluvium against similar older alluvial units. Within the Qoa, reverse drag-folding was observed, particularly on the upper plate (northern) units. The measured trend of the main fault surface of the south branch at NT-5 is roughly N85W and dipping 33-43 degrees northeast (Figure 17, in map pocket). At NT-5, a zone of sub-parallel minor faulting was observed extending southerly to approx Station 1+65. This resulted in local widening of the structural setback (see geologic map). Analyses of historic aerial photographs confirm that the lack of soil development and unusually flat terrain in the vicinity of NT-5 is due to prior grading or agricultural use.

5.7 Fault Trench NT-6:

This trench was excavated west of trench NT-2 and exposed the south branch of the CVFZ near station 0+85 (Plates 4 and 5). At this trench location, the south branch of the CVFZ places older alluvium against differing older alluvial units. Within the Qoa, reverse drag-folding was observed, particularly on the upper plate (northern) units. In addition, the upper plate was pervasively sheared, faulted and fractured with extensive carbonate infill along these features (Plate 6). The north end of the trench exposed older alluvial units which were highly oxidized (5YR and 7.5YR hues) which were in un-faulted, erosional contact with relatively less oxidized, and probably younger (7.5YR to 10YR) older alluvial units. These less oxidized units were in fault contact with similar older alluvial (7.5YR to 10YR) units on the southern, lower plate. The measured trend of the main fault surface of the south branch at NT-6 is roughly N85W and dipping 24-26 degrees northeast (Figure 18, in map pocket). On our logs the more oxidized unit is denoted Qoa_1, and the less oxidized unit as Qoa_2. These units are not differentiated on the geologic map, due to unknown outcrop pattern. Analyses of historic aerial photographs confirm that the lack of soil development and unusually flat terrain in the vicinity of NT-6 is due to prior grading or agricultural use.

5.8 East Road Cut RC-1:

A fault outcropping within an existing road cut located near the eastern property boundary was observed by geologists from this firm during preliminary site reconnaissance. This road cut was mapped in detail to determine whether the fault located there was part of the south branch or other fault splays projected southeasterly along the trend of the north branch (Figure 19, in map pocket). The road cut was first cleaned with a Hitachi ZX450H and then detail-logged by geologists from this firm. The fault exposed in RC-1 was determined to be the South Branch of the CVFZ, which juxtaposes differing older alluvial units at this location.

The kinematics of the fault observed in RC-1 were very similar to those observed in other trenches (NT-2, NT5 and NT-6). All of these exposures displayed moderate to low angle faults (28-45 degree dips) with reverse-kinematic drag-folding, particularly evident within upper plate stratigraphic units. This data, coupled with previous locations from the CHJ trenching, confirms the east-west trend of the South Branch in the eastern portion of the property. This differed greatly with vertical faulting and localized vertical bedding observed on the North Branch of the CVFZ, which is still exposed in CHJ SC-4 (Plate 7).

Activity of Faulting:

During this fault investigation, N&A has not attempted to age-date the South Branch of the Cherry Valley fault or the North Branch of the Cherry Valley fault. This fault investigation concentrated on refining the location and attitude of the South Branch of the Cherry Valley fault in order to position future structures outside the restricted use zone at final grades. No unbroken datable soil horizons or other unbroken pre-holocene units were exposed in any of the N&A excavations. In addition, no carbon or datable materials were encountered in any of the excavations.

It is our opinion that there is no direct indisputable evidence to designate the South Branch and North Branch of the Cherry Valley fault, and any possible faults northeast of the South Branch of the Cherry Valley fault, as inactive. In addition, there is relatively strong geomorphic and topographic evidence that indicate that the Cherry Valley Fault Zone is potentially active. Consequently, N&A has delineated a setback for the South Branch and "Recommended Restricted Use Zone" from the South Branch extending to the north and northeast property line

as shown on Figure11. No evidence of faulting was observed southerly of the South Branch CVFZ in any of the excavations.

6.0 Review of previous work and analyses:

Previous reports and letters from CHJ were reviewed by geologists from this firm. Though the work done was fairly extensive, some aspects of the location and age-dating of faulting onsite were not made clear from our standpoint, and warranted futher study. These issues are listed and described below:

6.1 Fault Location

CHJ's trenches were spaced great distances apart and major changes in strike on faults exposed were not explained or investigated. The south branch changed in strike from N60-70W to nearly east-west between CHJ's excavations SC-3 and T-2. Outcrops to the north of SC-3 showed that the south branch maintained its strike and dip for over 2,200 lineal feet. The significant strike change was never confirmed or explained. In addition, a moderately strong lineament suggested that the fault continued at the N60-70W, 10NE orientation (Figure 9). Two structure contours were prepared using both N&A field mapping and the CHJ measured strikes and dips on the South Branch from Trench T-1B and road cuts SC-2 and SC-3 (N65-70W, 10-15NE), see Figure. 12. These structure contours also paralleled/coincided with many of the aforementioned lineaments and geomorphic anomalies observed during our aerial photo analysis. The structure contours also projected southerly of all 2005 CHJ fault trenches. GPS measurements (measured with Trimble GeoXT, sub-meter accuracy) of the outcrops along the South Branch also confirmed that the structure contour was representative of the hypothetical planar orientation and structure contour of the fault surface (Figure 12). In order to confirm that the South Branch or related faulting did not continue southeasterly from CHJ SC-3 and south of CHJ T-2 through T-4, we sited subsequent trenches along the structure contour and photo lineaments.

6.2 CHJ onsite Age Dating Techniques:

NORTH BRANCH, CHERRY VALLEY FAULT ZONE

The CHJ 2005 field study and report did not determine the status of activity of the North Branch of the Cherry Valley fault within the site and CHJ designated a recommended restricted use zone from a point 50 feet southwest of the trace of the North Branch to the northern and northeast property line (C.H.J. Inc., 8/3/05). The North Branch was not located beyond cut SC-4 (Figure 11, and Plate 7).

On Sept. 15, 2006, C.H.J. Inc. provided an update that removed the recommended restricted use zone for the North Branch. They determined that the North Branch is inactive based on the results of a nearby fault investigation performed by Leighton and Associates (L&A) dated Aug. 3, 2004. Leighton's study was done for a separate parcel, easterly adjacent to the subject site. The L&A trenches for the age-dating study of the North Branch were excavated over 2,900 feet east of the CHJ mapped/non-queried hard point location of the North Branch within the subject property and did not expose or locate any faults. It is our opinion that to accept that this is the same fault (North Branch, CVFZ) without any field confirmation over such a great distance, and to accept that fault's inactivity based on the L&A report does not adequately address the location or activity of faulting of the North Branch of the CVFZ on the subject site.

SOUTH BRANCH, CHERRY VALLEY FAULT ZONE

Age dating of the South Branch occurred at CHJ Trench FT-1B, in which localized fluviatile channel deposits appeared to be unbroken across the fault trace. The rationale for inactivity stated that the unbroken deposits were Pleistocene, due to their 2.5YR reddish Munsell hue. The inherent flaw with this "color based" age date/activity assessment is that 7.5YR hued older alluvial materials appear to underlie this fluvial cap conformably, and are in fault contact with the San Timoteo Formation. We feel that the capping fluvial unit likely had reddish source materials, which are common in the local outcrops of both older alluvium, and, to a lesser degree, in occasional red beds within the San Timoteo Formation, and that their age estimation is therefore dubious. The fact that the underlying alluvial materials in fault contact with the

San Timoteo Formation are less oxidized than the stratigraphically younger, un-faulted, reddish, capping material is supportive of our hypothesis.

In addition, there are dark reddish brown materials in the active alluvial channels throughout the site, due to upslope outcrops of reddish brown older alluvium as their source (see Plate 11). Consequently, we feel that solely using color as an indicator of age in this locality is not reliable. Local soil age estimates where the source material is highly oxidized should be accompanied by correlative evidence to support that the observed oxidation/rubefaction occurred in-situ and that the soil was not simply transported from the ancient, already oxidized source materials.

Leighton's fault investigations utilized aerial photo lineament analyses, fault trenching, radio-carbon age dating, the degree of weathering of cobbles and boulders, soil stratigraphic analyses, soil development index, and maximum horizon index. Based on N&A's review of their data and conclusions, we disagree that they have proven with indisputable evidence that the North and South Branch of the Cherry Valley fault are inactive.

The primary supporting evidence of fault activity age estimates reported in the L&A fault studies performed on the North Branch (2004) and the South Branch (2006) are similarly color/oxidation based, and additionally invoke the high degree of weathering of larger clasts (chiefly granitic and metamorphic cobbles and boulders) observed within the younger alluvium. Again, the upslope outcrops of older alluvial materials located northerly adjacent to L&A trenches is Munsell 2.5 YR to 5YR hue older alluvium (Plate 11), so the color of the material observed should not be used without other evidence to support the age estimation. The degree of weathering of larger fraction is also very problematic for use as evidence of age at this locality. There is an abundance of cobble to boulder size clasts, many of which exhibit extreme weathering/in-situ decomposition within both the older alluvial and the San Timoteo Formation conglomerate. These units comprise the vast majority of the immediate upslope alluvial sources onsite. As with the color based estimates, if the coarse fraction within the source rock exhibits the same properties with respect to weathering, then this weathering should not be invoked as an indication of age in the underlying alluvial materials.

Finally, the soil stratigraphic analyses performed by ECI for L&A are in direct conflict with Carbon-14 age dates derived from direct sampling of carbon fragments within the L&A Trench

T-1. They explain the age discrepancy by invoking bioturbation of both carbon samples. Their sample acquisition techniques are described in detail within the report and do not mention any evidence of contamination or bioturbation. We feel that to invoke bioturbation of both samples, after the carbon dates do not agree with the ECI soil-stratigraphic age estimation, is not consistent with the overall evidence.

The Carbon-14 dates from Trench T-1 at 6.5 feet deep(510±40 yrs B.P.) and at 12 feet deep (2990± 40 yrs. B.P.) do not seem unreasonable to N&A. Based on this firm's previous trenching and C-14 age dating experience in this and similar depositional environments, several feet of alluvial deposition can occur during a single rainstorm event.

It is our opinion that the base of the Holocene is likely to be found much deeper in the alluvium than the L&A trenches were excavated and may be in the 20 to 30 foot depth range.

In summary, it is the opinion of this firm that the previous age dating efforts performed by CHJ and the CHJ acceptance of nearby work by Leighton and Associates for the CVFZ (North and South Branches) are inconclusive. In addition, the evidence for recent faulting which include topographic and geomorphic expression, stream channel capture and migration, elevated terrace surfaces, and major stratigraphic offset of alluvial and bedrock materials, though not conclusive, are indicative of relatively modern activity.

7.0 Conclusions

Based on the results of this fault investigation using aerial photo lineament analyses, fault trenching, geologic field mapping, observation of exposed roadcuts, and review of previous fault investigations by others, Neblett and Associates has successfully located the South Branch of the CVFZ onsite (Figure 11). Our analyses have resulted in a structural setback zone located 50 feet south of, and 100 feet to the north of the South Branch. We have also established a Restricted Use Zone (RUZ) located north and northeast of the South Branch to the north and northeast property boundary (Figure 11). If habitable structures are proposed for this area, a through fault investigation comparable to that presented herein, will be required.

8.0 Future Work

Upon the development of a grading plan, this firm will be required to re-position the structural setback zone based on the proposed grades. The footprint of the proposed commercial structure can then be analyzed for conformance with the re-positioned structural setback and the restricted use zone.

Closure

We greatly appreciate the opportunity to provide our services and look forward to working you and the other project team members.

Repectfully submitted,

Neblett and Associates Inc.

By: _____
Sidney S. Neblett, P.G. 577
CEG 252, Reg. Expires 9/30/09
President

By: _____
David H. Ginter, P.G. 6771
CEG 2250, Reg. Expires 6/30/09
Chief Geologist

By: _____
Brian Weatherby
Project Field Geologist

Distribution: Addressee (6 copies)

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APPENDIX 1
PLATES 1-11





Plate 1: Hitachi ZX450H excavating NT-3 (upper photo)
Hitachi ZX450H cleaning RC-1 with smooth bucket (lower photo)

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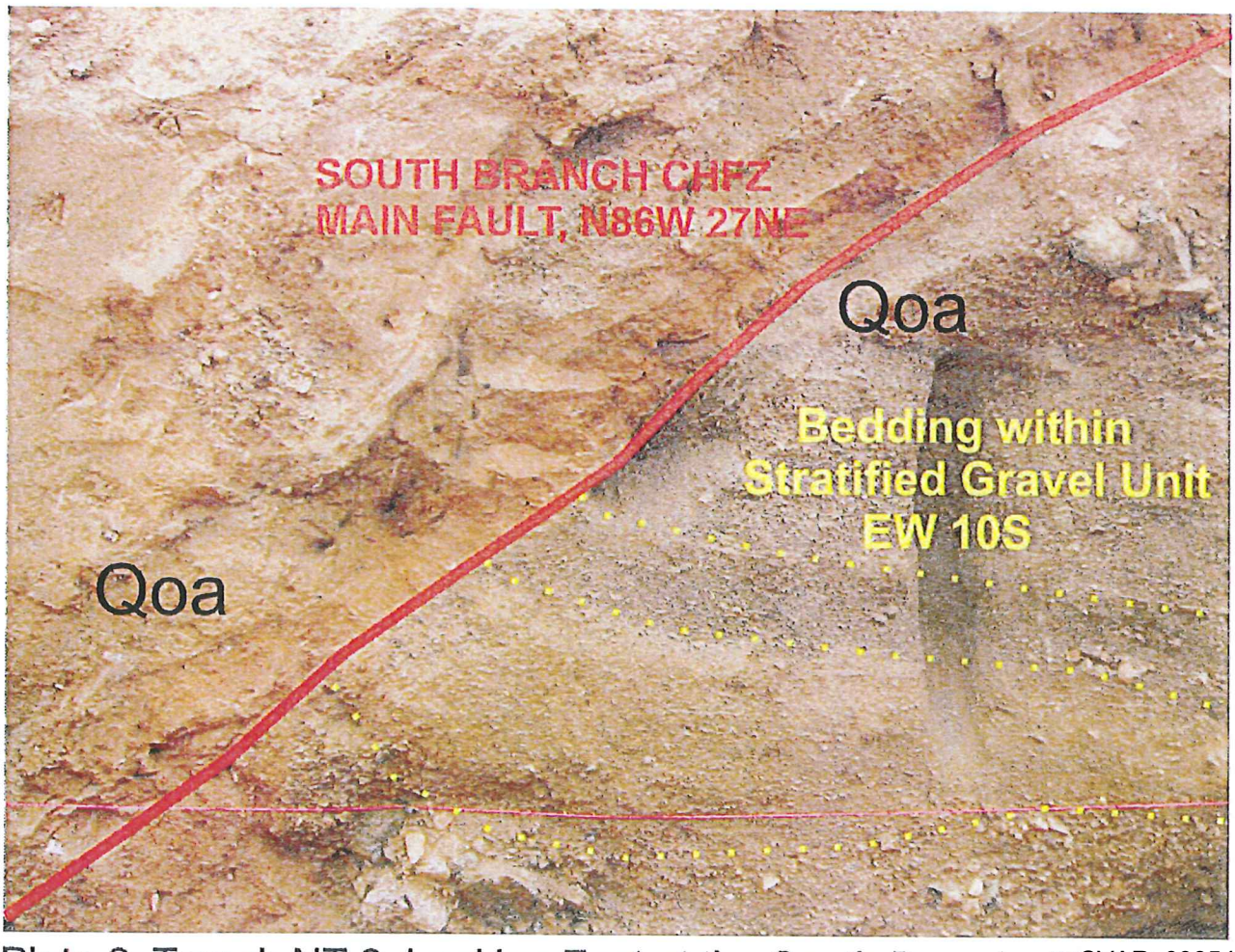

Plate 2: Trench NT-2 Looking East at the South Branch, CHFZ.



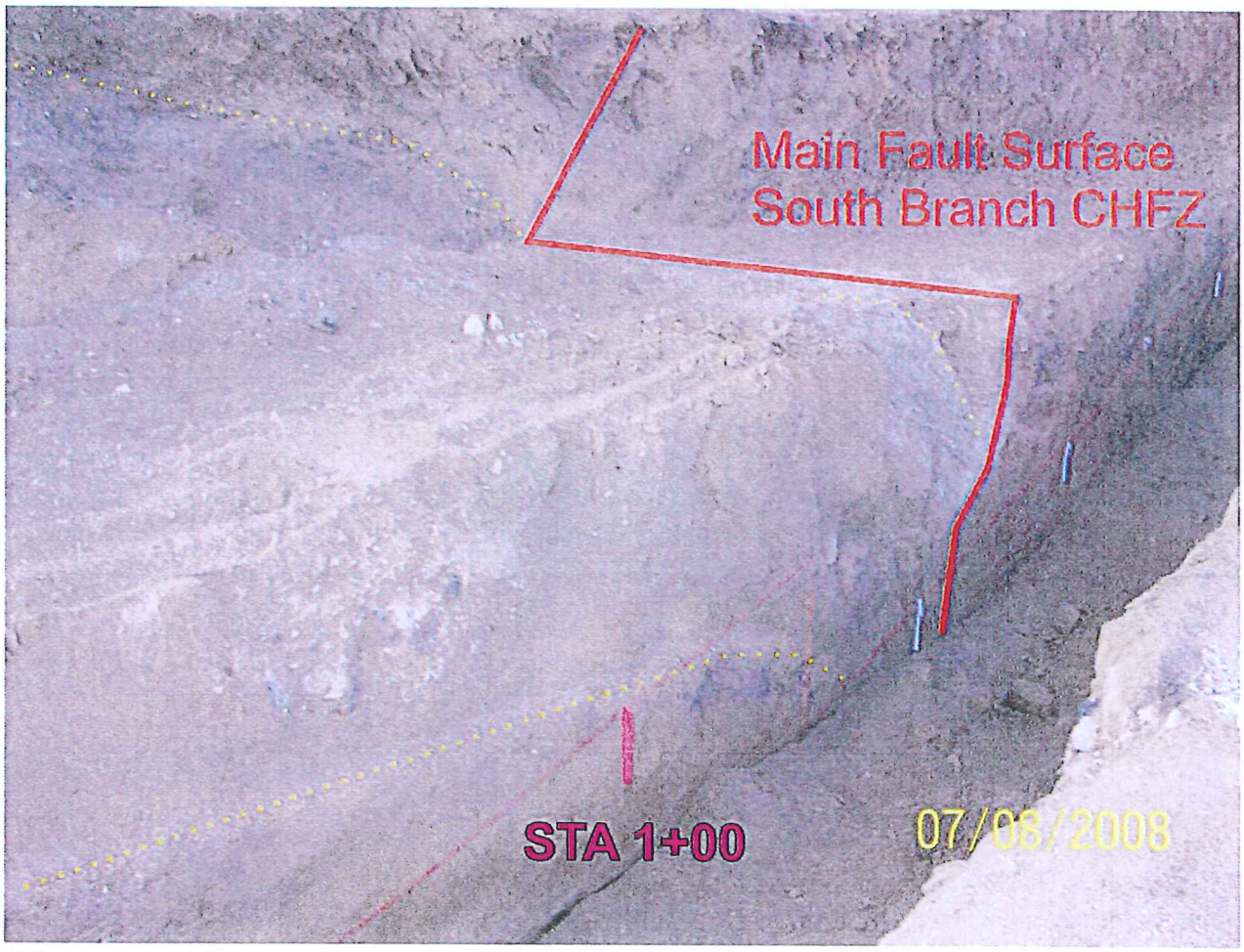

Plate 3: NT-5 Looking Southeast, showing drag folding within Qoa and CHFZ South Branch

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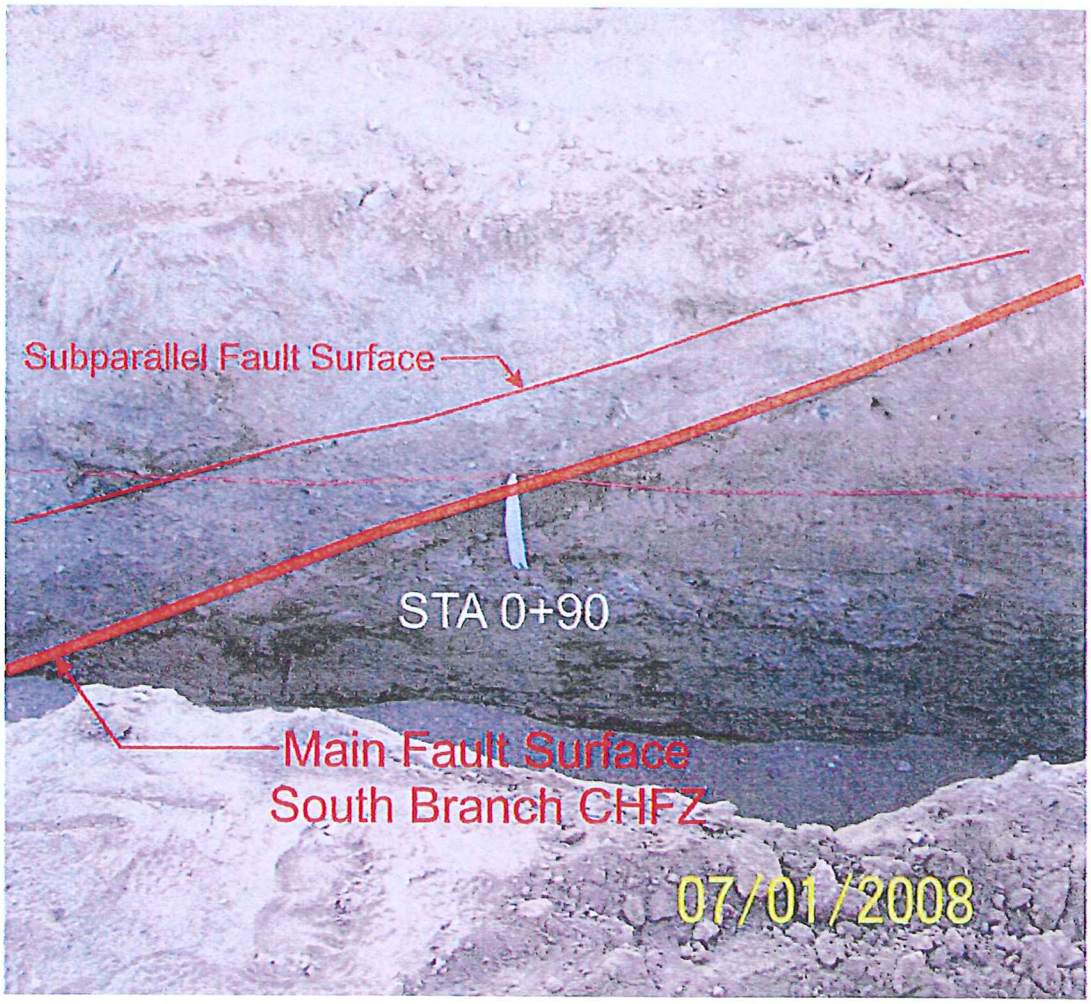

Plate 4: Trench NT-6, Looking east, South Branch CHFZ

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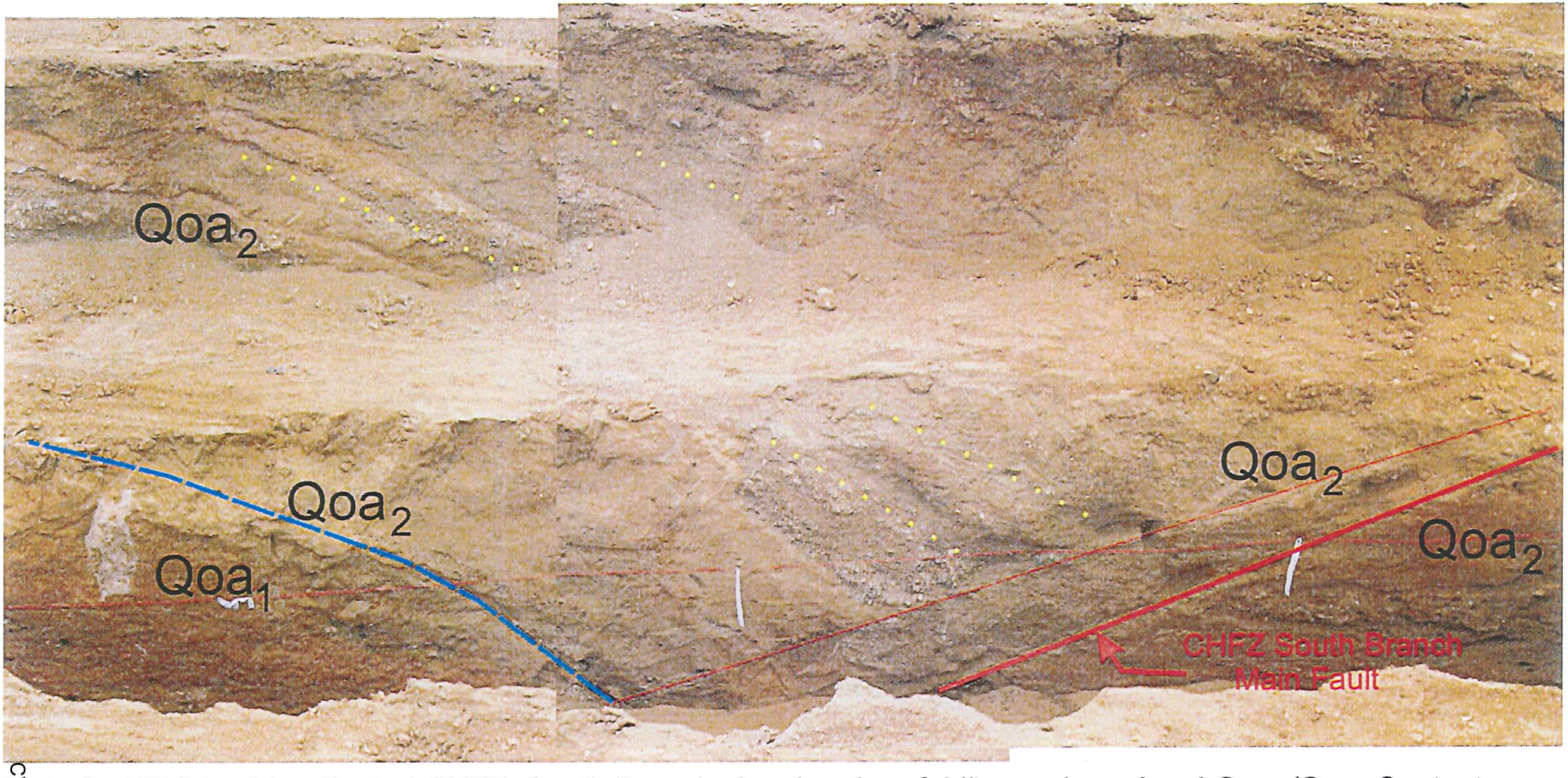

Plate 5: NT-6 Looking East at CHFZ, South Branch showing drag folding and erosional Qoa_2 /Qoa_1 Contact

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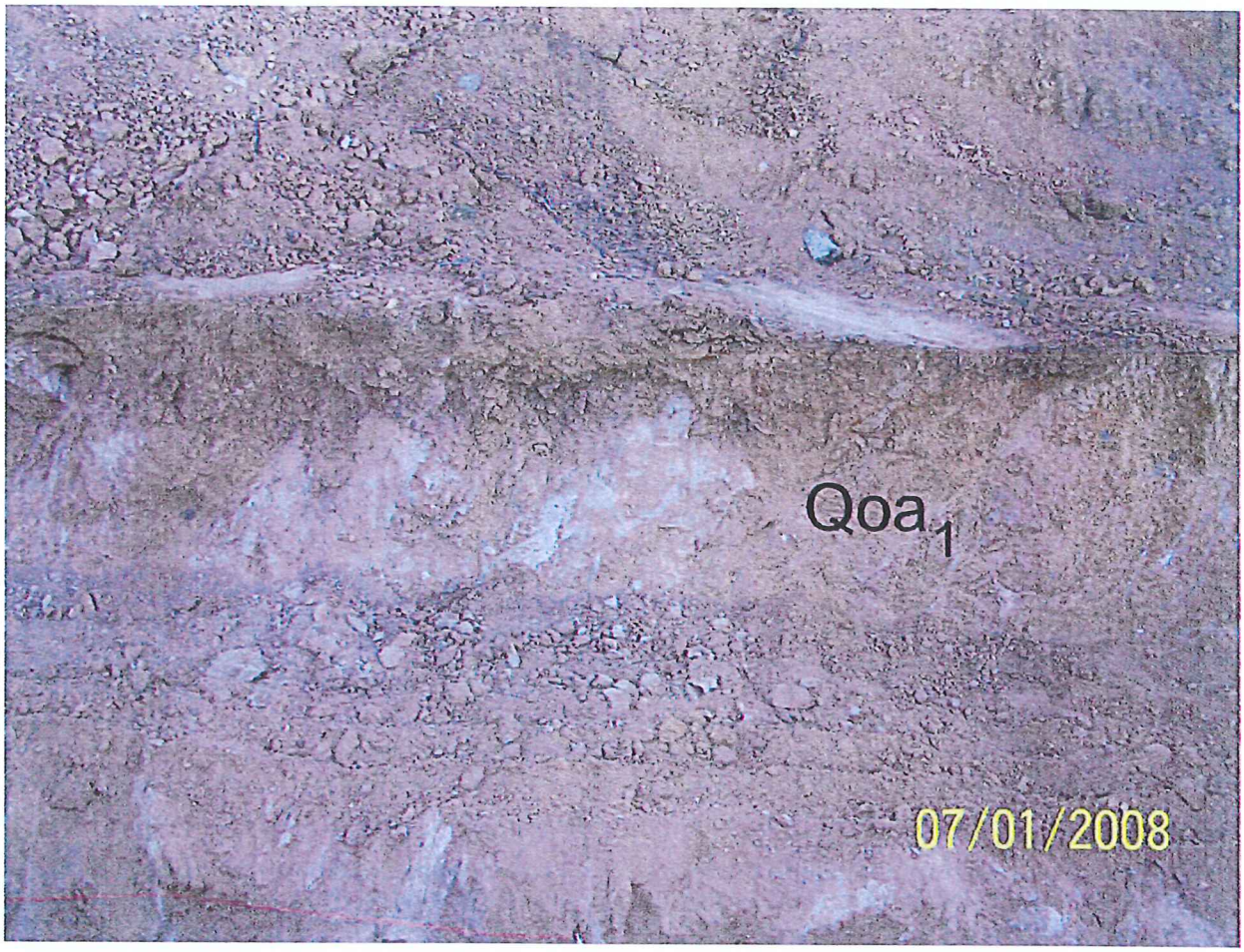

Plate 6: NT-6, Looking east, shattered upper plate older alluvium near STA 0+30.

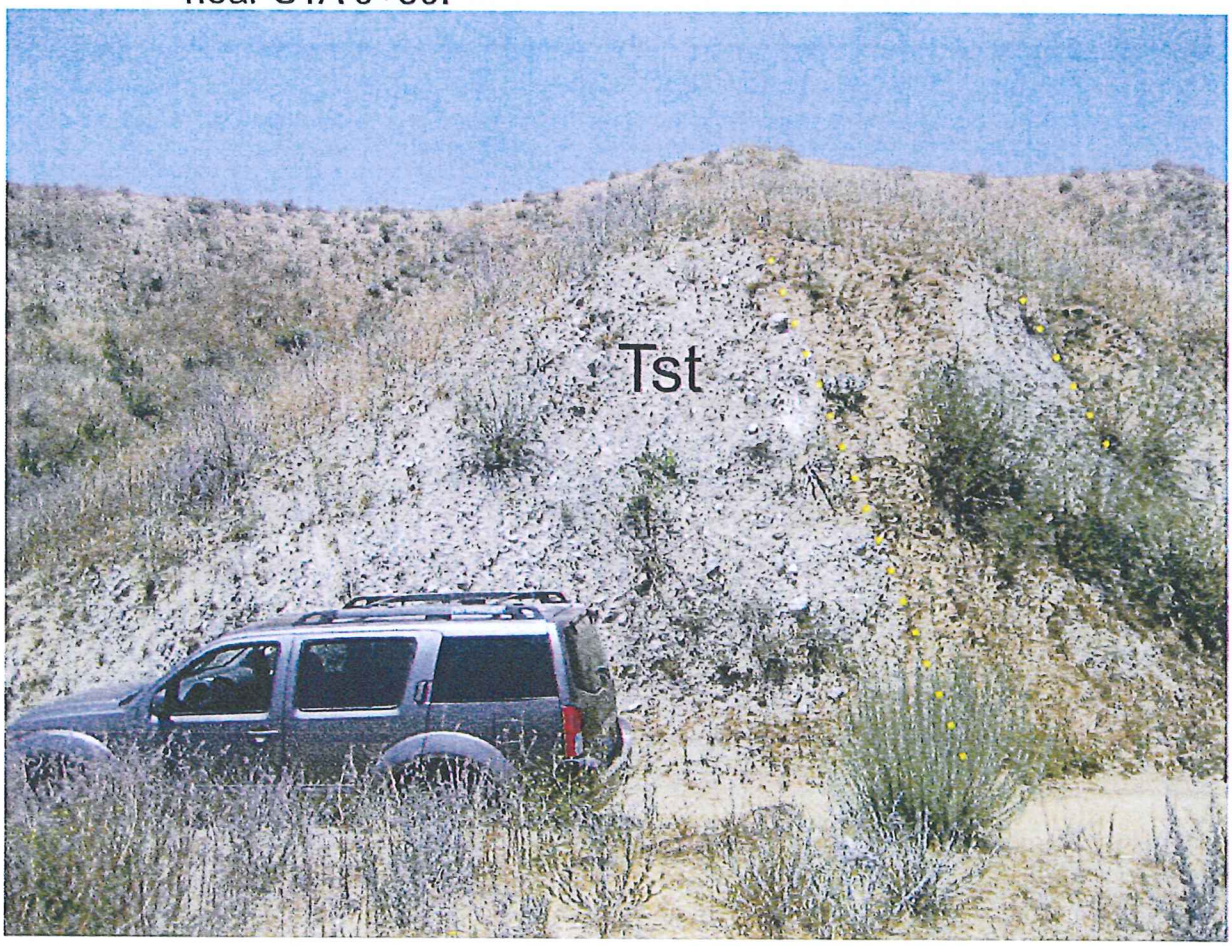

Plate 7: CHJ Cut SC-4, looking west at the North Branch, CHFZ, Note -Steep Bedding and pervasive secondary carbonate



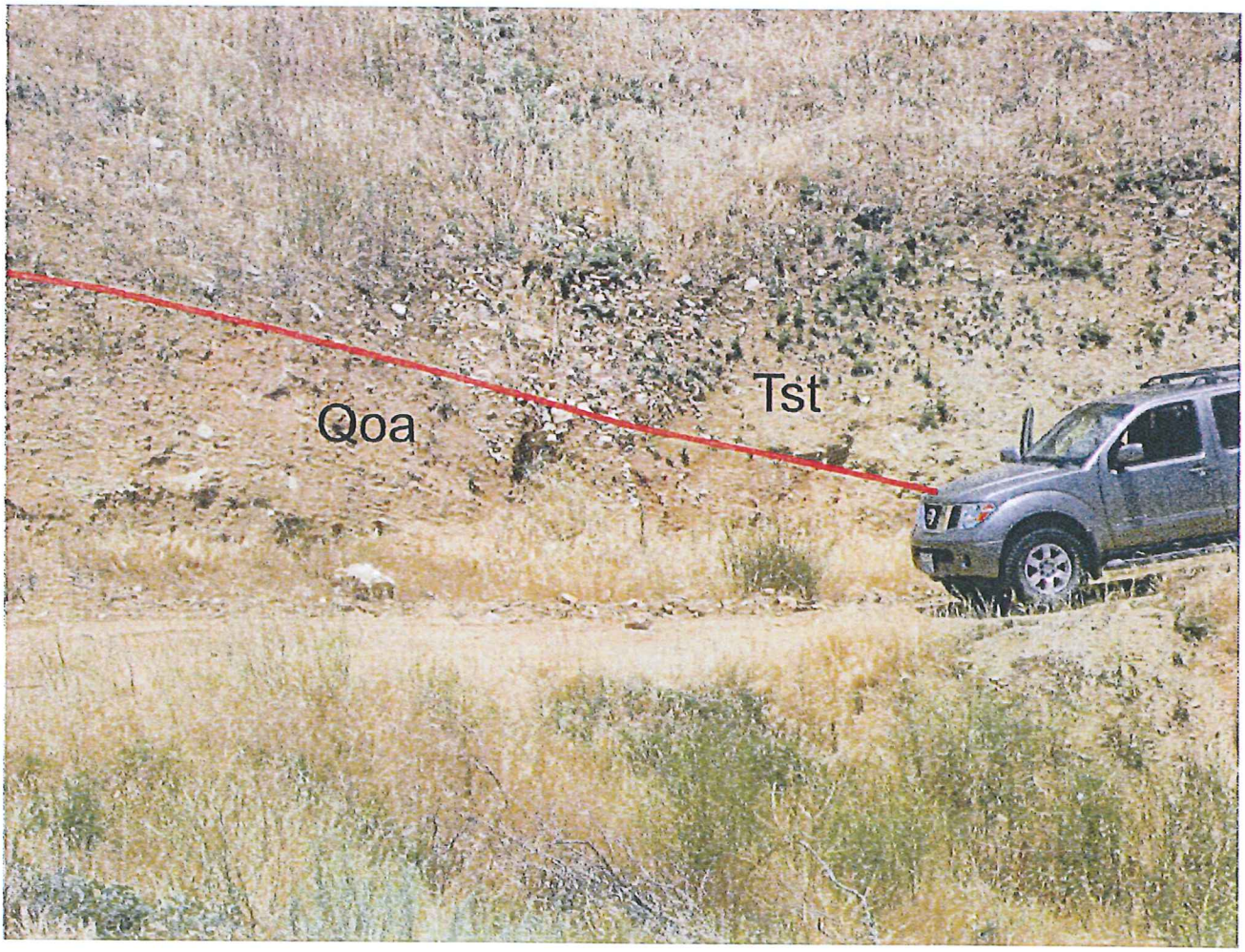

Plate 8: Looking Northwest at the South Branch CHFZ at CHU SC-1



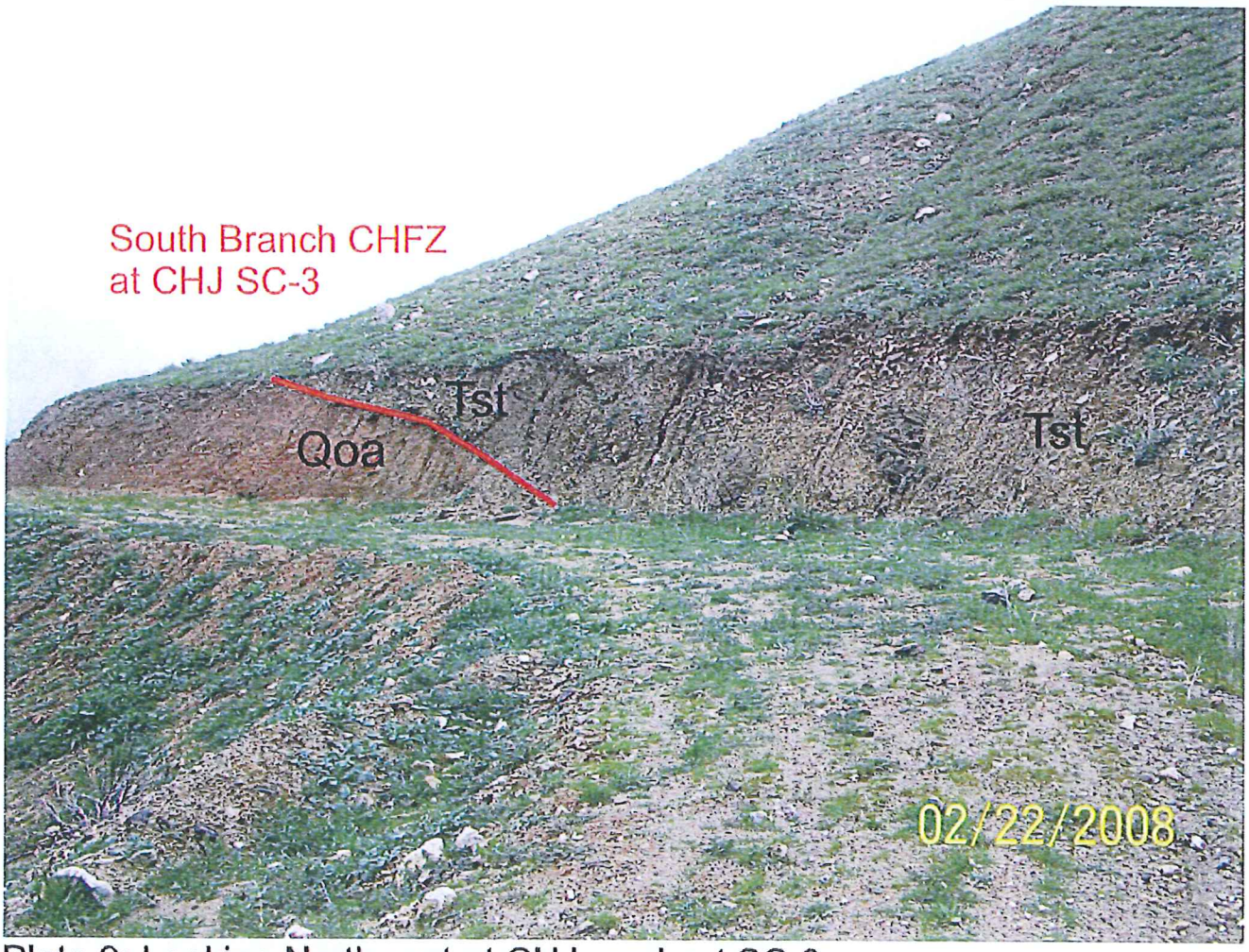

Plate 9: Looking Northwest at CHJ road cut SC-3

CVAR_09860

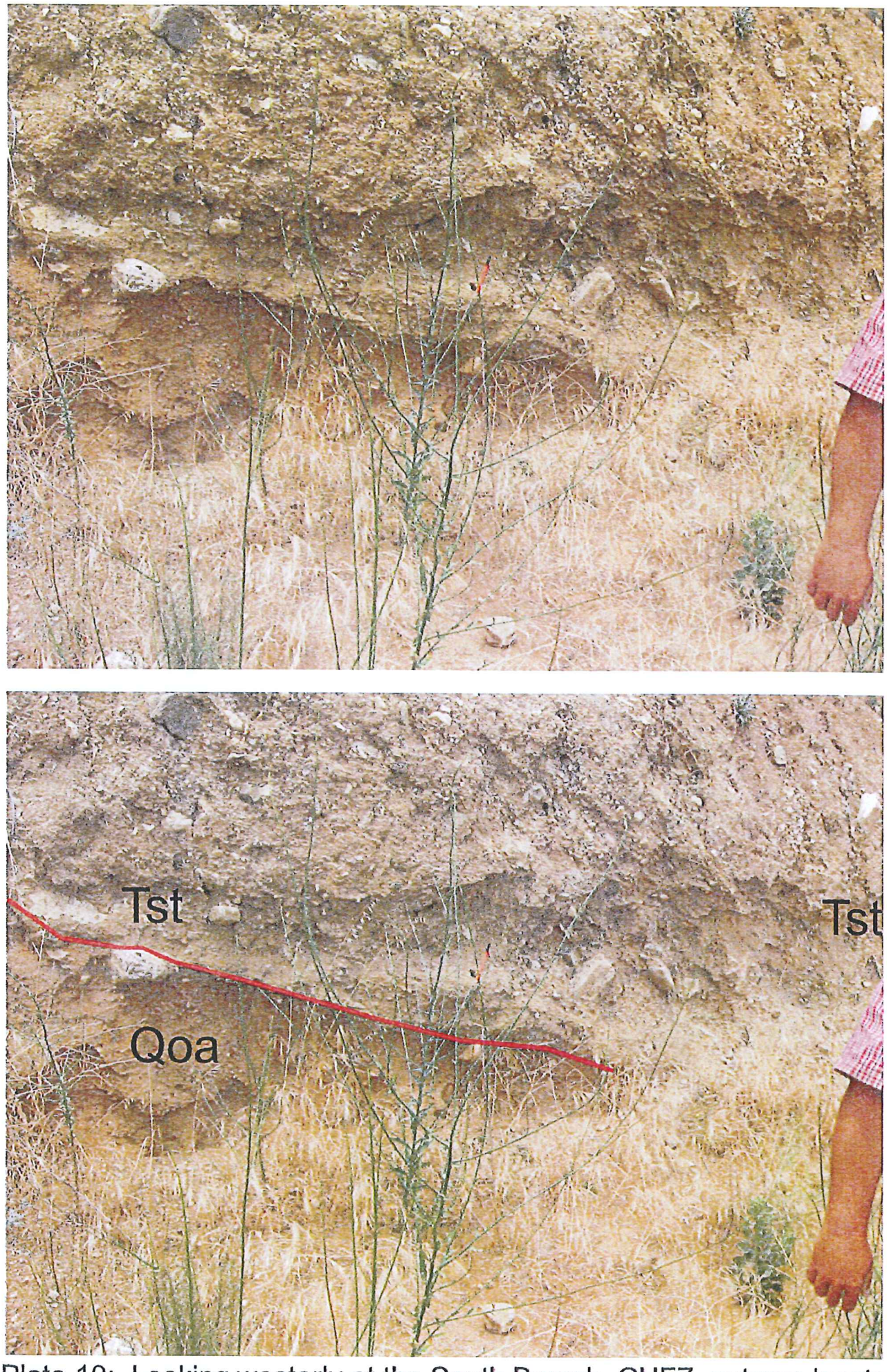

Plate 10: Looking westerly at the South Branch, CHFZ, outcrop located approximately 450 feet northwest of the subject site. CVAR_09861





Plate 11: Dark reddish brown older alluvial materials outcropping near eastern property boundary

CVAR_09862

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E.3 - Grading Plan Review Comments June 2013

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GINTER & ASSOCIATES, INC.

27631 DURAZNO
MISSION VIEJO, CA 92692
OFC (949) 581-2363 CELL (714) 478-1167

TSG Cherry Valley, L.P.
2 Park Plaza, Suite 700
Irvine, CA 92614

June 3, 2013

Project # 105-04

Attn: Mr. Brian Rupp
Project Manager

Subject: **Response to Review Comments by Riverside County,TLMA-Planning Regarding the I-10 Gateway Job Center, Project Parcel Map No. 36093, County of Riverside, California**

References: See attached List of References

Dear Mr. Rupp:

In accordance with your request, Ginter & Associates, Inc. (G&A) is providing this transmittal in response to the review comments provided by the County of Riverside, TLMA-Planning Department's Chief Engineering Geologist, Mr. David L. Jones and their geotechnical consultants, Geopacifica, concerning the response report by Neblett & Associates, Inc. (N&A) dated 7/29/2009 and the Grading Plan Review report by G&A dated 1/7/2013.

Riverside County Comment #1:

"As requested in the County's May 28, 2009 comments, comment #6, the consultant should explain how the lack of age dating of the onsite faults might affect development of the site (ground shaking potential probabilities, near source motions, etc.) See also consultant's "Additional Notes" provided in the Neblett & Associates, Inc. July 29, 2009 Response."

G&A Response to Comment #1:

The lack of age dating of the onsite faults should not affect the development of the site with respect to ground shaking, near-source motions or surface rupture. Any potential seismogenic movement on the Cherry Valley Fault Zone (CVFZ) will be manifested at depth (i.e. several miles in depth) and would probably not be visible or affect the near surface. Ground-shaking from potential movement on the CVFZ at depth will be masked and minimal compared to the ground-shaking caused by earthquakes on the San Andreas Fault to the east and the San Jacinto Fault to the west.

The articles referenced from the GSA concerning the San Gorgonio Pass were based on models utilizing various theories and scenarios. As of this date, no direct evidence for designating the CVFZ as "active" per the CGS mandate has been found to our knowledge. The authors of the referenced articles acknowledge that the San Andreas Fault Zone is a complex system of strike-slip and north-dipping thrust faults that transfer dextral-oblique slip through the San Gorgonio Pass region and that an as yet undermined amount of dextral slip is partitioned onto a number of structures in the San Gorgonio Pass. This may suggest that potential seismogenic movement at depth could be shared by the Banning Fault, CVFZ and other faults that could result in less ground-shaking with minor earthquake magnitudes.

Riverside County Comment #2:

"The consultant's response to the County's May 28, 2009 comments, comment #10 states: 'While faults may indeed underlie the site south of the mapped South Branch, our trenches did not expose any evidence of ground rupture or stratigraphic offset of beds within these middle Pleistocene older alluvial materials.' Please explain as the consultant did not trench the southern portion of the site. Also, please provide the necessary positive lines of evidence to support the presence or absence of active faults on the southern portion of this site."

G&A Response to Comment #2:

As in most of southern California, faults can be observed in outcrops and in bedrock concealed by surficial deposits that are commonly very old and much older than the Holocene. Consequently, the statement was made that south of older alluvium (Qoa) in the vicinity of the ridge where NT-4 was trenched, faults may be present that are currently concealed by younger alluvium (Qya).

The following are positive lines of evidence to support the absence of active faults in the southern portion of the site:

- No publications and/or geologic maps from federal, state, county or local agencies delineate any faults in this area of the site and on trend east and west of the site.

- Based on our aerial photo lineament analysis, no lineaments, including weak or tonal lineaments, were found within this area of the site or on trend east and west of the site.

- No geomorphic expression of faulting is present in this area of the site and on trend east and west of the site.

- Leighton's fault investigation (8/3/2004) and supplemental fault investigation (8/4/2006) for the easterly adjacent Danny Thomas Ranch indicated no evidence of faulting south of Station 0+60 in T-1 or within the entire length of T-3, which spanned the easterly projected suspect area of faulting questioned on the subject site.

- Leighton's aerial photograph review (8/3/2004) indicated no geomorphic expression was observed in the younger or older alluvial soils located within or south of the valley located east of the subject site.

- No evidence of faulting was encountered in the infiltration test pits, or the boring, that were located in the suspect area south of the older alluvium near NT-4.

Riverside County Comment #3:

"The consultant's response to the County's May 28, 2009 comments, comment #37 speaks to "critical structures". The consultant should consider using different terminology for the structure types allowed within the "Recommended Restricted Use Zone" and "Structural Setback". The term "critical structure" has a specific mean (e.g. fire station, hospital). Is the consultant suggesting other habitable structures can be placed on these areas?"

G&A Response to Comment #3:

We apologize for the "critical structures" terminology, which should be revised to read "habitable structures" for the Structural Setback Zone.

Likewise, the "Recommended Restricted Use Zone" can be utilized for non-habitable facilities, such as horse stables, soccer fields, etc. that will have less than 1,000 hrs. of human occupancy per year. Additional fault investigation in the future in this area would be required and approved by the controlling agencies to remove any portions of the restricted use zone for construction of potential habitable structures.

GEOTECHNICAL:

- In Section 7.6-Settlement in reference #2 the consultant provides the opinion that settlement will occur due to seismic activity, loading from fill placement and loading from proposed structures. The consultant also provided recommendations for settlement monuments for the deeper fill area. The consultant should provide anticipated settlement amounts and the justification for those numbers (laboratory testing, calculations, etc.). We require both the primary and secondary fill settlement amounts and time-frame. The County of Riverside would like to see no more than 1" static and 2" seismic settlement after ground modification measures have been performed.

G&A Response:

The planned mass grading of the site involves complete removal of the younger alluvium (Qya) and replacement with compacted fill. The maximum depth of proposed fill after removal of younger alluvium is approximately 80± vertical feet placed over older alluvium of approximately 100 feet in thickness. The areal loading from fill placement will cause settlement due to the compressibility of the fill and in place older alluvial materials.

A critical profile of 80 feet of compacted fill (after removal of 20 feet of younger alluvium) placed on top of 100 feet of older alluvium was considered in consolidation settlement calculation. A bulk density value of 125 pcf was considered for compacted fill as well as for older alluvium that will be left in place. Pre-consolidation pressures for soil layers in alluvium were conservatively assumed equal to the existing overburden pressures. Compression ratios for the older alluvium were obtained based on the average value from the consolidation tests performed by the previous consultant Neblett and Associates, Inc. and are summarized below:

Older Alluvium Sample Location	**Compression Ratio**	
	Rebound Curve Cer	**Virgin Curve Cec**
HS-1 at 35 feet	0.6 %	4.2 %
HS-2 at 30 feet	0.5%	2.5 %
HS-2 at 40 feet	0.6 %	3.3 %
HS-4 at 15 feet	0.6 %	2.7 %
HS-4 at 35 feet	0.7 %	2.4 %
Average	***0.6%***	***3.0 %***

Compression ratios for compacted engineered fill were assumed 0.5 % and 2.5 % for rebound curve and virgin curve, respectively. During grading, adequate samples should be obtained for each type of fill material in deep fill areas and consolidation testing should be performed to validate the consolidation characteristics assumed in our calculation.

Considering the maximum fill depth and anticipated consolidation characteristics of the fill and older alluvium, the computed primary consolidation settlement is on the order of 27-inches. The calculation sheet is included as an attachment. Due to the granular nature of the site soils, the majority of this settlement will occur during grading operations and long-term secondary settlement would be negligible.

The amount of remaining consolidation settlement after achieving finished grade elevation and the time frame of occurrence will depend on many factors, such as soil type, compressibility and permeability characteristics, initial density and moisture condition, ground water conditions, sequence of loading, and other factors. We recommend that the settlement monuments should be installed as soon as the finished grades are achieved in deep fill areas. After installation of settlement monuments, the Project Civil Engineer should survey the actual locations of the monuments and incorporate the locations in the project plans. Settlement monuments should be monitored by the Project Civil Engineer and the results be provided to the Project Geotechnical Engineer for evaluation. The monitoring program should be in accordance with the frequency recommended by the Project Geotechnical Engineer and should be continued until primary settlement is essentially complete. The recommended frequency of settlement monitoring is shown below:

Period	Monitoring Frequency
First month following installation	Weekly
1 -3 months	Bi-weekly
From 3 months to completion of Primary settlement	Monthly

The settlement monitoring frequency may be revised by the Project Geotechnical Engineer based on evaluation of the settlement data. The proposed settlement monitoring should be performed for a minimum duration of 6 months.

The Project Geotechnical Engineer should evaluate the magnitude and progress of settlements to determine if the primary settlements are complete and the long-term settlements have stabilized to acceptable limits. If the magnitude and rate of settlement

are excessive, it may be necessary to delay construction until primary consolidation has occurred and the rate of settlement has stabilized. One the amount and rate of settlement has reached acceptable limits, the subject areas will be released for construction of the planned improvements.

- Please provide an estimate of settlement due to seismic shaking.

G&A Response:

Seismically induced settlement consists of dry dynamic settlement (above ground water) and liquefaction-induced settlement (below groundwater). During a strong seismic event, seismically induced settlement can occur within loose to moderately dense, dry or saturated granular soils. In view of the absence of groundwater and the 200-300 ft. depth of the regional groundwater, the potential for liquefaction is considered remote. Complete removal of the younger alluvium (Qya) approximately 20ft. in depth and replacement with compacted engineered fill to the design grades is recommended. The native material underlain by the compacted fill or in the cut areas will consist of older alluvial sediments (Late Pleistocene Qoa) that are generally dense and consolidated due to their age (11,000 + years). Due to the dense nature of the underlying sediments, they are not considered greatly susceptible to dry dynamic seismic settlement. However, to be conservative, it would be reasonable to assume a seismic settlement of 0.5 inch for a 7.5 magnitude earthquake with a peak ground acceleration of 0.61g. The seismically induced settlement caused by ground shaking is expected to be generally uniform.

- The consultant, in reference #2 states, in Section 7.8 “Erosion/Debris Flows”, that the installation of designed devices to protect the slopes and control surface drainage will help “**mitigate”** the potential erosion and debris flow during storm event. Are there additional measures and devices which will “**eliminate**” the potential for debris flow and damage to improvements or structures. Please comment.

G&A Response:

This firm is unaware of any feasible devices that will “eliminate” the potential for debris flow and damage to improvements to structures. However, it is this firm’s opinion that the civil engineer’s plans indicate berms, debris basins and drainage swales, together with appropriate vegetation on slopes, will be employed in accordance with the standards of care and practice in the industry.

- Has the geotechnical consultant considered the Cherry Valley Fault trace a potential avenue for water seepage? Please comment.

G&A Response:

Based on the logs of fault trenches exposing the South Branch of the Cherry Valley Fault, the fault is "healed" with clay gouge material, which is impermeable and will not provide potential avenue for water seepage.

GEOLOGIC:

In reference #2, Section 3.4 "Site Faults" the consultant makes the statement "Though these two main breaks help define the zone, lineaments and geomorphic evidence suggest a zone of faulting and deformation associated with the CVFZ that may be as wide as 500-700 feet. With the consultants statements that the faults must be considered "potentially active" please provide additional justification for a structural setback recommended at 50 feet south of and 100 feet north and northeast of the south branch.

G&A Response:

G&A has taken a conservative approach and recommended a structural setback of 50 ft. south and 100 ft. north of the trace of the south branch of the CVFZ that transgresses the proposed development envelopes. Potential ground shaking, if it occurs, will be more intense on the upper plate of this thrust fault than the lower plate. Consequently, we propose a 50 ft. and 100 ft. structure setback on the lower and upper plate accordingly. Since no development is proposed north of this zone, G&A deems it unnecessary to provide any structural setbacks for the north branch of the CVFZ or others that may exist.

If you have any questions or require further information, please don't hesitate to contact us.

{Signatures on following page}

Respectfully submitted,
GINTER & ASSOCIATES, INC.

By:_____
Dave Ginter R.G., C.E.G.
Principal Engineering Geologist/President



By:_____
Vela "Ganesh" Ganeshwara, P.E., G.E.
Consulting Geotechnical Engineer



Attachments: Computation of Consolidation Settlement
Riverside County Planning Department Review Comments 4/17/13

Distribution: Mr. Brian Rupp (1)
Hunsaker Irvine (1)
County of Riverside (2)
File (1)

LIST OF REFERENCES

Bloyd, R.M., Jr., 1971, Underground Storage of Imported Water in the San Gorgonio Pass Area, Southern California; US Geological Survey Water-Supply Paper 1999-D

C.H.J. Inc., August 3, 2005, Subsurface Investigation of Faulting Cherry Valley Gateway Project, Tentative Tract No. 30545, Northeast of Cherry Valley Blvd. and I-10, Cherry Valley Area, Riverside County, California

Dibblee, T.W. Jr., 2003 Geologic Map of the El Casco Quadrangle DF-113

Evans, J.R., 2005, Engineering Geologic Investigation, Parcel Map 32244, Cherry Valley Area, Riverside County, File No. 1395

Ginter & Associates, Inc., 1/7/13, Grading Plan Review, Parcel Map No. 36093, I-10 Gateway Job Center, Cherry Valley Area, County of Riverside, CA

_____, 10/23/12, Infiltration Rate Evaluation for the I-10 Gateway Job Center, Parcel Map No. 36093, Cherry Valley Area, County of Riverside, CA

Hart, E.W., 1994, Fault Rupture Hazard Zones in California; California Dept. of Conservation, Division of Mines and Geology, Special Publication 42

ICG, Inc., 1990, Fault Hazard/Landslide Evaluation and Preliminary Geotechnical Investigation, 242± Acres Residential Development, NEC Cherry Valley Blvd., and Roberts Ave., Riverside County, California; unpublished consultant's report dated 1/2/1990,
(cited by Treiman, 1994)

Jennings, C.W., 1994, Fault Activity Map of California and Adjacent Areas, 1:750,000

Kahle, J.E., Hart E.W., Borchardt, G., Manson, M.W., 1987, Surface Rupture Associated with the North Palm Springs Earthquake of July 8, 1986 – Banning and Related Faults, Riverside County; Fault Evaluation Report FER-185, California Division of Mines And Geology

Leighton Consulting, Inc., 2004, Fault Investigation Report, Danny Thomas Ranch Portion of the Sunny-Cal Egg Ranch Project, North of Cherry Valley Blvd., East of I-10, Cherry Valley Area of Riverside County

_____, 2006, Supplemental Fault Investigation Report, Proposed Residential Development 122-Acre Site, 37300 and 37356 Cherry Valley Blvd., Calimesa Area of Riverside County, California

Matti, J.C., Morton, D.M., 1993, Paleogeographic Evolution of the San Andreas Fault in Southern California; A Reconstruction Based on a New Cross-Fault Correlation, Geological Society of America Memoir 178, 1993

Morton, D.M., Miller, F.K., 2006, Geologic Map of the San Bernardino and Santa Ana 30'x60' Quadrangles, California, USGS, p. 194

Neblett & Associates, Inc., 2008 Fault Investigation, Tent. Tr. 30545, GEO No. 1442, Cherry Valley Area, County of Riverside, CA NE of Cherry Valley Blvd. and I-10

_____, 2009, Grading Plan Review, Parcel Map No. 36093, I-10 Gateway Job Center, Cherry Valley Area, County of Riverside, California, GEO No. 1442

Riverside County, 2008, G15 Fault Zone Map

Riverside County Planning Department Review Comments for County Geologic Report No. 1442, Cherry Valley, dated 4/17/13

Treiman, J.A., 1994, The San Gorgonio Pass, Banning and Related Faults, Riverside County, California, California Division of Mines and Geology Fault Evaluation Report FER-235

USGS, 1954, Geology of Southern California, Bulletin 170

COMPUTATION OF CONSOLIDATION SETTLEMENT

Total Fill Depth = 80 ft, Thickness of Older Alluvium = 100 ft

Sublayer Depth (ft)			Sublayer Thickness	Initial Overburden Pressure	Pre-Consolidation Pressure	Pressure Change	Final Pressure	Compression Ratio		Vertical Strain	Change in Thickness
Top	Bottom	Average	Ho (ft)	Po (ksf)	Pp (ksf)	ΔP (ksf)	Pf (ksf)	Rebound Curve Cεr	Virgin Curve Cεc	εz (%) ***	εz.Ho (=ΔH) (inch)
0	10	5	10	0.625	0.625	0	0.625	0.5	2.5	0	0
10	20	15	10	0.625	0.625	1.25	1.875	0.5	2.5	1.193	1.43
20	40	30	20	1.25	1.25	3.75	5	0.5	2.5	1.505	3.61
40	60	50	20	1.25	1.25	6.25	7.5	0.5	2.5	1.945	4.67
60	80	70	20	1.25	1.25	8.75	10	0.5	2.5	2.258	5.42
80	100	90	20	1.25	3.75	10	11.25	0.6	3	1.718	4.12
100	120	110	20	3.75	6.25	10	13.75	0.6	3	1.160	2.78
120	140	130	20	6.25	8.75	10	16.25	0.6	3	0.894	2.15
140	160	150	20	8.75	11.25	10	18.75	0.6	3	0.731	1.75
160	180	170	20	11.25	13.75	10	21.25	0.6	3	0.619	1.49
Total Settlement (ΣΔH)											**27.43**

*** εz = Cεc log (Pf/Po) ……(Po > Pp - Virgin Compression)

εz = Cεr log (Pf/Po) ……(Pf < Pp - Overconsolidation)

εz = Cεr log (Pp/Po) + Cεc log (Pf/Pp)…..…(Po < Pp < Pf)

CRITICAL PROFILE CONSIDERED IN SETTLEMENT COMPUTATION

Proposed Finished Grade, El=0

Existing Grade, El= - 60 ft

Additional Compacted Fill to Achieve Fininshed Grade (60 ft)

Removal Bottom, El= - 80 ft

Oal to be Removed and Replaced with Compacted Fill (20 ft)

Qoa (Older Alluvium) to Remain in Place (100 ft)

Bottom of Qoa (Older Alluvium) El = -180 ft

Bedrock

CVAR_09876

RIVERSIDE COUNTY
PLANNING DEPARTMENT

Carolyn Syms Luna
Director

April 17, 2013

Pages 6 (including this cover)

Ginter & Associates
Email: Dave@GinterandAssociates.com
Attention: David H. Ginter

RE: Review Comments
County Geologic Report No. 1442
Fault Investigation, Tentative Tract No. 30545, GEO No. 1442, Cherry Valley

Please see the attached review comments pertaining to the subject report. Please call me at (951) 955-6863 if you have any questions.

Sincerely,

RIVERSIDE COUNTY PLANNING DEPARTMENT
Carolyn Syms Luna, Director

David L. Jones, CEG No. 2283
Chief Engineering Geologist, TLMA-Planning

Attachments: Review Comments

cc: Planner: Paul Rull, Riverside Office, Fax: (951) 955-2159
Applicant: Brian Rupp, TSG Cherry Valley, LP, Email: brupp@shopoff.com
File: GEO01442, PP25337, FT 2008-24

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PLOT PLAN:TRANSMITTED Case #: PP25337 Parcel: 407-220-017

5. DRT CORRECTIONS REQUIRED

PLANNING DEPARTMENT

5.PLANNING. 4 DRT - GEO01442 REQUIRED

County Geologic Report (GEO) No. 1442, submitted for this site (APN: 413-270-012 & 013, 407-220-004, 007-9, 016, 017) (no current project application), was prepared by Neblett & Associates, Inc. and is entitled: "Fault Investigation, Tentative Tract No. 30545, GEO No. 1442, Cherry Valley Area, County of Riverside, California", dated September 22, 2008. In addition, the following reports were submitted for this GEO:

C.H.J. Incorporated, August 3, 2005, "Subsurface Investigation of Faulting, Cherry Valley Gateway project, Tentative Tract No. 30545, Northeast of Cherry Valley Boulevard and Interstate 10, Cherry Valley Area, Riverside County, California".

C.H.J. Incorporated, September 15, 2006, "Update to Subsurface Investigation of Faulting, Cherry Valley Gateway Project, 244+/- Acres Northeast of Cherry Valley Boulevard and Interstate 10, Cherry Valley Area, Riverside County, California".

Neblett & Associates, Inc., "Response to Review Comments by Riverside County, TLMA-Planning Regarding the I-10 Gateway Job Center Project, Parcel Map No. 36093, Cherry Valley Area, County of Riverside, California GEO No. 1442.

Ginter & Associates, Inc., June 26, 2012, "Updated Consultant of Record for the I-1o Gateway Job Center, Tentative Tract May (sic) No. 34863, Cherry Valley Area, County of Riverside, California Geo No. 1442"

Ginter & Associates, Inc., January 7, 2013, "Grading Plan Review, Parcel Map No. 36093, I-10 Gateway Job Center, Cherry Valley Area, County of Riverside, California"

These documents are herein incorporated as a part of GEO01442.

Prior to scheduling this project for public hearing, clarification and/or additional information, relative to the issues enumerated by Geopacifica in their February 28, 2013 Geotechnical Report Review Check Corrections memo, shall be submitted to the County Geologist for review and

PLOT PLAN:TRANSMITTED Case #: PP25337 Parcel: 407-220-017

5. DRT CORRECTIONS REQUIRED

5.PLANNING. 4 DRT - GEO01442 (cont.) REQUIRED

approval. In addition, the following clarification and/or additional clarification shall also be submitted to the County Geologist for review and approval:

1.As requested in the County's May 28, 2009 comments, comment #6, the consultant should explain how the lack of age dating of the onsite faults might affect development of the site (ground shaking potential probabilities, near source motions, etc.). See also consultant's "Additional Notes" provided in the Neblett & Associates, Inc. July 29, 2009 Response.

2.The consultant's response to the County's May 28, 2009 comments, comment #10 states: "While faults may indeed underlie the site south of the mapped South Branch, our trenches did not expose any evidence of ground rupture or stratigraphic offset of beds within these middle Pleistocene older alluvial materials. Please explain as the consultant did not trench the southern portion of the site. Also, please provide the necessary positive lines of evidence to support the presence or absence of active faults on the southern portion of this site.

3.The consultant's response to the County's May 28, 2009 comments, comment #37 speads to "critical structures". The consultant should consider using different terminology for the structure types allowed within the "Recommended Restricted Use Zone" and "Structural Setback". The term "critical structure" has a specific meaning (eg. fire station, hospital). Is the consultant suggesting other habitable structures can be placed on these areas?

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GEOTECHNICAL
CONSULTANTS

RIVERSIDE COUNTY PLANNING DEPARTMENT
GEOTECHNICAL AND GEOLOGIC REPORT REVIEW CHECK CORRECTIONS

GEO 1442#2

February 28, 2013
Revised April 10, 2013

Mr. David L. Jones
Planning Department
County of Riverside, California

On February 11 and April 9, 2013, I received and reviewed the following documents:

1. Response to Review Comments by Riverside County, TLMA-Planning Regarding the I-10 Gateway Job Center Project, Parcel map No. 36093, Cherry Valley Area, County of Riverside, CA, GEO 1442, by Neblett & Associates, Inc., dated July 29, 2009
2. Grading Plan Review, Parcel Map No. 36093, I-10 Gateway Job Center, Cherry Valley Area, County of Riverside, CA, by Ginter & Associated, dated January 7, 2013
3. Comments Concerning Neblett & Associates, Inc's Response to Review Comments by riverside county, TLMA-Planning Regarding the I-10 Gateway Job Center, Cherry Valley Area, Riverside County, CA by Ginter and Associated, dated January 7, 2013
4. Sensitivity of the Southern Sand Andreas Fault System to Tectonic Boundary conditions and Fault Configurations, by Justin Herbert and Michele Cooke, October, 2012
5. A New Perspective on the Geometry of the San Andreas Fault in Southern California and Its Relationship to Lithospheric Structure, by Gary Fuis, dated February 2012

I also utilized the following documents for the technical review of document 1:

3060
INDUSTRY ST
SUITE 105
OCEANSIDE
CA 92054
TEL: 760.721.5488
FAX: 760.721.5539

6. Technical Guidelines for Review of Geotechnical and Geologic Reports; County of Riverside, 2000 edition, Transportation and Land Management Agency, Building and Safety Department, Planning Department, Transportation Department.
7. Guidelines for Evaluating and Mitigating Seismic Hazards in California, Special Publication 117A, California Division of Mines and Geology, 1997, Revised 2008

The purpose of our review is to check that the submitted documents provide soil/geologic data/information to meet the standards of practice within, and guidelines for reports of, Riverside County, California and any requirements and standards set by the State of California for Geologic, Seismic and Engineering reports. As a note, acceptance and/or approval of the consultant report at the Planning level does not guarantee or constitute acceptance/approval for grading or a grading permit. Response to certain review items will be required at the submittal/review level for Building and Safety for acceptance/approval for grading and grading permits.

Based on our review the geotechnical documents #1-5, prepared and submitted for the proposed I-10 Job Center in the Cherry Valley Area of Riverside County, CA, GEO 1442 **does not** provide adequate soil/geologic data/information to meet the minimum Planning Department guidelines for Riverside County and **is not** approved for entitlement purposes. I have items that need clarification prior to approval:

GEOTECHNICAL

- In Section 7.6 – Settlement in reference #2 the consultant provides the opinion that settlement will occur due to seismic activity, loading from fill placement and loading from proposed structures. The consultant also provided recommendations for settlement monuments for the deeper fill areas. The consultant should provide anticipated settlement amounts and the justification for those numbers(laboratory testing, calculations, etc.). We require both the primary and secondary fill settlement amounts and time-frame. The County of Riverside would like to see no more that 1" static and 2" seismic settlement after ground modification measures have been performed.
- Please provide an estimate of settlement due to seismic shaking.
- The consultant, in reference #2 states, in Section 7.8 "Erosion/Debris Flows", that the installation of designed devices to protect the slopes and control surface drainage will help "**mitigate**" the potential erosion and debris flow during storm

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GEOTECHNICAL CONSULTANTS

events. Are there additional measures and devices which will "**eliminate**" the potential for debris flow and damage to improvements or structures. Please comment.

- Has the geotechnical consultant considered potential stabilization fills for areas where the Cherry Valley Fault is exposed in cut slopes? Please comment.
- Does the geotechnical consultant consider the Cherry Valley Fault trace a potential avenue for water seepage? Please comment.

GEOLOGIC

- In reference #2, Section 3.4 "Site Faults" the consultant makes the statement "Though these two main breaks help define the zone, lineaments and geomorphic evidence suggest a zone of faulting and deformation associated with the CVFZ that may be as wide as 500-700 feet. With the consultants statements that the faults must be considered "potentially active" please provide additional justification for a structural setback recommended at 50 feet south of and 100 feet north and northeast of the south branch.

If you have any questions, please do not hesitate to contact us.

Respectfully,

James F. Knowlton

James F. Knowlton
RCE 55754/CEG 1045

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E.4 - Consolidation Settlement

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COMPUTATION OF CONSOLIDATION SETTLEMENT

Total Fill Depth = 80 ft, Thickness of Older Alluvium = 100 ft

Sublayer Depth (ft)			Sublayer Thickness	Initial Overburden Pressure	Pre-Consolidation Pressure	Pressure Change	Final Pressure	Compression Ratio		Vertical Strain	Change in Thickness
Top	Bottom	Average	Ho (ft)	Po (ksf)	Pp (ksf)	ΔP (ksf)	Pf (ksf)	Rebound Curve Cεr	Virgin Curve Cεc	εz (%) ***	εz.Ho (=ΔH) (inch)
0	10	5	10	0.625	0.625	0	0.625	0.5	2.5	0	0
10	20	15	10	0.625	0.625	1.25	1.875	0.5	2.5	1.193	1.43
20	40	30	20	1.25	1.25	3.75	5	0.5	2.5	1.505	3.61
40	60	50	20	1.25	1.25	6.25	7.5	0.5	2.5	1.945	4.67
60	80	70	20	1.25	1.25	8.75	10	0.5	2.5	2.258	5.42
80	100	90	20	1.25	3.75	10	11.25	0.6	3	1.718	4.12
100	120	110	20	3.75	6.25	10	13.75	0.6	3	1.160	2.78
120	140	130	20	6.25	8.75	10	16.25	0.6	3	0.894	2.15
140	160	150	20	8.75	11.25	10	18.75	0.6	3	0.731	1.75
160	180	170	20	11.25	13.75	10	21.25	0.6	3	0.619	1.49
Total Settlement (ΣΔH)											**27.43**

*** εz = Cεc log (Pf/Po) ……(Po > Pp - Virgin Compression)

εz = Cεr log (Pf/Po) ……..(Pf < Pp - Overconsolidation)

εz = Cεr log (Pp/Po) + Cεc log (Pf/Pp)…..…(Po < Pp < Pf)

CRITICAL PROFILE CONSIDERED IN SETTLEMENT COMPUTATION

Proposed Finished Grade, El=0

Existing Grade, El= - 60 ft

Additional Compacted Fill to Achieve Fininshed Grade (60 ft)

Removal Bottom, El= - 80 ft

Oal to be Removed and Replaced with Compacted Fill (20 ft)

Qoa (Older Alluvium) to Remain in Place (100 ft)

Bottom of Qoa (Older Alluvium) El = -180 ft

Bedrock

CVAR_09886

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E.5 - County Review

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RIVERSIDE COUNTY
PLANNING DEPARTMENT

Carolyn Syms Luna
Director

April 17, 2013

Pages 6 (including this cover)

Ginter & Associates
Email: Dave@GinterandAssociates.com
Attention: David H. Ginter

RE: Review Comments
County Geologic Report No. 1442
Fault Investigation, Tentative Tract No. 30545, GEO No. 1442, Cherry Valley

Please see the attached review comments pertaining to the subject report. Please call me at (951) 955-6863 if you have any questions.

Sincerely,

RIVERSIDE COUNTY PLANNING DEPARTMENT
Carolyn Syms Luna, Director

David L. Jones, CEG No. 2283
Chief Engineering Geologist, TLMA-Planning

Attachments: Review Comments

cc: Planner: Paul Rull, Riverside Office, Fax: (951) 955-2159
Applicant: Brian Rupp, TSG Cherry Valley, LP, Email: brupp@shopoff.com
File: GEO01442, PP25337, FT 2008-24

B:\Geology\CGR\GEO01300-1499\geo01442_comments.docx

PLOT PLAN:TRANSMITTED Case #: PP25337 Parcel: 407-220-017

5. DRT CORRECTIONS REQUIRED

PLANNING DEPARTMENT

5.PLANNING. 4 DRT - GEO01442 REQUIRED

County Geologic Report (GEO) No. 1442, submitted for this site (APN: 413-270-012 & 013, 407-220-004, 007-9, 016, 017) (no current project application), was prepared by Neblett & Associates, Inc. and is entitled: "Fault Investigation, Tentative Tract No. 30545, GEO No. 1442, Cherry Valley Area, County of Riverside, California", dated September 22, 2008. In addition, the following reports were submitted for this GEO:

C.H.J. Incorporated, August 3, 2005, "Subsurface Investigation of Faulting, Cherry Valley Gateway project, Tentative Tract No. 30545, Northeast of Cherry Valley Boulevard and Interstate 10, Cherry Valley Area, Riverside County, California".

C.H.J. Incorporated, September 15, 2006, "Update to Subsurface Investigation of Faulting, Cherry Valley Gateway Project, 244+/- Acres Northeast of Cherry Valley Boulevard and Interstate 10, Cherry Valley Area, Riverside County, California".

Neblett & Associates, Inc., "Response to Review Comments by Riverside County, TLMA-Planning Regarding the I-10 Gateway Job Center Project, Parcel Map No. 36093, Cherry Valley Area, County of Riverside, California GEO No. 1442.

Ginter & Associates, Inc., June 26, 2012, "Updated Consultant of Record for the I-1o Gateway Job Center, Tentative Tract May (sic) No. 34863, Cherry Valley Area, County of Riverside, California Geo No. 1442"

Ginter & Associates, Inc., January 7, 2013, "Grading Plan Review, Parcel Map No. 36093, I-10 Gateway Job Center, Cherry Valley Area, County of Riverside, California"

These documents are herein incorporated as a part of GEO01442.

Prior to scheduling this project for public hearing, clarification and/or additional information, relative to the issues enumerated by Geopacifica in their February 28, 2013 Geotechnical Report Review Check Corrections memo, shall be submitted to the County Geologist for review and

PLOT PLAN:TRANSMITTED Case #: PP25337 Parcel: 407-220-017

5. DRT CORRECTIONS REQUIRED

5.PLANNING. 4 DRT - GEO01442 (cont.) REQUIRED

approval. In addition, the following clarification and/or additional clarification shall also be submitted to the County Geologist for review and approval:

1.As requested in the County's May 28, 2009 comments, comment #6, the consultant should explain how the lack of age dating of the onsite faults might affect development of the site (ground shaking potential probabilities, near source motions, etc.). See also consultant's "Additional Notes" provided in the Neblett & Associates, Inc. July 29, 2009 Response.

2.The consultant's response to the County's May 28, 2009 comments, comment #10 states: "While faults may indeed underlie the site south of the mapped South Branch, our trenches did not expose any evidence of ground rupture or stratigraphic offset of beds within these middle Pleistocene older alluvial materials. Please explain as the consultant did not trench the southern portion of the site. Also, please provide the necessary positive lines of evidence to support the presence or absence of active faults on the southern portion of this site.

3.The consultant's response to the County's May 28, 2009 comments, comment #37 speads to "critical structures". The consultant should consider using different terminology for the structure types allowed within the "Recommended Restricted Use Zone" and "Structural Setback". The term "critical structure" has a specific meaning (eg. fire station, hospital). Is the consultant suggesting other habitable structures can be placed on these areas?

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GEOTECHNICAL
CONSULTANTS

RIVERSIDE COUNTY PLANNING DEPARTMENT
GEOTECHNICAL AND GEOLOGIC REPORT REVIEW CHECK CORRECTIONS

GEO 1442#2

February 28, 2013
Revised April 10, 2013

Mr. David L. Jones
Planning Department
County of Riverside, California

On February 11 and April 9, 2013, I received and reviewed the following documents:

1. Response to Review Comments by Riverside County, TLMA-Planning Regarding the I-10 Gateway Job Center Project, Parcel map No. 36093, Cherry Valley Area, County of Riverside, CA, GEO 1442, by Neblett & Associates, Inc., dated July 29, 2009
2. Grading Plan Review, Parcel Map No. 36093, I-10 Gateway Job Center, Cherry Valley Area, County of Riverside, CA, by Ginter & Associated, dated January 7, 2013
3. Comments Concerning Neblett & Associates, Inc's Response to Review Comments by riverside county, TLMA-Planning Regarding the I-10 Gateway Job Center, Cherry Valley Area, Riverside County, CA by Ginter and Associated, dated January 7, 2013
4. Sensitivity of the Southern Sand Andreas Fault System to Tectonic Boundary conditions and Fault Configurations, by Justin Herbert and Michele Cooke, October, 2012
5. A New Perspective on the Geometry of the San Andreas Fault in Southern California and Its Relationship to Lithospheric Structure, by Gary Fuis, dated February 2012

I also utilized the following documents for the technical review of document 1:

3060
INDUSTRY ST
SUITE 105
OCEANSIDE
CA 92054
TEL: 760.721.5488
FAX: 760.721.5539

6. Technical Guidelines for Review of Geotechnical and Geologic Reports; County of Riverside, 2000 edition, Transportation and Land Management Agency, Building and Safety Department, Planning Department, Transportation Department.
7. Guidelines for Evaluating and Mitigating Seismic Hazards in California, Special Publication 117A, California Division of Mines and Geology, 1997, Revised 2008

The purpose of our review is to check that the submitted documents provide soil/geologic data/information to meet the standards of practice within, and guidelines for reports of, Riverside County, California and any requirements and standards set by the State of California for Geologic, Seismic and Engineering reports. As a note, acceptance and/or approval of the consultant report at the Planning level does not guarantee or constitute acceptance/approval for grading or a grading permit. Response to certain review items will be required at the submittal/review level for Building and Safety for acceptance/approval for grading and grading permits.

Based on our review the geotechnical documents #1-5, prepared and submitted for the proposed I-10 Job Center in the Cherry Valley Area of Riverside County, CA, GEO 1442 **does not** provide adequate soil/geologic data/information to meet the minimum Planning Department guidelines for Riverside County and **is not** approved for entitlement purposes. I have items that need clarification prior to approval:

GEOTECHNICAL

- In Section 7.6 – Settlement in reference #2 the consultant provides the opinion that settlement will occur due to seismic activity, loading from fill placement and loading from proposed structures. The consultant also provided recommendations for settlement monuments for the deeper fill areas. The consultant should provide anticipated settlement amounts and the justification for those numbers(laboratory testing, calculations, etc.). We require both the primary and secondary fill settlement amounts and time-frame. The County of Riverside would like to see no more that 1" static and 2" seismic settlement after ground modification measures have been performed.
- Please provide an estimate of settlement due to seismic shaking.
- The consultant, in reference #2 states, in Section 7.8 "Erosion/Debris Flows", that the installation of designed devices to protect the slopes and control surface drainage will help "**mitigate**" the potential erosion and debris flow during storm

GEOPACIFICA
GEOTECHNICAL CONSULTANTS

events. Are there additional measures and devices which will "**eliminate**" the potential for debris flow and damage to improvements or structures. Please comment.

- Has the geotechnical consultant considered potential stabilization fills for areas where the Cherry Valley Fault is exposed in cut slopes? Please comment.
- Does the geotechnical consultant consider the Cherry Valley Fault trace a potential avenue for water seepage? Please comment.

GEOLOGIC

- In reference #2, Section 3.4 "Site Faults" the consultant makes the statement "Though these two main breaks help define the zone, lineaments and geomorphic evidence suggest a zone of faulting and deformation associated with the CVFZ that may be as wide as 500-700 feet. With the consultants statements that the faults must be considered "potentially active" please provide additional justification for a structural setback recommended at 50 feet south of and 100 feet north and northeast of the south branch.

If you have any questions, please do not hesitate to contact us.

Respectfully,

James F. Knowlton

James F. Knowlton
RCE 55754/CEG 1045

E.6 - Grading Plan Review November 2014

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GRADING PLAN REVIEW FOR THE

REVISED TPM #36564

SAN GORGONIO CROSSINGS

COUNTY OF RIVERSIDE, CALIFORNIA

Prepared for : TSG Cherry Valley, L.P.
2 Park Plaza, Suite 700
Irvine, CA 92614

GINTER & ASSOCIATES, INC.
27631 DURAZNO
MISSION VIEJO, CALIFORNIA

Project # 105-05 November 24, 2014

CVAR_09898

GINTER & ASSOCIATES, INC.

27631 DURAZNO
MISSION VIEJO, CA 92692
OFC (949) 581-2363 CELL (714) 478-1167

TSG Cherry Valley, L.P.
2 Park Plaza, Suite 700
Irvine, CA 92614

November 24, 2014

Project # 105-05

Attn: Mr. Brian Rupp

Subject: **Grading Plan Review**
For the Revised TPM# 36564
San Gorgonio Crossings,
County of Riverside, California

References: See attached List of References

Introduction:

The subject site, formerly known as the I-10 Gateway Job Center, is now called the San Gorgonio Crossings. The revised plan was prepared by Albert A. Webb Associates at a scale of 1"=80' dated 9/3/14 and is attached (in pockets).

The *Grading Plan Review, Parcel Map # 36093 I-10 Gateway Job Center* dated 1/7/13 and subsequent response dated 6/3/13 by Ginter & Associates, Inc. was approved by the Riverside County Planning Department on September 4, 2013. The geotechnical site conditions, recommendations and conclusions of these documents generally remain applicable unless superseded by the contents of this report.

The modifications to the plan by the designated project civil engineer warrant the presentation of the revised cross sections and geotechnical engineering analyses contained herein.

General Summary of Plan Design Changes:

- Removed Retaining Walls
- Decreased the area of the building footprints
- Modified slopes along the northern, southern, eastern and western perimeters
- Added two water tanks in the northeast portion
- Slightly re-positioned storm drain channels and WQMP infiltration basins

Revised Geotechnical Map and Cross Sections:

Cross sections 1-1" through 7'7" have been revised to reflect the revised grades. The geology shown on the sections has not changed.

The geotechnical map (Figure 1, enclosed in pocket) has been modified to reflect the re-positioning of some of the stabilization keyways, as shown on the pertinent cross sections.

Revised Slope Stability Analyses:

Revised global and surficial slope stability analyses were performed to evaluate the stability of the largest engineered fill slope (section7-7") and the largest cut slope in older alluvium (Section 3-3"). Detailed slope stability analyses are present in Appendix II. The results of the stability analyses indicate that the proposed slopes will provide factors of safety greater than 1.5 and 1.1 under static and pseudostatic conditions, respectively, conforming to the County of Riverside standards and are acceptable, as planned. Similarly, the factors of safety for the surficial stability conditions also meet the required minimum safety factor of 1.5.

Geotechnical Construction Recommendations:

All pertinent parties need to review the recommendations found in the referenced report dated January 7, 2013.

Plan Review, Observations, and Testing:

Ginter & Associates, Inc. should be provided with precise grading and foundation plans, when available, for our review to evaluate the preliminary recommendations presented herein and to develop additional/revised recommendations, as appropriate.

Field observation and testing during precise and remedial grading must be performed by a representative of this firm to verify conformance of the earthwork to the requirements of the regulating agencies, the project specifications, and the recommendations presented in this report. Any earthwork performed in connection with the subject project without the full knowledge of, and not under the direct observation of this firm, will render the recommendations of this report invalid.

Limitations:

This report and the report dated 1/7/13 have been prepared for the exclusive use of TSG Cherry Valley, L.P. and its design consultants relative to the design and construction of the proposed project. This report is not intended for other parties, and it may not contain sufficient information for other purposes.

The Owner or Owner Representative should make sure that the information and preliminary recommendations presented in this report and the 1/7/13 report are brought to the attention of the Project Architect and Project Engineer and incorporated into the project plans.

The findings contained in this report are based upon our evaluation and interpretation of the information obtained from limited borings and/or test pits and the results of the laboratory testing and engineering analysis. The opinions and recommendations provided were based on the assumption that the geotechnical conditions, which exist across the site, are similar to those observed in the test excavations. The condition and characteristics of the sub-surface materials at locations and depths other than those excavated and observed may be different and no representations are made as to their quality and engineering properties. Should any conditions encountered during construction differ from those described herein, this office should be contacted immediately for evaluation of the actual conditions and for appropriate recommendations prior to continuation of work.

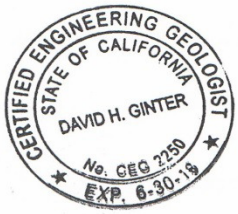
The findings and recommendations presented herein were obtained in accordance with currently accepted professional engineering principles and practices in the field of geologic and geotechnical engineering and reflect our best professional judgment. We make no other warranty, either express or implied.

We thank you for the opportunity to provide our services for your project and look forward to working with you and the project team during site grading, design and construction. If you have any questions or require additional information, please contact the undersigned.

{Signatures on following page}

Respectfully submitted,
GINTER & ASSOCIATES, INC.

By:_____
Dave Ginter R.G., C.E.G.
Principal Engineering Geologist/President



By:_____
Vela "Ganesh" Ganeshwara, P.E., G.E.
Consulting Geotechnical Engineer



Attachments: Revised Plan-Albert A. Webb Associates
Cross Sections 1-1" through 7'7"
Geological Map (Figure 1)
Digital copy of January 7, 2013 report (1)

Distribution: Mr. Brian Rupp (5 hard copies, 2 digital copies)

LIST OF REFERENCES

Bloyd, R.M., Jr., 1971, Underground Storage of Imported Water in the San Gorgonio Pass Area, Southern California; US Geological Survey Water-Supply Paper 1999-D

C.H.J. Inc., August 3, 2005, Subsurface Investigation of Faulting Cherry Valley Gateway Project, Tentative Tract No. 30545, Northeast of Cherry Valley Blvd. and I-10, Cherry Valley Area, Riverside County, California

Dibblee, T.W. Jr., 2003 Geologic Map of the El Casco Quadrangle DF-113

Evans, J.R., 2005, Engineering Geologic Investigation, Parcel Map 32244, Cherry Valley Area, Riverside County, File No. 1395

Ginter & Associates, Inc., June 26, 2012, Updated Consultant of Record for the I-10 Gateway Job Center, TT Map # 34863, Cherry Valley Area, County of Riverside, CA GEO # 1442

_____, January 7, 2013, Grading Plan Review, Parcel Map # 36093, I-10 Gateway Job Center, Cherry Valley Area, County of Riverside, CA

_____, June 3, 2013, Response to Review Comments by Riverside County, TLMA-Planning Regarding the I-10 Gateway Job Center, Project Parcel Map # 36093, County of Riverside, CA

_____, 1/7/13, Grading Plan Review, Parcel Map No. 36093, I-10 Gateway Job Center, Cherry Valley Area, County of Riverside, CA

_____, 10/23/12, Infiltration Rate Evaluation for the I-10 Gateway Job Center, Parcel Map No. 36093, Cherry Valley Area, County of Riverside, CA

Hart, E.W., 1994, Fault Rupture Hazard Zones in California; California Dept. of Conservation, Division of Mines and Geology, Special Publication 42

ICG, Inc., 1990, Fault Hazard/Landslide Evaluation and Preliminary Geotechnical Investigation, 242± Acres Residential Development, NEC Cherry Valley Blvd., and Roberts Ave., Riverside County, California; unpublished consultant's report dated 1/2/1990,
(cited by Treiman, 1994)

Jennings, C.W., 1994, Fault Activity Map of California and Adjacent Areas, 1:750,000

Kahle, J.E., Hart E.W., Borchardt, G., Manson, M.W., 1987, Surface Rupture Associated with the North Palm Springs Earthquake of July 8, 1986 – Banning and Related Faults, Riverside County; Fault Evaluation Report FER-185, California Division of Mines And Geology

Leighton Consulting, Inc., 2004, Fault Investigation Report, Danny Thomas Ranch Portion of the Sunny-Cal Egg Ranch Project, North of Cherry Valley Blvd., East of I-10, Cherry Valley Area of Riverside County

_____, 2006, Supplemental Fault Investigation Report, Proposed Residential Development 122-Acre Site, 37300 and 37356 Cherry Valley Blvd., Calimesa Area of Riverside County, California

Matti, J.C., Morton, D.M., 1993, Paleogeographic Evolution of the San Andreas Fault in Southern California; A Reconstruction Based on a New Cross-Fault Correlation, Geological Society of America Memoir 178, 1993

Morton, D.M., Miller, F.K., 2006, Geologic Map of the San Bernardino and Santa Ana 30'x60' Quadrangles, California, USGS, p. 194

Neblett & Associates, Inc., 2008 Fault Investigation, Tent. Tr. 30545, GEO No. 1442, Cherry Valley Area, County of Riverside, CA NE of Cherry Valley Blvd. and I-10

_____, 2009, Grading Plan Review, Parcel Map No. 36093, I-10 Gateway Job Center, Cherry Valley Area, County of Riverside, California, GEO No. 1442

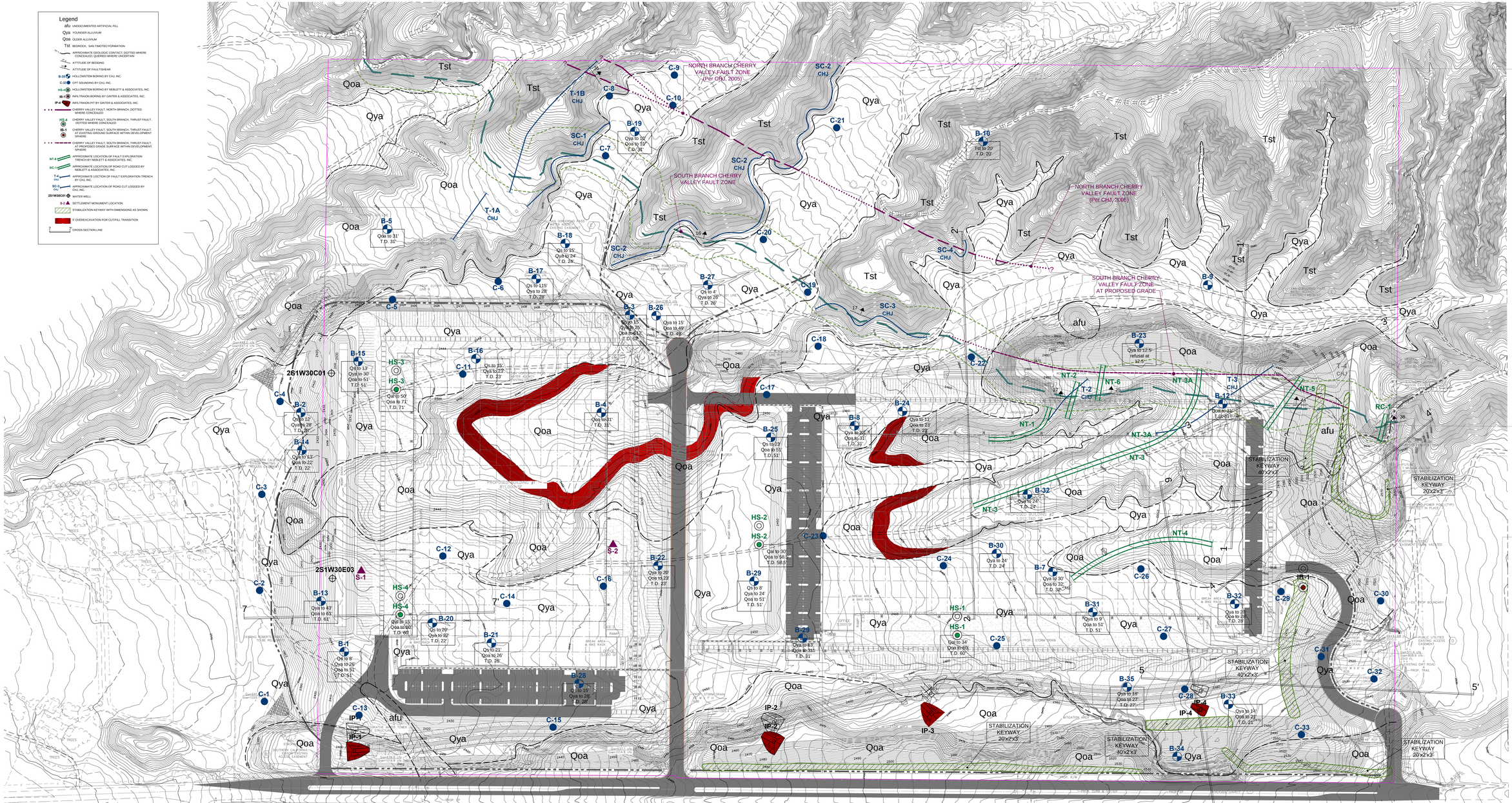
Riverside County, 2008, G15 Fault Zone Map

Riverside County Planning Department, September 4, 2013, Conditions of Approval, County Geologic Report # 1442

_____ Review Comments for County Geologic Report No. 1442, Cherry Valley, dated 4/17/13

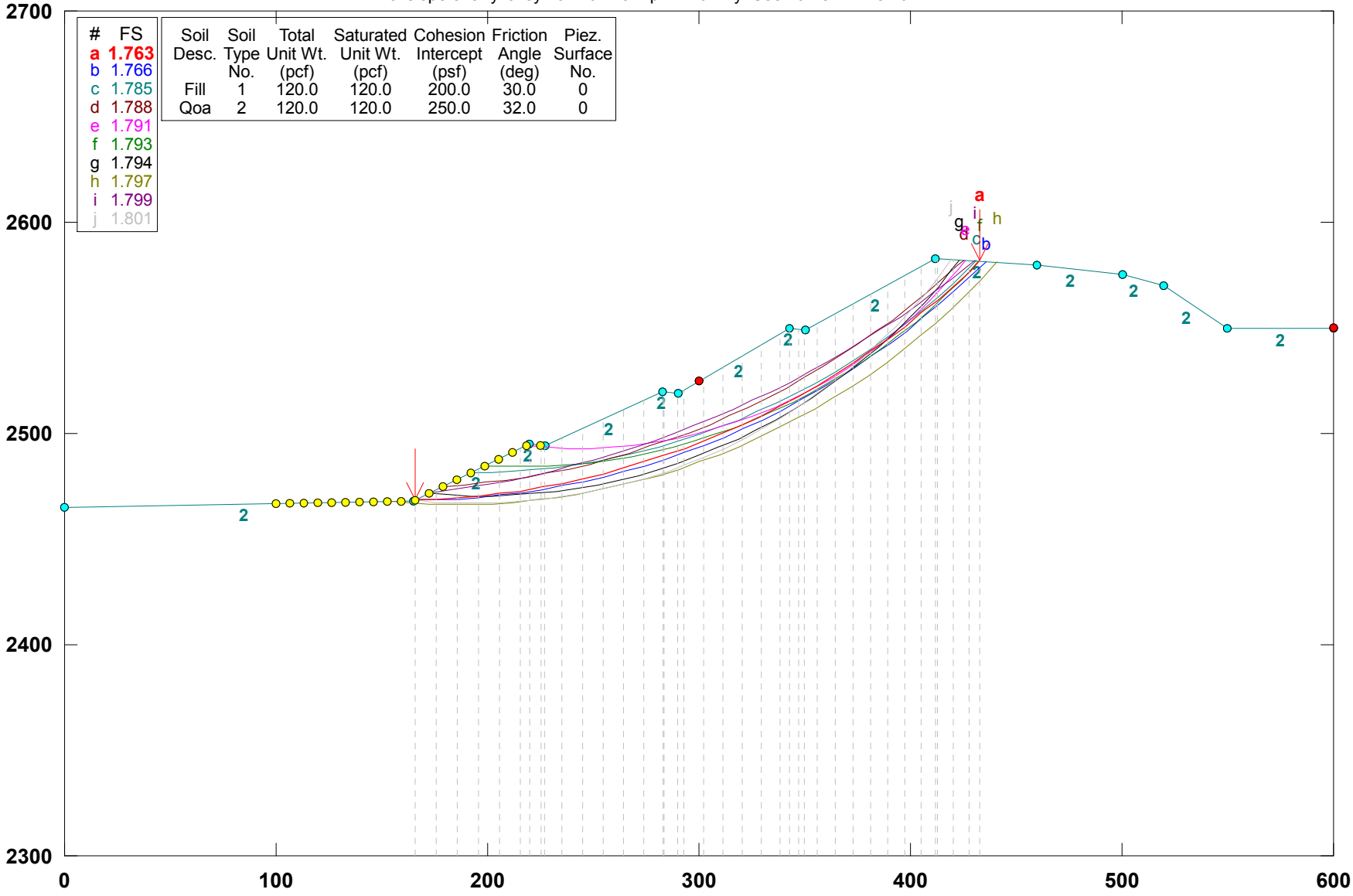
Treiman, J.A., 1994, The San Gorgonio Pass, Banning and Related Faults, Riverside County, California, California Division of Mines and Geology Fault Evaluation Report FER-235

USGS, 1954, Geology of Southern California, Bulletin 170


Legend
afu UNDOCUMENTED ARTIFICIAL FILL
Qya YOUNGER ALLUVIUM
Qoa OLDER ALLUVIUM
Tst BEDROCK, SAN TIMOTEO FORMATION
APPROXIMATE GEOLOGIC CONTACT, DOTTED WHERE CONCEALED, QUERIED WHERE UNCERTAIN
ATTITUDE OF BEDDING
ATTITUDE OF FAULT/SHEAR
B-35 HOLLOW/STEM BORING BY CHJ, INC.
C-33 CPT SOUNDING BY CHJ, INC.
HS-4 HOLLOW/STEM BORING BY NEBLETT & ASSOCIATES, INC.
IB-1 INFILTRAION BORING BY GINTER & ASSOCIATES, INC.
IP-4 INFILTRAION PIT BY GINTER & ASSOCIATES, INC.
CHERRY VALLEY FAULT, NORTH BRANCH, DOTTED WHERE CONCEALED
HS-4 CHERRY VALLEY FAULT, SOUTH BRANCH, THRUST FAULT, DOTTED WHERE CONCEALED
IB-1 CHERRY VALLEY FAULT, SOUTH BRANCH, THRUST FAULT, AT EXISTING GROUND SURFACE WITHIN DEVELOPMENT SPHERE
CHERRY VALLEY FAULT, SOUTH BRANCH, THRUST FAULT, AT PROPOSED GRADE SURFACE WITHIN DEVELOPMENT SPHERE
NT-4 APPROXIMATE LOCATION OF FAULT EXPLORATION TRENCH BY NEBLETT & ASSOCIATES, INC.
RC-1 APPROXIMATE LOCATION OF ROAD CUT LOGGED BY NEBLETT & ASSOCIATES, INC.
T-4 APPROXIMATE LOCTION OF FAULT EXPLORATION TRENCH BY CHJ, INC.
SC-3 APPROXIMATE LOCATION OF ROAD CUT LOGGED BY CHJ, INC.
2S1W30C01 WATER WELL
S-2 SETTLEMENT MONUMENT LOCATION
STABILIZATION KEYWAY WITH DIMENSIONS AS SHOWN
X OVEREXCAVATION FOR CUT/FILL TRANSITION
7 7' CROSS-SECTION LINE
NORTH BRANCH CHERRY VALLEY FAULT ZONE (Per CHJ, 2005)
SOUTH BRANCH CHERRY VALLEY FAULT ZONE
SOUTH BRANCH CHERRY VALLEY FAULT ZONE AT PROPOSED GRADE
STABILIZATION KEYWAY 40'X2'x3'
STABILIZATION KEYWAY 20'x2'x3'
PROJECT NO. 105-05
DATE 11-24-14
Figure 1
GEOTECHNICAL MAP
CVAR_09905

Section 3-3', I-10 Gateway Center, Cut Slope in Qoa, PN: 105-03, Static

c:\slope\cherryvalley\nov 2014\3-1.pl2 Run By: Username 11/18/2014 12:42PM



Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Fill	1	120.0	120.0	200.0	30.0	0
Qoa	2	120.0	120.0	250.0	32.0	0

GSTABL7 v.2 FSmin=1.763

Safety Factors Are Calculated By The Modified Bishop Method

CVAR_09906

***** GSTABL7 *****

** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
** Original Version 1.0, January 1996; Current Ver. 2.005.2, Jan. 2011 **
(All Rights Reserved-Unauthorized Use Prohibited)

****

SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 11/18/2014
Time of Run: 12:42PM
Run By: Username
Input Data Filename: C:\SLOPE\CherryValley\Nov 2014\3-1.in
Output Filename: C:\SLOPE\CherryValley\Nov 2014\3-1.OUT
Unit System: English
Plotted Output Filename: C:\SLOPE\CherryValley\Nov 2014\3-1.PLT
PROBLEM DESCRIPTION: Section 3-3', I-10 Gateway Center, Cut Slope in Qoa, PN: 105-03, Static

BOUNDARY COORDINATES
13 Top Boundaries
13 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	2465.00	165.00	2468.00	2
2	165.00	2468.00	220.00	2495.00	2
3	220.00	2495.00	227.00	2494.00	2
4	227.00	2494.00	283.00	2520.00	2
5	283.00	2520.00	290.00	2519.00	2
6	290.00	2519.00	343.00	2550.00	2
7	343.00	2550.00	350.00	2549.00	2
8	350.00	2549.00	412.00	2583.00	2
9	412.00	2583.00	460.00	2580.00	2
10	460.00	2580.00	500.00	2575.00	2
11	500.00	2575.00	520.00	2570.00	2
12	520.00	2570.00	550.00	2550.00	2
13	550.00	2550.00	600.00	2550.00	2

User Specified Y-Origin = 2300.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	200.0	30.0	0.00	0.0	0
2	120.0	120.0	250.0	32.0	0.00	0.0	0

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.
4000 Trial Surfaces Have Been Generated.
200 Surface(s) Initiate(s) From Each Of 20 Points Equally Spaced Along The Ground Surface Between X = 100.00(ft)
and X = 225.00(ft)
Each Surface Terminates Between X = 300.00(ft)
and X = 600.00(ft)
Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is Y = 0.00(ft)
10.00(ft) Line Segments Define Each Trial Failure Surface.
Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Total Number of Trial Surfaces Attempted = 4000
Number of Trial Surfaces With Valid FS = 4000
Statistical Data On All Valid FS Values:
FS Max = 6.518 FS Min = 1.763 FS Ave = 3.043

Standard Deviation = 0.890 Coefficient of Variation = 29.25 %

Failure Surface Specified By 31 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	165.789	2468.387
2	175.782	2468.780
3	185.761	2469.423
4	195.721	2470.318
5	205.655	2471.464
6	215.557	2472.859
7	225.421	2474.503
8	235.241	2476.395
9	245.009	2478.534
10	254.721	2480.918
11	264.369	2483.546
12	273.949	2486.416
13	283.453	2489.526
14	292.875	2492.875
15	302.211	2496.460
16	311.453	2500.279
17	320.596	2504.329
18	329.634	2508.609
19	338.561	2513.115
20	347.372	2517.844
21	356.061	2522.793
22	364.623	2527.960
23	373.052	2533.341
24	381.343	2538.932
25	389.490	2544.731
26	397.489	2550.732
27	405.334	2556.934
28	413.020	2563.331
29	420.543	2569.919
30	427.897	2576.695
31	433.047	2581.685

Circle Center At X = 155.215 ; Y = 2865.287 ; and Radius = 397.040

Factor of Safety

*** 1.763 ***

Individual data on the 37 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	10.0	2706.1	0.0	0.0	0.	0.	0.0	0.0	0.0
2	10.0	7952.8	0.0	0.0	0.	0.	0.0	0.0	0.0
3	10.0	12867.2	0.0	0.0	0.	0.	0.0	0.0	0.0
4	9.9	17438.9	0.0	0.0	0.	0.	0.0	0.0	0.0
5	9.9	21658.8	0.0	0.0	0.	0.	0.0	0.0	0.0
6	4.4	11025.2	0.0	0.0	0.	0.	0.0	0.0	0.0
7	5.4	13376.4	0.0	0.0	0.	0.	0.0	0.0	0.0
8	1.6	3686.3	0.0	0.0	0.	0.	0.0	0.0	0.0
9	8.2	20086.0	0.0	0.0	0.	0.	0.0	0.0	0.0
10	9.8	26526.9	0.0	0.0	0.	0.	0.0	0.0	0.0
11	9.7	29007.2	0.0	0.0	0.	0.	0.0	0.0	0.0
12	9.6	31120.7	0.0	0.0	0.	0.	0.0	0.0	0.0
13	9.6	32868.1	0.0	0.0	0.	0.	0.0	0.0	0.0
14	9.1	32586.8	0.0	0.0	0.	0.	0.0	0.0	0.0
15	0.5	1657.6	0.0	0.0	0.	0.	0.0	0.0	0.0
16	6.5	22610.4	0.0	0.0	0.	0.	0.0	0.0	0.0
17	2.9	9480.4	0.0	0.0	0.	0.	0.0	0.0	0.0
18	9.3	32200.5	0.0	0.0	0.	0.	0.0	0.0	0.0
19	9.2	33798.8	0.0	0.0	0.	0.	0.0	0.0	0.0
20	9.1	35018.4	0.0	0.0	0.	0.	0.0	0.0	0.0
21	9.0	35866.0	0.0	0.0	0.	0.	0.0	0.0	0.0
22	8.9	36349.8	0.0	0.0	0.	0.	0.0	0.0	0.0
23	4.4	18322.0	0.0	0.0	0.	0.	0.0	0.0	0.0
24	4.4	17322.4	0.0	0.0	0.	0.	0.0	0.0	0.0
25	2.6	9648.2	0.0	0.0	0.	0.	0.0	0.0	0.0
26	6.1	21525.7	0.0	0.0	0.	0.	0.0	0.0	0.0
27	8.6	30097.5	0.0	0.0	0.	0.	0.0	0.0	0.0

28	8.4	29008.8	0.0	0.0	0.	0.	0.0	0.0	0.0
29	8.3	27635.9	0.0	0.0	0.	0.	0.0	0.0	0.0
30	8.1	25996.8	0.0	0.0	0.	0.	0.0	0.0	0.0
31	8.0	24108.8	0.0	0.0	0.	0.	0.0	0.0	0.0
32	7.8	21991.2	0.0	0.0	0.	0.	0.0	0.0	0.0
33	6.7	17170.7	0.0	0.0	0.	0.	0.0	0.0	0.0
34	1.0	2455.7	0.0	0.0	0.	0.	0.0	0.0	0.0
35	7.5	14512.8	0.0	0.0	0.	0.	0.0	0.0	0.0
36	7.4	7880.6	0.0	0.0	0.	0.	0.0	0.0	0.0
37	5.1	1641.1	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 32 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	165.789	2468.387
2	175.788	2468.585
3	185.777	2469.044
4	195.751	2469.762
5	205.703	2470.739
6	215.627	2471.975
7	225.514	2473.469
8	235.360	2475.220
9	245.157	2477.226
10	254.898	2479.487
11	264.577	2482.000
12	274.187	2484.764
13	283.722	2487.777
14	293.176	2491.038
15	302.541	2494.543
16	311.812	2498.291
17	320.983	2502.279
18	330.046	2506.505
19	338.997	2510.964
20	347.828	2515.656
21	356.534	2520.575
22	365.110	2525.719
23	373.548	2531.085
24	381.844	2536.668
25	389.992	2542.466
26	397.987	2548.473
27	405.822	2554.687
28	413.493	2561.102
29	420.994	2567.715
30	428.321	2574.521
31	435.468	2581.515
32	435.485	2581.532

Circle Center At X = 163.178 ; Y = 2852.612 ; and Radius = 384.234

Factor of Safety

*** 1.766 ***

Failure Surface Specified By 28 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	192.105	2481.306
2	202.103	2481.500
3	212.091	2481.988
4	222.061	2482.771
5	232.003	2483.848
6	241.908	2485.218
7	251.769	2486.879
8	261.577	2488.831
9	271.323	2491.072
10	280.998	2493.599
11	290.595	2496.410
12	300.104	2499.504
13	309.518	2502.877
14	318.829	2506.526
15	328.027	2510.448
16	337.106	2514.640
17	346.057	2519.099
18	354.873	2523.819
19	363.545	2528.798

20	372.067	2534.031
21	380.431	2539.512
22	388.629	2545.238
23	396.655	2551.204
24	404.501	2557.404
25	412.161	2563.833
26	419.627	2570.485
27	426.894	2577.354
28	431.320	2581.792

Circle Center At X = 190.596 ; Y = 2819.875 ; and Radius = 338.573

Factor of Safety

*** 1.785 ***

Failure Surface Specified By 29 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	178.947	2474.847
2	188.916	2475.634
3	198.862	2476.671
4	208.779	2477.958
5	218.661	2479.494
6	228.500	2481.279
7	238.292	2483.310
8	248.029	2485.587
9	257.706	2488.108
10	267.317	2490.871
11	276.854	2493.876
12	286.314	2497.119
13	295.689	2500.600
14	304.973	2504.315
15	314.161	2508.262
16	323.247	2512.440
17	332.224	2516.844
18	341.088	2521.473
19	349.833	2526.324
20	358.453	2531.393
21	366.943	2536.677
22	375.297	2542.173
23	383.511	2547.877
24	391.578	2553.786
25	399.494	2559.897
26	407.254	2566.204
27	414.853	2572.705
28	422.285	2579.395
29	425.221	2582.174

Circle Center At X = 152.658 ; Y = 2871.498 ; and Radius = 397.522

Factor of Safety

*** 1.788 ***

Failure Surface Specified By 25 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	218.421	2494.225
2	228.387	2493.397
3	238.379	2492.998
4	248.379	2493.027
5	258.368	2493.486
6	268.329	2494.373
7	278.242	2495.686
8	288.090	2497.424
9	297.854	2499.582
10	307.517	2502.157
11	317.060	2505.145
12	326.467	2508.539
13	335.719	2512.334
14	344.799	2516.522
15	353.692	2521.096
16	362.380	2526.048
17	370.848	2531.367
18	379.079	2537.045
19	387.060	2543.072
20	394.774	2549.434

21	402.208	2556.122
22	409.349	2563.123
23	416.183	2570.424
24	422.697	2578.011
25	425.936	2582.129

Circle Center At X = 242.690 ; Y = 2725.967 ; and Radius = 233.009

Factor of Safety

*** 1.791 ***

Failure Surface Specified By 28 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	198.684	2484.536
2	208.679	2484.211
3	218.679	2484.225
4	228.673	2484.578
5	238.649	2485.270
6	248.596	2486.299
7	258.502	2487.665
8	268.356	2489.366
9	278.147	2491.400
10	287.863	2493.765
11	297.494	2496.458
12	307.028	2499.476
13	316.454	2502.816
14	325.761	2506.473
15	334.939	2510.443
16	343.977	2514.722
17	352.865	2519.306
18	361.592	2524.188
19	370.149	2529.363
20	378.525	2534.825
21	386.712	2540.568
22	394.699	2546.585
23	402.477	2552.870
24	410.038	2559.415
25	417.373	2566.212
26	424.473	2573.254
27	431.330	2580.532
28	432.381	2581.726

Circle Center At X = 213.287 ; Y = 2778.983 ; and Radius = 294.809

Factor of Safety

*** 1.793 ***

Failure Surface Specified By 30 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	172.368	2471.617
2	182.342	2470.884
3	192.334	2470.504
4	202.334	2470.478
5	212.329	2470.805
6	222.306	2471.486
7	232.252	2472.519
8	242.156	2473.903
9	252.005	2475.636
10	261.786	2477.717
11	271.487	2480.142
12	281.097	2482.909
13	290.603	2486.013
14	299.993	2489.452
15	309.255	2493.221
16	318.379	2497.315
17	327.352	2501.729
18	336.163	2506.458
19	344.802	2511.495
20	353.257	2516.835
21	361.518	2522.470
22	369.575	2528.394
23	377.417	2534.599
24	385.034	2541.078
25	392.418	2547.821

26	399.559	2554.822
27	406.448	2562.071
28	413.076	2569.559
29	419.435	2577.276
30	423.281	2582.295

Circle Center At X = 198.103 ; Y = 2753.031 ; and Radius = 282.588

Factor of Safety

*** 1.794 ***

Failure Surface Specified By 34 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	152.632	2467.775
2	162.602	2467.007
3	172.591	2466.530
4	182.589	2466.342
5	192.588	2466.445
6	202.581	2466.838
7	212.557	2467.522
8	222.510	2468.495
9	232.430	2469.756
10	242.309	2471.305
11	252.139	2473.140
12	261.912	2475.260
13	271.619	2477.663
14	281.252	2480.347
15	290.803	2483.309
16	300.264	2486.548
17	309.627	2490.060
18	318.884	2493.842
19	328.028	2497.892
20	337.050	2502.206
21	345.942	2506.779
22	354.699	2511.609
23	363.311	2516.692
24	371.772	2522.022
25	380.074	2527.596
26	388.211	2533.408
27	396.176	2539.455
28	403.962	2545.730
29	411.563	2552.229
30	418.971	2558.945
31	426.182	2565.874
32	433.188	2573.010
33	439.984	2580.346
34	440.734	2581.204

Circle Center At X = 184.055 ; Y = 2810.555 ; and Radius = 344.218

Factor of Safety

*** 1.797 ***

Failure Surface Specified By 30 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	172.368	2471.617
2	182.280	2472.941
3	192.164	2474.459
4	202.017	2476.173
5	211.833	2478.080
6	221.610	2480.181
7	231.343	2482.474
8	241.030	2484.959
9	250.665	2487.635
10	260.246	2490.500
11	269.768	2493.553
12	279.229	2496.794
13	288.623	2500.221
14	297.948	2503.832
15	307.200	2507.627
16	316.375	2511.604
17	325.471	2515.760
18	334.482	2520.096
19	343.406	2524.608

20	352.239	2529.296
21	360.978	2534.156
22	369.620	2539.189
23	378.160	2544.391
24	386.596	2549.760
25	394.925	2555.295
26	403.143	2560.993
27	411.247	2566.852
28	419.233	2572.870
29	427.100	2579.044
30	430.523	2581.842

Circle Center At X = 110.333 ; Y = 2974.330 ; and Radius = 506.526

Factor of Safety

*** 1.799 ***

Failure Surface Specified By 31 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	165.789	2468.387
2	175.753	2467.536
3	185.741	2467.044
4	195.740	2466.913
5	205.738	2467.143
6	215.720	2467.734
7	225.675	2468.684
8	235.589	2469.993
9	245.449	2471.659
10	255.243	2473.679
11	264.957	2476.051
12	274.580	2478.773
13	284.098	2481.839
14	293.499	2485.248
15	302.772	2488.993
16	311.903	2493.070
17	320.881	2497.474
18	329.694	2502.199
19	338.331	2507.239
20	346.781	2512.587
21	355.032	2518.237
22	363.074	2524.181
23	370.896	2530.411
24	378.488	2536.919
25	385.841	2543.697
26	392.944	2550.736
27	399.789	2558.026
28	406.366	2565.559
29	412.667	2573.324
30	418.684	2581.312
31	419.534	2582.529

Circle Center At X = 194.368 ; Y = 2744.027 ; and Radius = 277.117

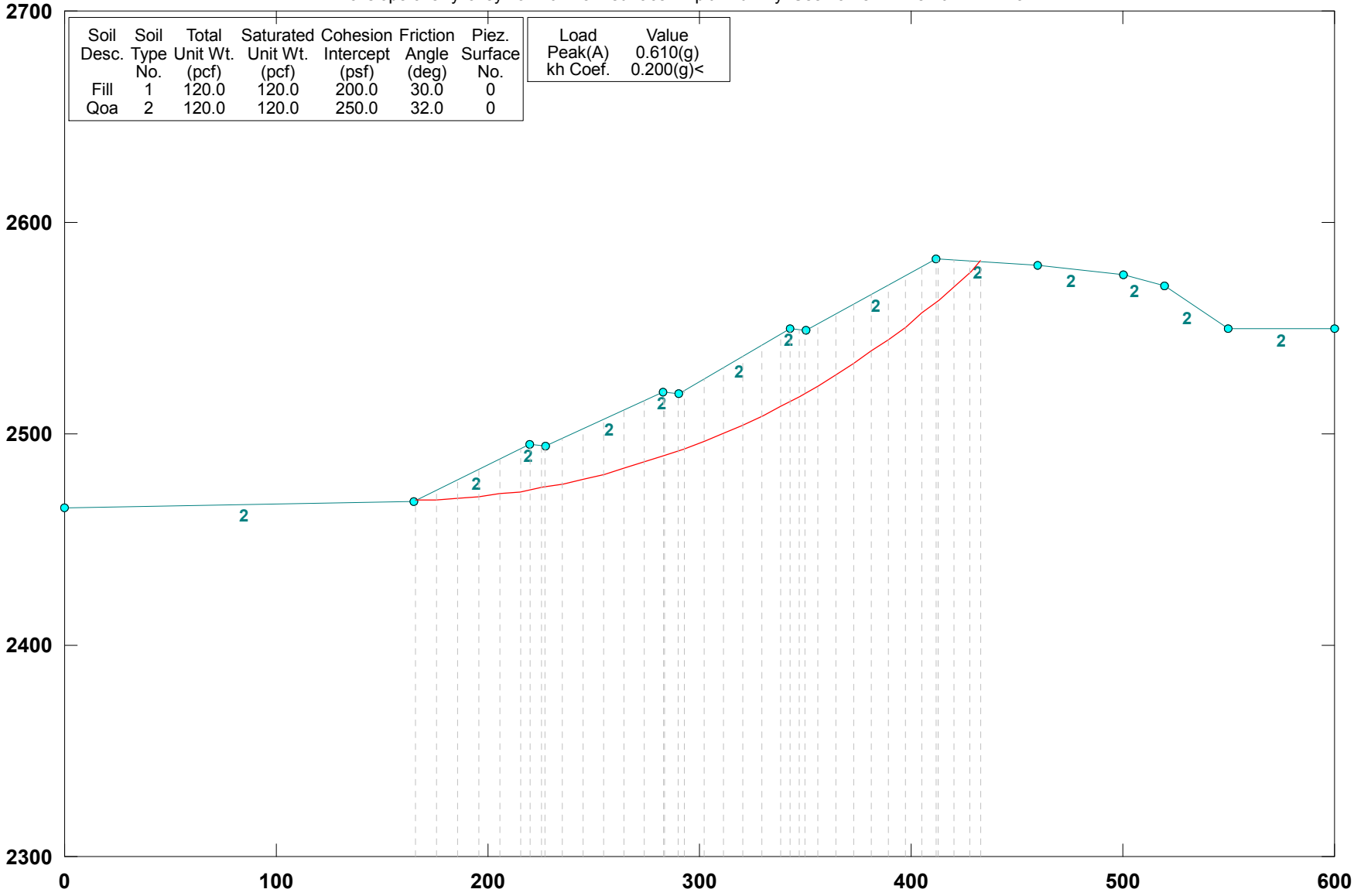
Factor of Safety

*** 1.801 ***

**** END OF GSTABL7 OUTPUT ****

Section 3-3', I-10 Gateway Center, Cut Slope in Qoa, PN: 105-03, Pseudostatic

c:\slope\cherryvalley\nov 2014\3-1 surface #1.plt Run By: Username 11/18/2014 12:43PM



Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Fill	1	120.0	120.0	200.0	30.0	0
Qoa	2	120.0	120.0	250.0	32.0	0

Load	Value
Peak(A)	0.610(g)
kh Coef.	0.200(g)<

GSTABL7 v.2 FSmin=1.137

Factor Of Safety Is Calculated By The Modified Bishop Method

CVAR_09914

***** GSTABL7 *****

** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
** Original Version 1.0, January 1996; Current Ver. 2.005.2, Jan. 2011 **
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SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

Analysis Run Date: 11/18/2014
Time of Run: 12:43PM
Run By: Username
Input Data Filename: C:\SLOPE\CherryValley\Nov 2014\3-1 Surface #1.in
Output Filename: C:\SLOPE\CherryValley\Nov 2014\3-1 Surface #1.OUT
Unit System: English
Plotted Output Filename: C:\SLOPE\CherryValley\Nov 2014\3-1 Surface #1.PLT
PROBLEM DESCRIPTION: Section 3-3', I-10 Gateway Center, Cut Slope in Qoa, PN: 105-03, Pseudostatic

BOUNDARY COORDINATES
13 Top Boundaries
13 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	2465.00	165.00	2468.00	2
2	165.00	2468.00	220.00	2495.00	2
3	220.00	2495.00	227.00	2494.00	2
4	227.00	2494.00	283.00	2520.00	2
5	283.00	2520.00	290.00	2519.00	2
6	290.00	2519.00	343.00	2550.00	2
7	343.00	2550.00	350.00	2549.00	2
8	350.00	2549.00	412.00	2583.00	2
9	412.00	2583.00	460.00	2580.00	2
10	460.00	2580.00	500.00	2575.00	2
11	500.00	2575.00	520.00	2570.00	2
12	520.00	2570.00	550.00	2550.00	2
13	550.00	2550.00	600.00	2550.00	2

User Specified Y-Origin = 2300.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	200.0	30.0	0.00	0.0	0
2	120.0	120.0	250.0	32.0	0.00	0.0	0

Specified Peak Ground Acceleration Coefficient (A) = 0.610(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.200(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
Trial Failure Surface Specified By 31 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	165.789	2468.387
2	175.782	2468.780
3	185.761	2469.423
4	195.721	2470.318
5	205.655	2471.464
6	215.557	2472.859
7	225.421	2474.503
8	235.241	2476.395
9	245.009	2478.534
10	254.721	2480.918
11	264.369	2483.546
12	273.949	2486.416
13	283.453	2489.526

14	292.875	2492.875
15	302.211	2496.460
16	311.453	2500.279
17	320.596	2504.329
18	329.634	2508.609
19	338.561	2513.115
20	347.372	2517.844
21	356.061	2522.793
22	364.623	2527.960
23	373.052	2533.341
24	381.343	2538.932
25	389.490	2544.731
26	397.489	2550.732
27	405.334	2556.934
28	413.020	2563.331
29	420.543	2569.919
30	427.897	2576.695
31	433.047	2581.685

DEFLECTION ANGLE & SEGMENT DATA FOR SPECIFIED SURFACE(Excluding Last Segment)

Angle/Segment No.	Deflection(Deg)	Segment Length(ft)
1	1.43	10.00
2	1.45	10.00
3	1.44	10.00
4	1.44	10.00
5	1.44	10.00
6	1.44	10.00
7	1.45	10.00
8	1.44	10.00
9	1.45	10.00
10	1.44	10.00
11	1.44	10.00
12	1.45	10.00
13	1.44	10.00
14	1.45	10.00
15	1.44	10.00
16	1.45	10.00
17	1.44	10.00
18	1.44	10.00
19	1.44	10.00
20	1.45	10.00
21	1.44	10.00
22	1.44	10.00
23	1.45	10.00
24	1.43	10.00
25	1.45	10.00
26	1.44	10.00
27	1.44	10.00
28	1.45	10.00

Circle Center At X = 155.216(ft) ; Y = 2865.283(ft); and Radius = 397.037(ft)

* * Factor Of Safety Is Calculated By The Modified Bishop Method * *

Factor Of Safety For The Preceding Specified Surface = 1.137

Table 1 - Individual Data on the 37 Slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	10.0	2706.0	0.0	0.0	0.0	0.0	541.2	0.0	0.0
2	10.0	7952.3	0.0	0.0	0.0	0.0	1590.5	0.0	0.0
3	10.0	12867.7	0.0	0.0	0.0	0.0	2573.5	0.0	0.0
4	9.9	17438.3	0.0	0.0	0.0	0.0	3487.7	0.0	0.0
5	9.9	21657.8	0.0	0.0	0.0	0.0	4331.6	0.0	0.0
6	4.4	11025.8	0.0	0.0	0.0	0.0	2205.2	0.0	0.0
7	5.4	13375.7	0.0	0.0	0.0	0.0	2675.1	0.0	0.0
8	1.6	3686.8	0.0	0.0	0.0	0.0	737.4	0.0	0.0
9	8.2	20086.9	0.0	0.0	0.0	0.0	4017.4	0.0	0.0
10	9.8	26525.3	0.0	0.0	0.0	0.0	5305.1	0.0	0.0
11	9.7	29007.7	0.0	0.0	0.0	0.0	5801.5	0.0	0.0
12	9.6	31118.4	0.0	0.0	0.0	0.0	6223.7	0.0	0.0
13	9.6	32870.3	0.0	0.0	0.0	0.0	6574.1	0.0	0.0
14	9.1	32585.7	0.0	0.0	0.0	0.0	6517.1	0.0	0.0

15	0.5	1658.7	0.0	0.0	0.0	0.0	331.7	0.0	0.0
16	6.5	22609.1	0.0	0.0	0.0	0.0	4521.8	0.0	0.0
17	2.9	9479.5	0.0	0.0	0.0	0.0	1895.9	0.0	0.0
18	9.3	32203.0	0.0	0.0	0.0	0.0	6440.6	0.0	0.0
19	9.2	33798.4	0.0	0.0	0.0	0.0	6759.7	0.0	0.0
20	9.1	35019.3	0.0	0.0	0.0	0.0	7003.9	0.0	0.0
21	9.0	35866.4	0.0	0.0	0.0	0.0	7173.3	0.0	0.0
22	8.9	36348.2	0.0	0.0	0.0	0.0	7269.6	0.0	0.0
23	4.4	18321.9	0.0	0.0	0.0	0.0	3664.4	0.0	0.0
24	4.4	17322.1	0.0	0.0	0.0	0.0	3464.4	0.0	0.0
25	2.6	9648.5	0.0	0.0	0.0	0.0	1929.7	0.0	0.0
26	6.1	21525.0	0.0	0.0	0.0	0.0	4305.0	0.0	0.0
27	8.6	30098.7	0.0	0.0	0.0	0.0	6019.7	0.0	0.0
28	8.4	29009.2	0.0	0.0	0.0	0.0	5801.8	0.0	0.0
29	8.3	27637.2	0.0	0.0	0.0	0.0	5527.4	0.0	0.0
30	8.1	25995.8	0.0	0.0	0.0	0.0	5199.2	0.0	0.0
31	8.0	24109.9	0.0	0.0	0.0	0.0	4822.0	0.0	0.0
32	7.8	21991.4	0.0	0.0	0.0	0.0	4398.3	0.0	0.0
33	6.7	17169.6	0.0	0.0	0.0	0.0	3433.9	0.0	0.0
34	1.0	2455.5	0.0	0.0	0.0	0.0	491.1	0.0	0.0
35	7.5	14512.9	0.0	0.0	0.0	0.0	2902.6	0.0	0.0
36	7.4	7880.0	0.0	0.0	0.0	0.0	1576.0	0.0	0.0
37	5.2	1641.1	0.0	0.0	0.0	0.0	328.2	0.0	0.0

Table 2 - Base Stress Data on the 37 Slices

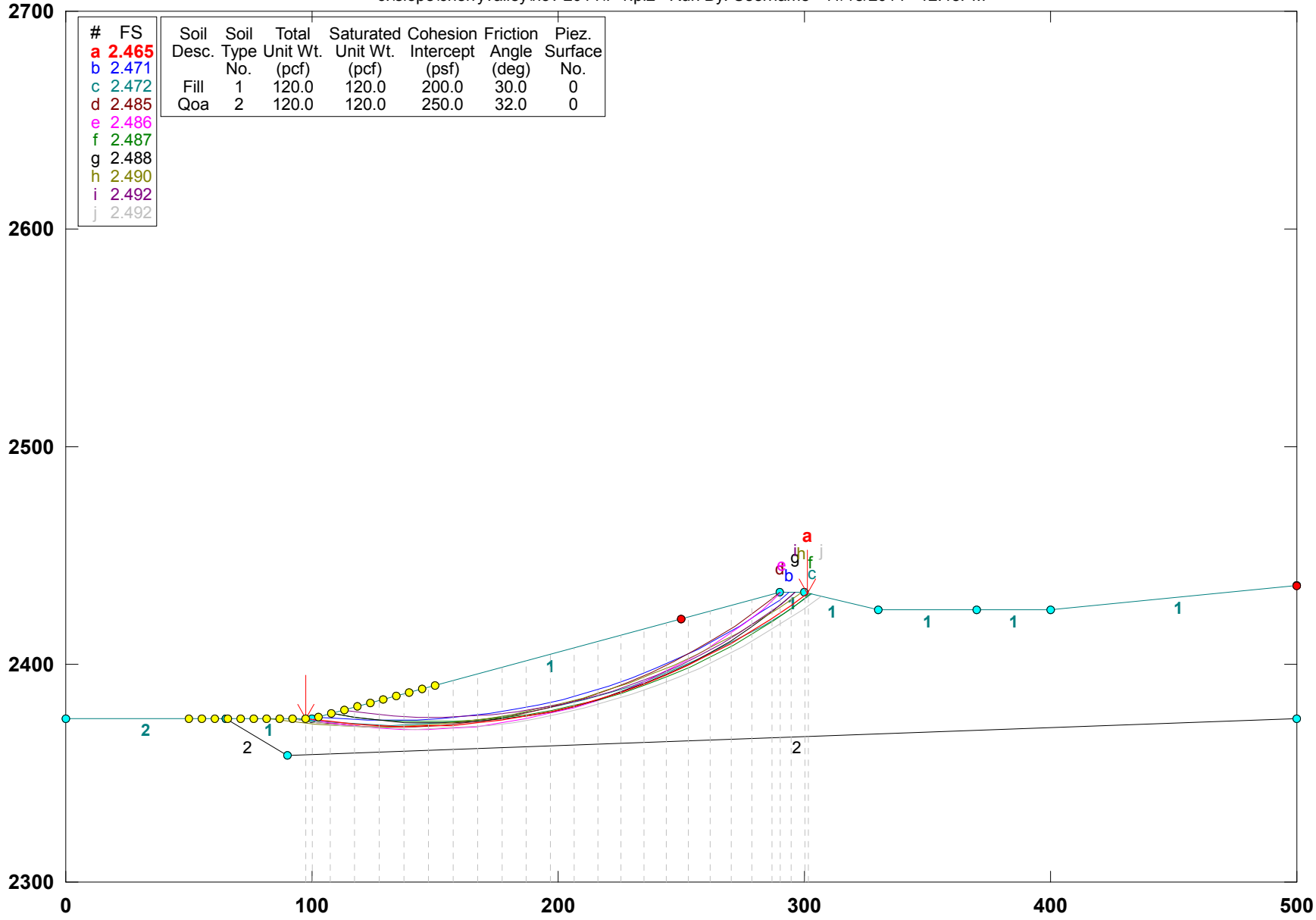
Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	2.25	170.79	10.00	410.34	64.55
2	3.69	180.77	10.00	722.38	208.51
3	5.14	190.74	10.00	1007.51	368.02
4	6.58	200.69	10.00	1266.60	539.85
5	8.02	210.61	10.00	1500.51	721.18
6	9.46	217.78	4.50	1649.59	872.54
7	9.46	222.71	5.50	1641.44	867.61
8	10.91	226.21	1.61	1545.36	872.82
9	10.91	231.12	8.39	1603.28	910.62
10	12.35	240.12	10.00	1737.70	1070.55
11	13.79	249.87	10.00	1864.75	1236.73
12	15.24	259.54	10.00	1970.41	1397.37
13	16.68	269.16	10.00	2055.54	1549.26
14	18.12	278.47	9.52	2118.60	1688.73
15	18.12	283.23	0.48	2151.24	1717.19
16	19.57	286.73	6.95	2014.35	1679.37
17	19.57	291.44	3.05	1932.74	1604.46
18	21.01	297.54	10.00	1986.16	1732.21
19	22.45	306.83	10.00	2065.93	1889.60
20	23.89	316.02	10.00	2125.76	2030.55
21	25.34	325.11	10.00	2165.94	2153.46
22	26.78	334.10	10.00	2187.41	2255.83
23	28.22	340.78	5.04	2184.64	2329.24
24	28.22	345.19	4.96	2104.81	2237.09
25	29.66	348.69	3.02	1937.58	2108.77
26	29.66	353.03	6.98	1880.44	2040.59
27	31.11	360.34	10.00	1837.23	2048.29
28	32.55	368.84	10.00	1776.99	2029.01
29	33.99	377.20	10.00	1702.06	1984.13
30	35.44	385.42	10.00	1612.83	1913.62
31	36.88	393.49	10.00	1510.54	1817.37
32	38.33	401.41	10.00	1395.33	1695.86
33	39.77	408.67	8.67	1275.80	1560.07
34	39.77	412.51	1.33	1203.64	1458.78
35	41.21	416.78	10.00	982.53	1168.63
36	42.66	424.22	10.00	610.41	648.11
37	44.09	430.47	7.17	293.06	191.97

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 473742.28 (lbs)
Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 1594.17(psf)
Sum of the Driving Forces = 416726.72 (lbs)
Average Mobilized Shear Stress = 1402.31(psf)

```
Total length of the failure surface =     297.17(ft)
CAUTION - Factor Of Safety Is Calculated By The Modified Bishop
          Method. This Method Is Valid Only If The Failure Surface
          Approximates A Circular Arc.
        *** SEISMIC SLOPE DISPLACEMENT DATA ***
(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) =  0.2707(g)
Calculated Newmark Seismic Displacement =   0.301(ft)
Non-Symmetrical Sliding Resistance Has Been Specified
for Downhill Sliding.
              **** END OF GSTABL7 OUTPUT ****
```

Section7-7', I-10 Gateway Center, Fill Slope, PN: 105-03, Static

c:\slope\cherryvalley\nov 2014\7-1.pl2 Run By: Username 11/18/2014 12:48PM



GSTABL7 v.2 FSmin=2.465

Safety Factors Are Calculated By The Modified Bishop Method

CVAR_09919

***** GSTABL7 *****

** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
** Original Version 1.0, January 1996; Current Ver. 2.005.2, Jan. 2011 **
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SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

****

Analysis Run Date: 11/18/2014
Time of Run: 12:48PM
Run By: Username
Input Data Filename: C:\SLOPE\CherryValley\Nov 2014\7-1.in
Output Filename: C:\SLOPE\CherryValley\Nov 2014\7-1.OUT
Unit System: English
Plotted Output Filename: C:\SLOPE\CherryValley\Nov 2014\7-1.PLT
PROBLEM DESCRIPTION: Section7-7', I-10 Gateway Center, Fill Slope, PN: 105-03, Static

BOUNDARY COORDINATES
8 Top Boundaries
10 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	2375.00	65.00	2375.00	2
2	65.00	2375.00	100.00	2375.00	1
3	100.00	2375.00	290.00	2433.00	1
4	290.00	2433.00	300.00	2433.00	1
5	300.00	2433.00	330.00	2425.00	1
6	330.00	2425.00	370.00	2425.00	1
7	370.00	2425.00	400.00	2425.00	1
8	400.00	2425.00	500.00	2436.00	1
9	65.00	2375.00	90.00	2358.00	2
10	90.00	2358.00	500.00	2375.00	2

User Specified Y-Origin = 2300.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	200.0	30.0	0.00	0.0	0
2	120.0	120.0	250.0	32.0	0.00	0.0	0

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.
4000 Trial Surfaces Have Been Generated.
200 Surface(s) Initiate(s) From Each Of 20 Points Equally Spaced
Along The Ground Surface Between X = 50.00(ft)
and X = 150.00(ft)
Each Surface Terminates Between X = 250.00(ft)
and X = 500.00(ft)
Unless Further Limitations Were Imposed, The Minimum Elevation
At Which A Surface Extends Is Y = 0.00(ft)
10.00(ft) Line Segments Define Each Trial Failure Surface.
Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Evaluated. They Are Ordered - Most Critical First.
* * Safety Factors Are Calculated By The Modified Bishop Method * *
Total Number of Trial Surfaces Attempted = 4000
Number of Trial Surfaces With Valid FS = 4000
Statistical Data On All Valid FS Values:
FS Max = 9.706 FS Min = 2.465 FS Ave = 4.537
Standard Deviation = 1.493 Coefficient of Variation = 32.92 %
Failure Surface Specified By 23 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)

1	97.368	2375.000
2	107.259	2373.522
3	117.201	2372.446
4	127.178	2371.772
5	137.174	2371.504
6	147.173	2371.640
7	157.159	2372.181
8	167.114	2373.126
9	177.023	2374.473
10	186.869	2376.219
11	196.636	2378.364
12	206.309	2380.901
13	215.871	2383.828
14	225.307	2387.140
15	234.601	2390.831
16	243.738	2394.896
17	252.702	2399.326
18	261.480	2404.116
19	270.057	2409.258
20	278.419	2414.742
21	286.552	2420.561
22	294.443	2426.703
23	301.436	2432.617

Circle Center At X = 138.809 ; Y = 2618.482 ; and Radius = 246.984

Factor of Safety

*** 2.465 ***

Individual data on the 25 slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	2.6	62.1	0.0	0.0	0.	0.	0.0	0.0	0.0
2	7.3	1779.9	0.0	0.0	0.	0.	0.0	0.0	0.0
3	9.9	6859.0	0.0	0.0	0.	0.	0.0	0.0	0.0
4	10.0	11571.2	0.0	0.0	0.	0.	0.0	0.0	0.0
5	10.0	15815.2	0.0	0.0	0.	0.	0.0	0.0	0.0
6	10.0	19560.6	0.0	0.0	0.	0.	0.0	0.0	0.0
7	10.0	22783.0	0.0	0.0	0.	0.	0.0	0.0	0.0
8	10.0	25463.2	0.0	0.0	0.	0.	0.0	0.0	0.0
9	9.9	27586.8	0.0	0.0	0.	0.	0.0	0.0	0.0
10	9.8	29147.8	0.0	0.0	0.	0.	0.0	0.0	0.0
11	9.8	30143.0	0.0	0.0	0.	0.	0.0	0.0	0.0
12	9.7	30577.4	0.0	0.0	0.	0.	0.0	0.0	0.0
13	9.6	30460.9	0.0	0.0	0.	0.	0.0	0.0	0.0
14	9.4	29809.4	0.0	0.0	0.	0.	0.0	0.0	0.0
15	9.3	28645.1	0.0	0.0	0.	0.	0.0	0.0	0.0
16	9.1	26993.4	0.0	0.0	0.	0.	0.0	0.0	0.0
17	9.0	24888.4	0.0	0.0	0.	0.	0.0	0.0	0.0
18	8.8	22365.9	0.0	0.0	0.	0.	0.0	0.0	0.0
19	8.6	19469.4	0.0	0.0	0.	0.	0.0	0.0	0.0
20	8.4	16243.9	0.0	0.0	0.	0.	0.0	0.0	0.0
21	8.1	12741.1	0.0	0.0	0.	0.	0.0	0.0	0.0
22	3.4	4373.6	0.0	0.0	0.	0.	0.0	0.0	0.0
23	4.4	4279.3	0.0	0.0	0.	0.	0.0	0.0	0.0
24	5.6	2632.0	0.0	0.0	0.	0.	0.0	0.0	0.0
25	1.4	137.6	0.0	0.0	0.	0.	0.0	0.0	0.0

Failure Surface Specified By 22 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	102.632	2375.803
2	112.585	2374.842
3	122.569	2374.275
4	132.568	2374.104
5	142.565	2374.329
6	152.546	2374.949
7	162.494	2375.964
8	172.395	2377.372
9	182.232	2379.170
10	191.990	2381.357
11	201.654	2383.928

12	211.208	2386.879
13	220.638	2390.207
14	229.929	2393.905
15	239.067	2397.968
16	248.036	2402.389
17	256.824	2407.162
18	265.416	2412.279
19	273.798	2417.731
20	281.958	2423.512
21	289.883	2429.611
22	293.944	2433.000

Circle Center At X = 131.914 ; Y = 2626.410 ; and Radius = 252.311

Factor of Safety

*** 2.471 ***

Failure Surface Specified By 24 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	92.105	2375.000
2	102.026	2373.743
3	111.986	2372.849
4	121.972	2372.318
5	131.970	2372.150
6	141.968	2372.347
7	151.953	2372.908
8	161.910	2373.833
9	171.827	2375.119
10	181.690	2376.765
11	191.487	2378.770
12	201.205	2381.130
13	210.830	2383.843
14	220.350	2386.904
15	229.752	2390.310
16	239.024	2394.056
17	248.153	2398.137
18	257.128	2402.548
19	265.936	2407.282
20	274.566	2412.335
21	283.006	2417.698
22	291.245	2423.365
23	299.272	2429.329
24	302.892	2432.229

Circle Center At X = 131.577 ; Y = 2646.421 ; and Radius = 274.276

Factor of Safety

*** 2.472 ***

Failure Surface Specified By 23 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	92.105	2375.000
2	101.975	2373.394
3	111.906	2372.221
4	121.879	2371.483
5	131.875	2371.181
6	141.874	2371.316
7	151.857	2371.888
8	161.806	2372.896
9	171.702	2374.338
10	181.525	2376.210
11	191.257	2378.510
12	200.879	2381.233
13	210.373	2384.373
14	219.721	2387.926
15	228.905	2391.883
16	237.906	2396.238
17	246.709	2400.982
18	255.297	2406.107
19	263.652	2411.601
20	271.759	2417.456
21	279.603	2423.658
22	287.168	2430.198
23	290.136	2433.000

Circle Center At X = 133.779 ; Y = 2599.992 ; and Radius = 228.819

Factor of Safety

*** 2.485 ***

Failure Surface Specified By 23 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	97.368	2375.000
2	107.177	2373.053
3	117.069	2371.584
4	127.020	2370.596
5	137.007	2370.091
6	147.007	2370.071
7	156.996	2370.535
8	166.951	2371.483
9	176.848	2372.912
10	186.665	2374.819
11	196.377	2377.199
12	205.963	2380.048
13	215.400	2383.357
14	224.665	2387.120
15	233.736	2391.328
16	242.594	2395.970
17	251.216	2401.036
18	259.582	2406.514
19	267.673	2412.390
20	275.470	2418.652
21	282.954	2425.285
22	290.108	2432.272
23	290.784	2433.000

Circle Center At X = 142.425 ; Y = 2576.322 ; and Radius = 206.302

Factor of Safety

*** 2.486 ***

Failure Surface Specified By 22 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	107.895	2377.410
2	117.765	2375.807
3	127.697	2374.638
4	137.670	2373.904
5	147.665	2373.607
6	157.664	2373.748
7	167.648	2374.326
8	177.596	2375.340
9	187.491	2376.789
10	197.312	2378.669
11	207.042	2380.977
12	216.662	2383.708
13	226.153	2386.858
14	235.497	2390.420
15	244.677	2394.387
16	253.674	2398.753
17	262.471	2403.507
18	271.052	2408.642
19	279.400	2414.148
20	287.499	2420.013
21	295.334	2426.227
22	302.405	2432.359

Circle Center At X = 149.451 ; Y = 2602.052 ; and Radius = 228.454

Factor of Safety

*** 2.487 ***

Failure Surface Specified By 22 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	107.895	2377.410
2	117.730	2375.604
3	127.641	2374.274
4	137.605	2373.422
5	147.598	2373.051
6	157.598	2373.161
7	167.580	2373.752

8	177.523	2374.823
9	187.402	2376.371
10	197.195	2378.393
11	206.880	2380.884
12	216.434	2383.838
13	225.834	2387.249
14	235.060	2391.108
15	244.089	2395.407
16	252.900	2400.135
17	261.474	2405.282
18	269.790	2410.835
19	277.830	2416.782
20	285.573	2423.110
21	293.003	2429.802
22	296.227	2433.000

Circle Center At X = 150.320 ; Y = 2580.495 ; and Radius = 207.470

Factor of Safety

*** 2.488 ***

Failure Surface Specified By 25 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	81.579	2375.000
2	91.476	2373.567
3	101.418	2372.496
4	111.393	2371.788
5	121.387	2371.443
6	131.387	2371.463
7	141.380	2371.847
8	151.352	2372.595
9	161.290	2373.706
10	171.181	2375.178
11	181.012	2377.010
12	190.769	2379.198
13	200.441	2381.741
14	210.013	2384.634
15	219.474	2387.874
16	228.810	2391.457
17	238.009	2395.377
18	247.060	2399.630
19	255.950	2404.210
20	264.666	2409.111
21	273.199	2414.326
22	281.536	2419.848
23	289.666	2425.671
24	297.579	2431.785
25	299.037	2433.000

Circle Center At X = 125.841 ; Y = 2645.838 ; and Radius = 274.431

Factor of Safety

*** 2.490 ***

Failure Surface Specified By 21 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	113.158	2379.017
2	123.037	2377.467
3	132.978	2376.384
4	142.959	2375.769
5	152.958	2375.625
6	162.953	2375.951
7	172.921	2376.747
8	182.841	2378.010
9	192.691	2379.739
10	202.448	2381.929
11	212.091	2384.576
12	221.600	2387.673
13	230.952	2391.214
14	240.127	2395.191
15	249.105	2399.594
16	257.866	2404.416
17	266.391	2409.644
18	274.660	2415.267

19	282.655	2421.273
20	290.360	2427.648
21	296.241	2433.000

Circle Center At X = 151.027 ; Y = 2588.187 ; and Radius = 212.571

Factor of Safety

*** 2.492 ***

Failure Surface Specified By 24 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	92.105	2375.000
2	101.953	2373.261
3	111.861	2371.911
4	121.815	2370.951
5	131.799	2370.383
6	141.798	2370.208
7	151.795	2370.425
8	161.776	2371.036
9	171.726	2372.038
10	181.629	2373.431
11	191.469	2375.211
12	201.232	2377.377
13	210.902	2379.925
14	220.464	2382.851
15	229.904	2386.150
16	239.207	2389.818
17	248.359	2393.848
18	257.345	2398.235
19	266.152	2402.972
20	274.766	2408.051
21	283.174	2413.465
22	291.362	2419.205
23	299.319	2425.262
24	306.571	2431.248

Circle Center At X = 141.258 ; Y = 2624.575 ; and Radius = 254.369

Factor of Safety

*** 2.492 ***

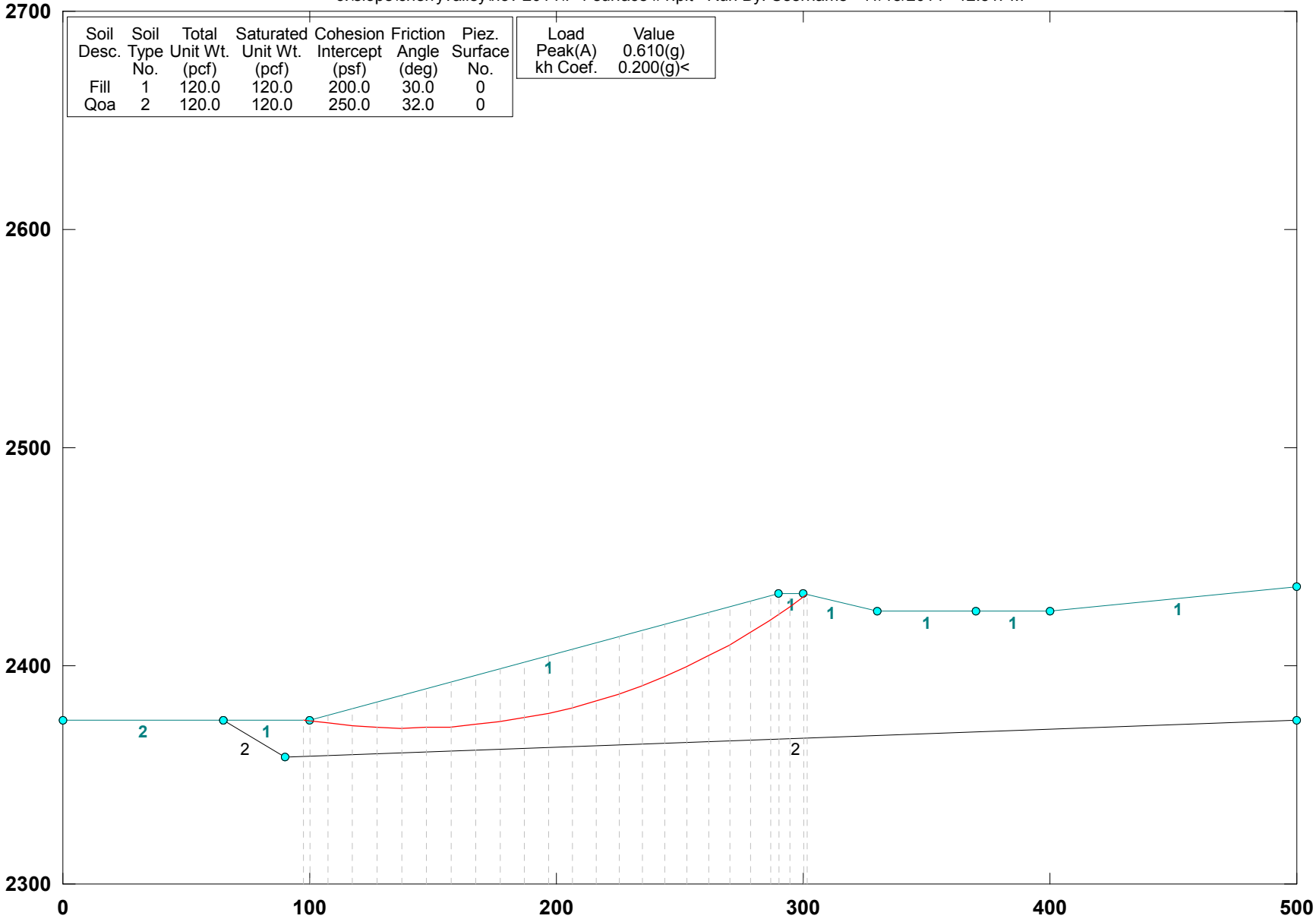
**** END OF GSTABL7 OUTPUT ****

Section7-7', I-10 Gateway Center, Fill Slope, PN: 105-03, Pseudostatic

c:\slope\cherryvalley\nov 2014\7-1 surface #1.plt Run By: Username 11/18/2014 12:51PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Fill	1	120.0	120.0	200.0	30.0	0
Qoa	2	120.0	120.0	250.0	32.0	0

Load	Value
Peak(A)	0.610(g)
kh Coef.	0.200(g)<



GSTABL7 v.2 FSmin=1.416

Factor Of Safety Is Calculated By The Modified Bishop Method

CVAR_09926

***** GSTABL7 *****

** GSTABL7 by Dr. Garry H. Gregory, Ph.D.,P.E.,D.GE **
** Original Version 1.0, January 1996; Current Ver. 2.005.2, Jan. 2011 **
(All Rights Reserved-Unauthorized Use Prohibited)

SLOPE STABILITY ANALYSIS SYSTEM
Modified Bishop, Simplified Janbu, or GLE Method of Slices.
(Includes Spencer & Morgenstern-Price Type Analysis)
Including Pier/Pile, Reinforcement, Soil Nail, Tieback,
Nonlinear Undrained Shear Strength, Curved Phi Envelope,
Anisotropic Soil, Fiber-Reinforced Soil, Boundary Loads, Water
Surfaces, Pseudo-Static & Newmark Earthquake, and Applied Forces.

Analysis Run Date: 11/18/2014
Time of Run: 12:51PM
Run By: Username
Input Data Filename: C:\SLOPE\CherryValley\Nov 2014\7-1 Surface #1.in
Output Filename: C:\SLOPE\CherryValley\Nov 2014\7-1 Surface #1.OUT
Unit System: English
Plotted Output Filename: C:\SLOPE\CherryValley\Nov 2014\7-1 Surface #1.PLT
PROBLEM DESCRIPTION: Section7-7', I-10 Gateway Center, Fill Slope, PN: 105-03, Pseudostatic

BOUNDARY COORDINATES
8 Top Boundaries
10 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	0.00	2375.00	65.00	2375.00	2
2	65.00	2375.00	100.00	2375.00	1
3	100.00	2375.00	290.00	2433.00	1
4	290.00	2433.00	300.00	2433.00	1
5	300.00	2433.00	330.00	2425.00	1
6	330.00	2425.00	370.00	2425.00	1
7	370.00	2425.00	400.00	2425.00	1
8	400.00	2425.00	500.00	2436.00	1
9	65.00	2375.00	90.00	2358.00	2
10	90.00	2358.00	500.00	2375.00	2

User Specified Y-Origin = 2300.00(ft)
Default X-Plus Value = 0.00(ft)
Default Y-Plus Value = 0.00(ft)

ISOTROPIC SOIL PARAMETERS
2 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	120.0	120.0	200.0	30.0	0.00	0.0	0
2	120.0	120.0	250.0	32.0	0.00	0.0	0

Specified Peak Ground Acceleration Coefficient (A) = 0.610(g)
Specified Horizontal Earthquake Coefficient (kh) = 0.200(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
Specified Seismic Pore-Pressure Factor = 0.000
Trial Failure Surface Specified By 23 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	97.368	2375.000
2	107.259	2373.522
3	117.201	2372.446
4	127.178	2371.772
5	137.174	2371.504
6	147.173	2371.640
7	157.159	2372.181
8	167.114	2373.126
9	177.023	2374.473
10	186.869	2376.219
11	196.636	2378.364
12	206.309	2380.901
13	215.871	2383.828
14	225.307	2387.140
15	234.601	2390.831
16	243.738	2394.896

17	252.702	2399.326
18	261.480	2404.116
19	270.057	2409.258
20	278.419	2414.742
21	286.552	2420.561
22	294.443	2426.703
23	301.436	2432.617

DEFLECTION ANGLE & SEGMENT DATA FOR SPECIFIED SURFACE(Excluding Last Segment)

Angle/Segment No.	Deflection(Deg)	Segment Length(ft)
1	2.32	10.00
2	2.31	10.00
3	2.33	10.00
4	2.32	10.00
5	2.32	10.00
6	2.32	10.00
7	2.32	10.00
8	2.32	10.00
9	2.33	10.00
10	2.31	10.00
11	2.33	10.00
12	2.32	10.00
13	2.32	10.00
14	2.33	10.00
15	2.31	10.00
16	2.32	10.00
17	2.32	10.00
18	2.31	10.00
19	2.33	10.00
20	2.31	10.00

Circle Center At X = 138.808(ft) ; Y = 2618.491(ft); and Radius = 246.992(ft)

* * Factor Of Safety Is Calculated By The Modified Bishop Method * *

Factor Of Safety For The Preceding Specified Surface = 1.416

Table 1 - Individual Data on the 25 Slices

Slice No.	Width (ft)	Weight (lbs)	Water Force Top (lbs)	Water Force Bot (lbs)	Tie Force Norm (lbs)	Tie Force Tan (lbs)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Surcharge Load (lbs)
1	2.6	62.1	0.0	0.0	0.0	0.0	12.4	0.0	0.0
2	7.3	1780.0	0.0	0.0	0.0	0.0	356.0	0.0	0.0
3	9.9	6859.1	0.0	0.0	0.0	0.0	1371.8	0.0	0.0
4	10.0	11571.1	0.0	0.0	0.0	0.0	2314.2	0.0	0.0
5	10.0	15814.9	0.0	0.0	0.0	0.0	3163.0	0.0	0.0
6	10.0	19560.5	0.0	0.0	0.0	0.0	3912.1	0.0	0.0
7	10.0	22784.4	0.0	0.0	0.0	0.0	4556.9	0.0	0.0
8	10.0	25461.9	0.0	0.0	0.0	0.0	5092.4	0.0	0.0
9	9.9	27586.9	0.0	0.0	0.0	0.0	5517.4	0.0	0.0
10	9.8	29147.1	0.0	0.0	0.0	0.0	5829.4	0.0	0.0
11	9.8	30141.4	0.0	0.0	0.0	0.0	6028.3	0.0	0.0
12	9.7	30578.5	0.0	0.0	0.0	0.0	6115.7	0.0	0.0
13	9.6	30461.3	0.0	0.0	0.0	0.0	6092.3	0.0	0.0
14	9.4	29810.7	0.0	0.0	0.0	0.0	5962.1	0.0	0.0
15	9.3	28645.5	0.0	0.0	0.0	0.0	5729.1	0.0	0.0
16	9.1	26994.1	0.0	0.0	0.0	0.0	5398.8	0.0	0.0
17	9.0	24885.6	0.0	0.0	0.0	0.0	4977.1	0.0	0.0
18	8.8	22365.9	0.0	0.0	0.0	0.0	4473.2	0.0	0.0
19	8.6	19468.9	0.0	0.0	0.0	0.0	3893.8	0.0	0.0
20	8.4	16244.2	0.0	0.0	0.0	0.0	3248.8	0.0	0.0
21	8.1	12740.8	0.0	0.0	0.0	0.0	2548.2	0.0	0.0
22	3.4	4373.8	0.0	0.0	0.0	0.0	874.8	0.0	0.0
23	4.4	4279.2	0.0	0.0	0.0	0.0	855.8	0.0	0.0
24	5.6	2632.2	0.0	0.0	0.0	0.0	526.4	0.0	0.0
25	1.4	137.6	0.0	0.0	0.0	0.0	27.5	0.0	0.0

Table 2 - Base Stress Data on the 25 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	-8.50	98.68	2.66	227.47	1.16
2	-8.50	103.63	7.34	363.73	11.93
3	-6.18	112.23	10.00	625.94	60.99
4	-3.87	122.19	10.00	894.23	148.37

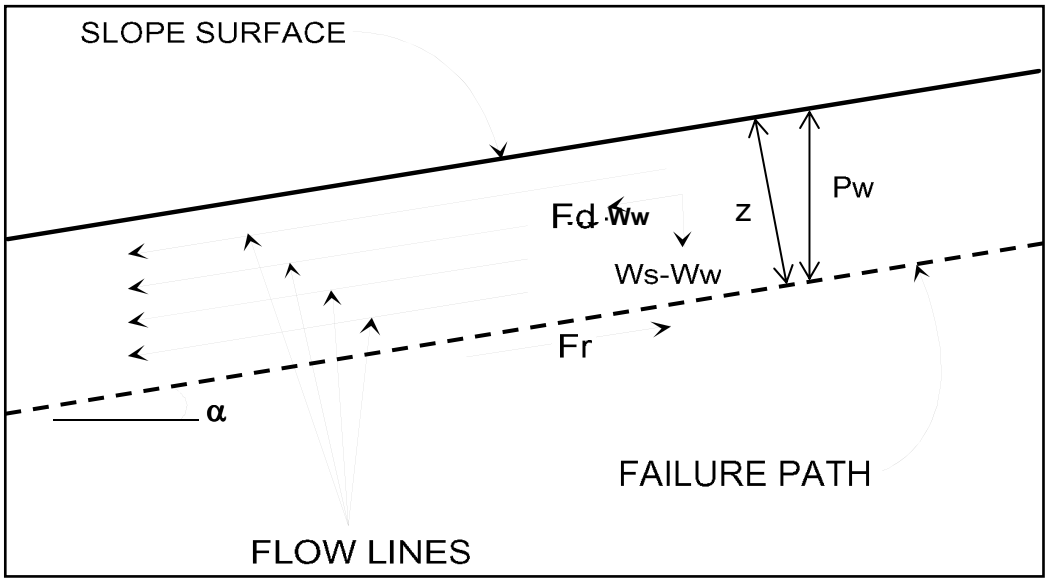
5	-1.54	132.18	10.00	1125.74	265.36
6	0.78	142.17	10.00	1322.09	404.91
7	3.10	152.17	10.00	1484.52	560.71
8	5.42	162.14	10.00	1614.22	725.64
9	7.74	172.07	10.00	1712.47	892.29
10	10.06	181.95	10.00	1780.41	1053.87
11	12.39	191.75	10.00	1818.87	1203.99
12	14.70	201.47	10.00	1829.52	1334.66
13	17.02	211.09	10.00	1812.97	1441.47
14	19.34	220.59	10.00	1770.62	1518.03
15	21.66	229.95	10.00	1703.65	1559.93
16	23.99	239.17	10.00	1613.11	1563.59
17	26.30	248.22	10.00	1500.51	1525.60
18	28.62	257.09	10.00	1366.95	1444.80
19	30.94	265.77	10.00	1213.85	1320.07
20	33.26	274.24	10.00	1042.77	1151.88
21	35.58	282.49	10.00	855.04	941.84
22	37.89	288.28	4.37	707.77	768.55
23	37.89	292.22	5.63	573.94	584.32
24	40.22	297.22	7.28	352.08	288.20
25	40.22	300.72	1.88	189.86	58.40

Sum of the Resisting Forces (including Pier/Pile, Tieback, Reinforcing Soil Nail, and Applied Forces if applicable) = 283406.72 (lbs)
Average Available Shear Strength (including Tieback, Pier/Pile, Reinforcing, Soil Nail, and Applied Forces if applicable) = 1293.16(psf)
Sum of the Driving Forces = 200125.45 (lbs)
Average Mobilized Shear Stress = 913.15(psf)
Total length of the failure surface = 219.16(ft)
CAUTION - Factor Of Safety Is Calculated By The Modified Bishop Method. This Method Is Valid Only If The Failure Surface Approximates A Circular Arc.

*** SEISMIC SLOPE DISPLACEMENT DATA ***
(Note: kv is set = zero for displacement calculations)
Seismic Yield Coefficient (ky) = 0.3803(g)
Calculated Newmark Seismic Displacement = 0.152(ft)
Non-Symmetrical Sliding Resistance Has Been Specified for Downhill Sliding.

**** END OF GSTABL7 OUTPUT ****

SURFICIAL SLOPE STABILITY



Assume: (1) Saturation To Slope Surface
(2) Sufficient Permeability To Establish Water Flow

P_w = Water Pressure Head=(z)(cos^2(α))
W_s = Saturated Soil Unit Weight
W_w = Unit Weight of Water (62.4 lb/cu.ft.)
u = Pore Water Pressure=(W_w)(z)(cos^2(α))
z = Layer Thickness
α = Angle of Slope
phi = Angle of Friction
c = Cohesion
F_d = (0.5)(z)(W_s)(sin(2α))
F_r = (z)(W_s-W_w)(cos^2(α))(tan(phi)) + c
Factor of Safety = F_r/F_d

Engineered Fill Slope

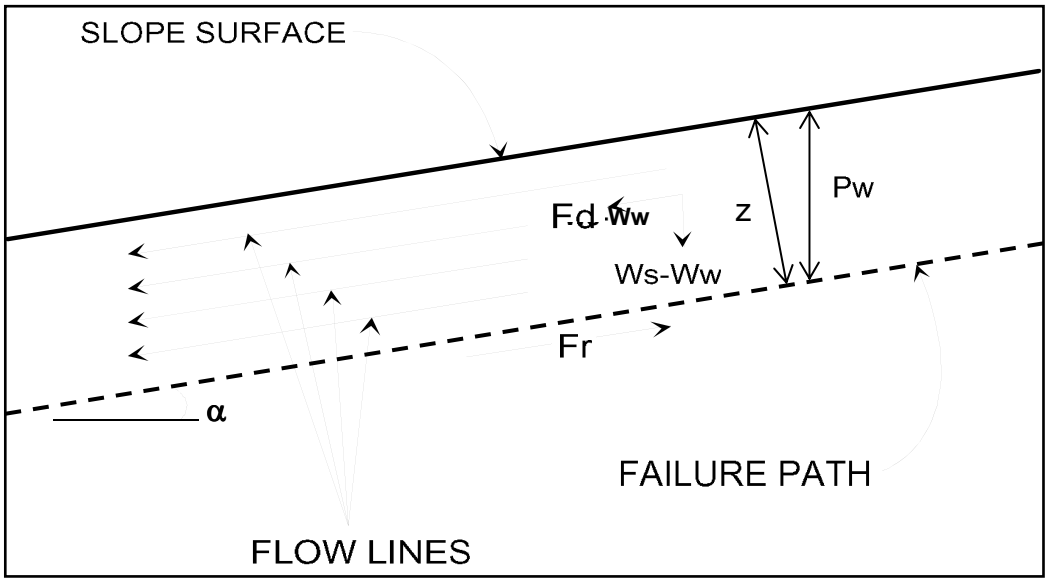
Given:

W_s (pcf)	c (psf)	ϕ (degrees)	z (ft)	Slope Ratio:	α (degrees)
120	200	30	4	2.0 :1	26.5

Calculations:

P_w	u	F_d	F_r	**Factor of Safety**
3.20	199.97	191.58	306.57	**1.60**

SURFICIAL SLOPE STABILITY



Assume: (1) Saturation To Slope Surface
(2) Sufficient Permeability To Establish Water Flow

P_w = Water Pressure Head=(z)(cos^2(α))
W_s = Saturated Soil Unit Weight
W_w = Unit Weight of Water (62.4 lb/cu.ft.)
u = Pore Water Pressure=(W_w)(z)(cos^2(α))
z = Layer Thickness
α = Angle of Slope
phi = Angle of Friction
c = Cohesion
F_d = (0.5)(z)(W_s)(sin(2α))
F_r = (z)(W_s-W_w)(cos^2(α))(tan(phi)) + c
Factor of Safety = F_r/F_d

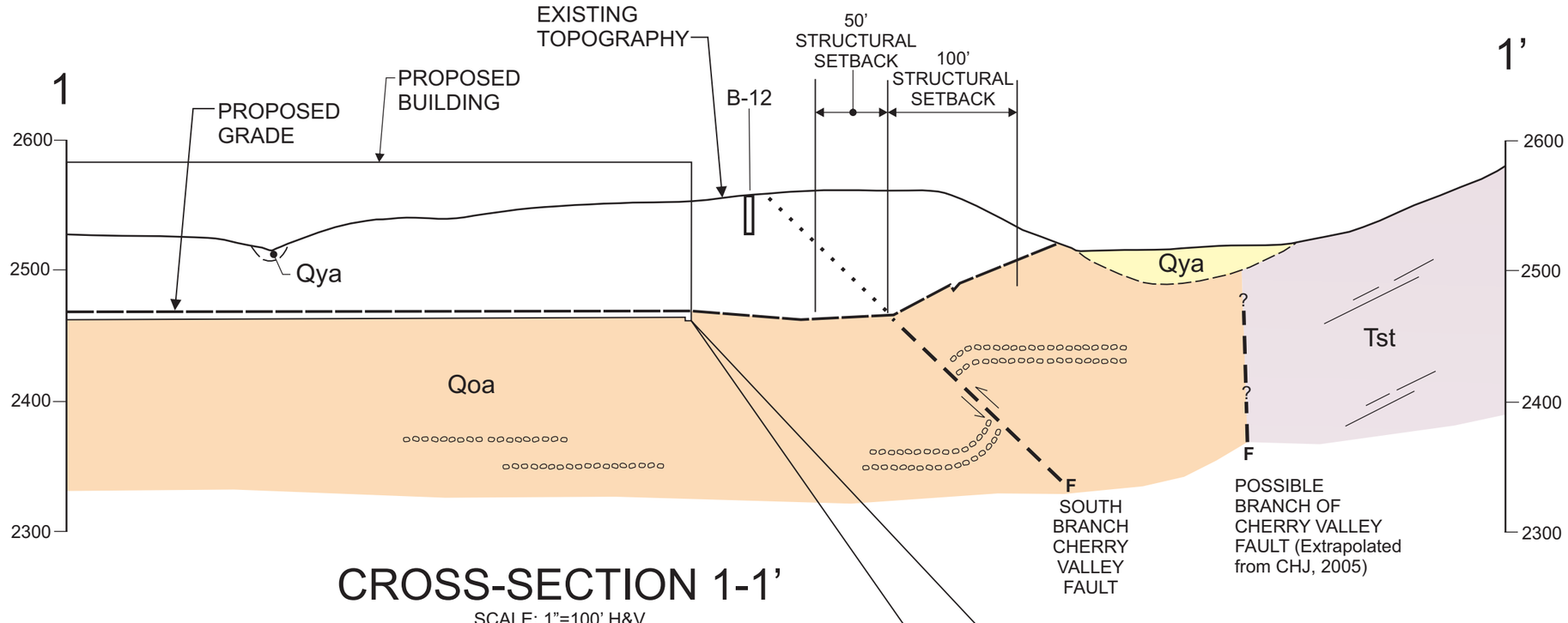
Cut Slope in Older Alluvium

Given:

W_s (pcf)	c (psf)	ϕ (degrees)	z (ft)	Slope Ratio:	α (degrees)
120	250	32	4	2.0 :1	26.5

Calculations:

P_w	u	F_d	F_r	**Factor of Safety**
3.20	199.97	191.58	365.35	**1.91**

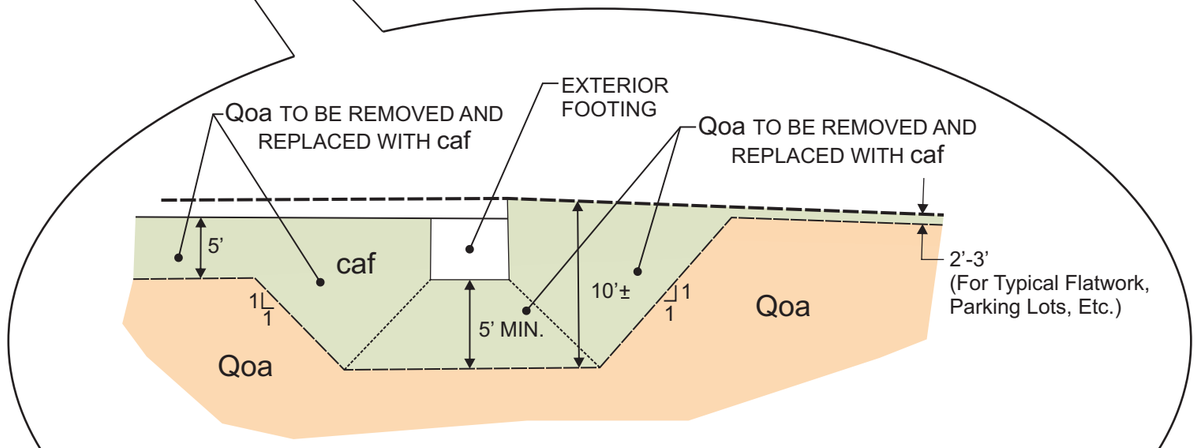


CROSS-SECTION 1-1’

SCALE: 1”=100’ H&V

Legend

- afu: UNDOCUMENTED FILL
- Qya: YOUNGER ALLUVIUM
- Qoa: OLDER ALLUVIUM
- Tst: BEDROCK-SAN TIMOTEO FORMATION
- STABILIZATION FILL
- APPROXIMATE GEOLOGIC CONTACT, QUERIED WHERE UNCERTAIN
- APPROXIMATE DIPS OF BEDS
- APPROXIMATE LOCATION OF FAULT SHOWING DIRECTION OF MOVEMENT, QUERIED WHERE UNCERTAIN, DOTTED WHERE PROJECTED



DETAIL FOR FOOTING, SLAB AND FLATWORK OVEREXCAVATION

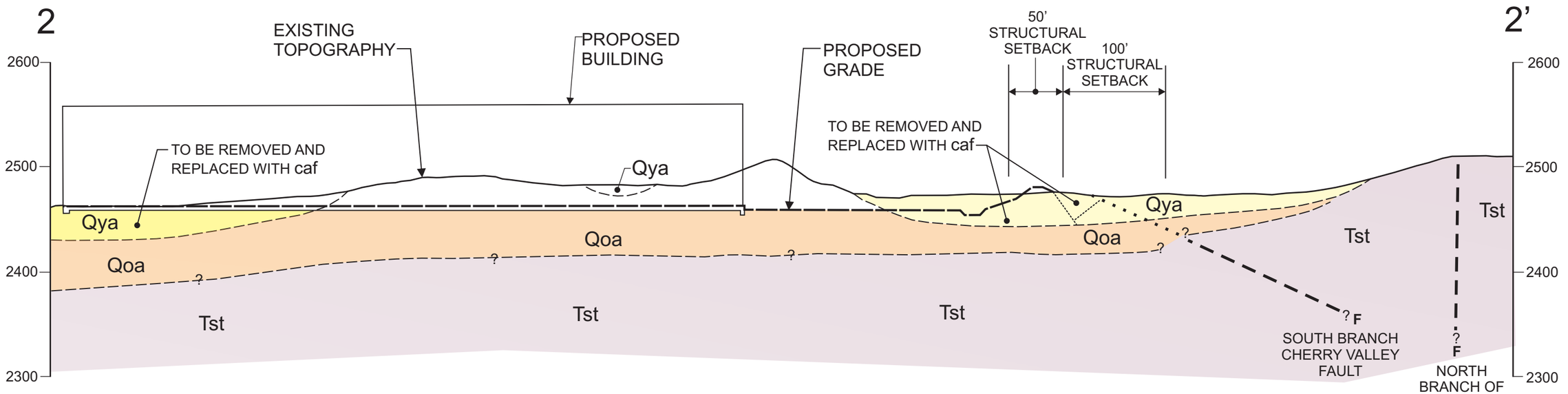
NOT TO SCALE

***NOTE:** THIS OVEREXCAVATION ALSO APPLIES TO INTERIOR COLUMN FOOTINGS.

PROJECT NO. : 105-05

DATE : Nov. , 2014

CVAR_09932



CROSS-SECTION 2-2'

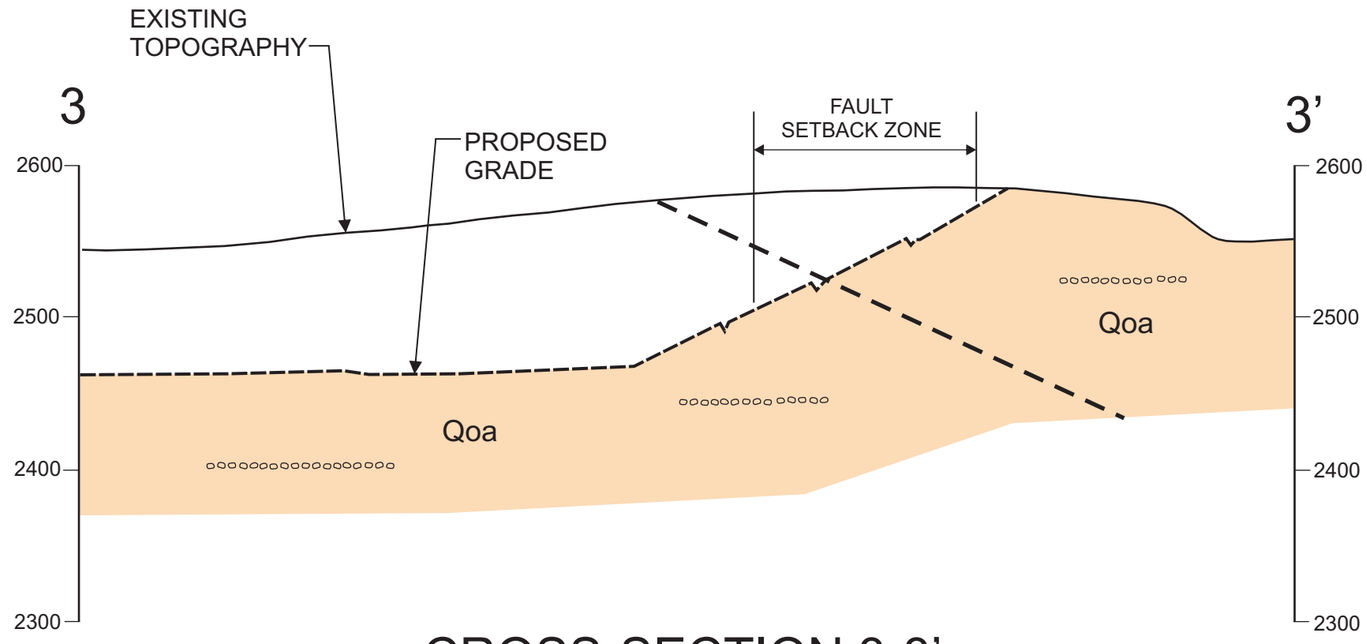
SCALE: 1"=100' H&V

*SEE CROSS-SECTION 1-1' FOR LEGEND

PROJECT NO. :
105-05

DATE :
Nov. , 2014

CVAR_09933



CROSS-SECTION 3-3’

HIGHEST CUT SLOPE

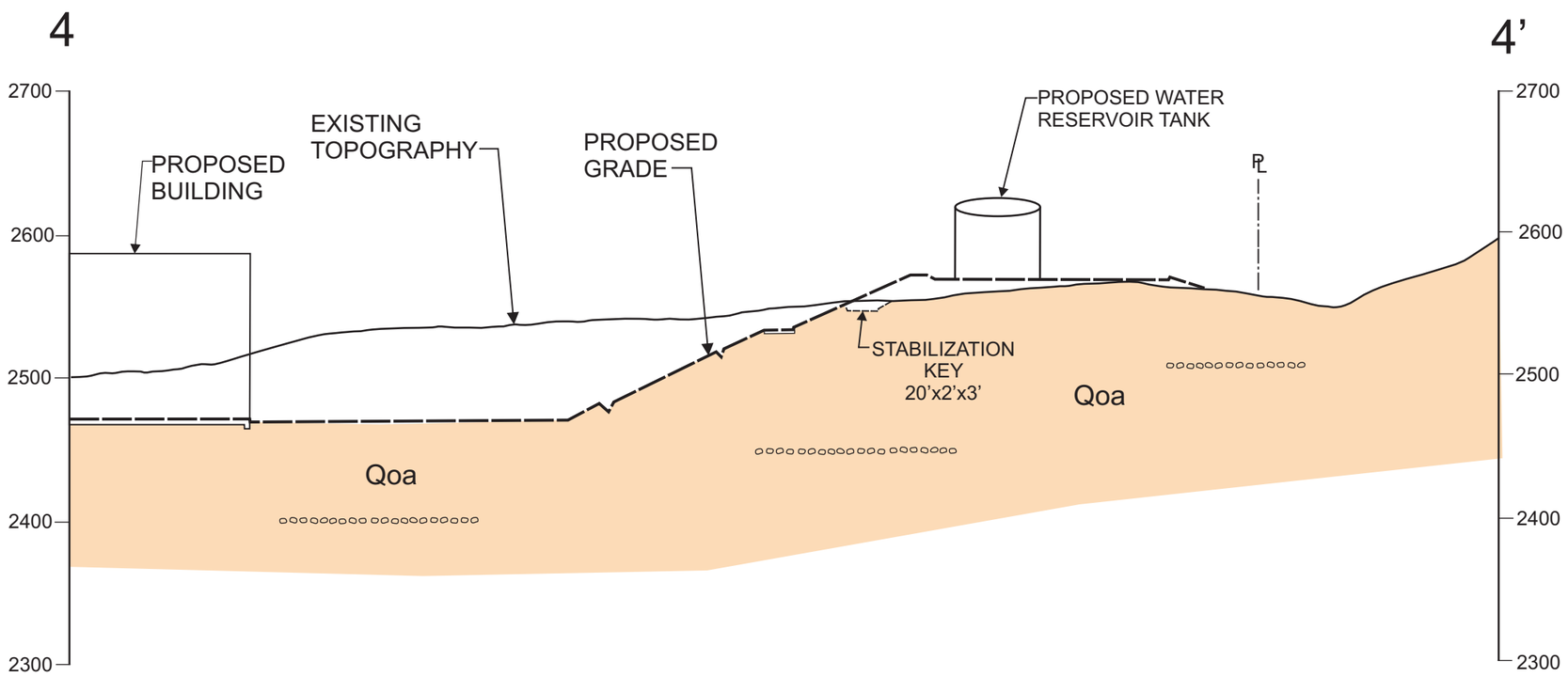
SCALE: 1”=100’ H&V

*SEE CROSS-SECTION 1-1’ FOR LEGEND

PROJECT NO. :
105-05

DATE :
Nov. , 2014

CVAR_09934



CROSS-SECTION 4-4’

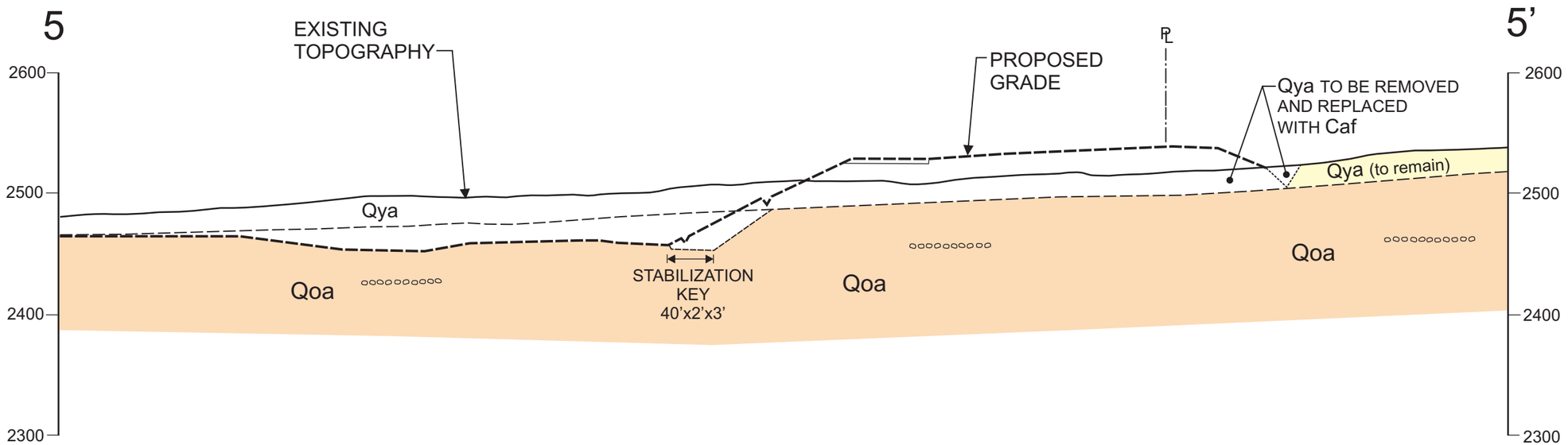
SCALE: 1”=100’ H&V

*SEE CROSS-SECTION 1-1’ FOR LEGEND

PROJECT NO. :
105-03

DATE :
11-24-2014

CVAR_09935



CROSS-SECTION 5-5’

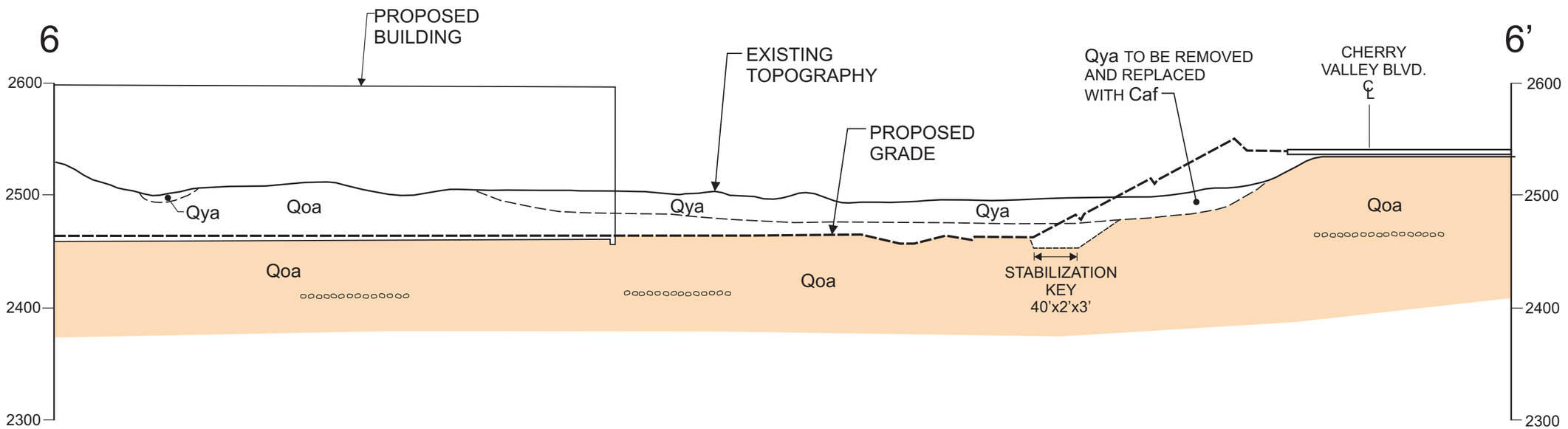
SCALE: 1”=100’ H&V

*SEE CROSS-SECTION 1-1’ FOR LEGEND

PROJECT NO. :
105-03

DATE :
11-24-2014

CVAR_09936



CROSS-SECTION 6-6’

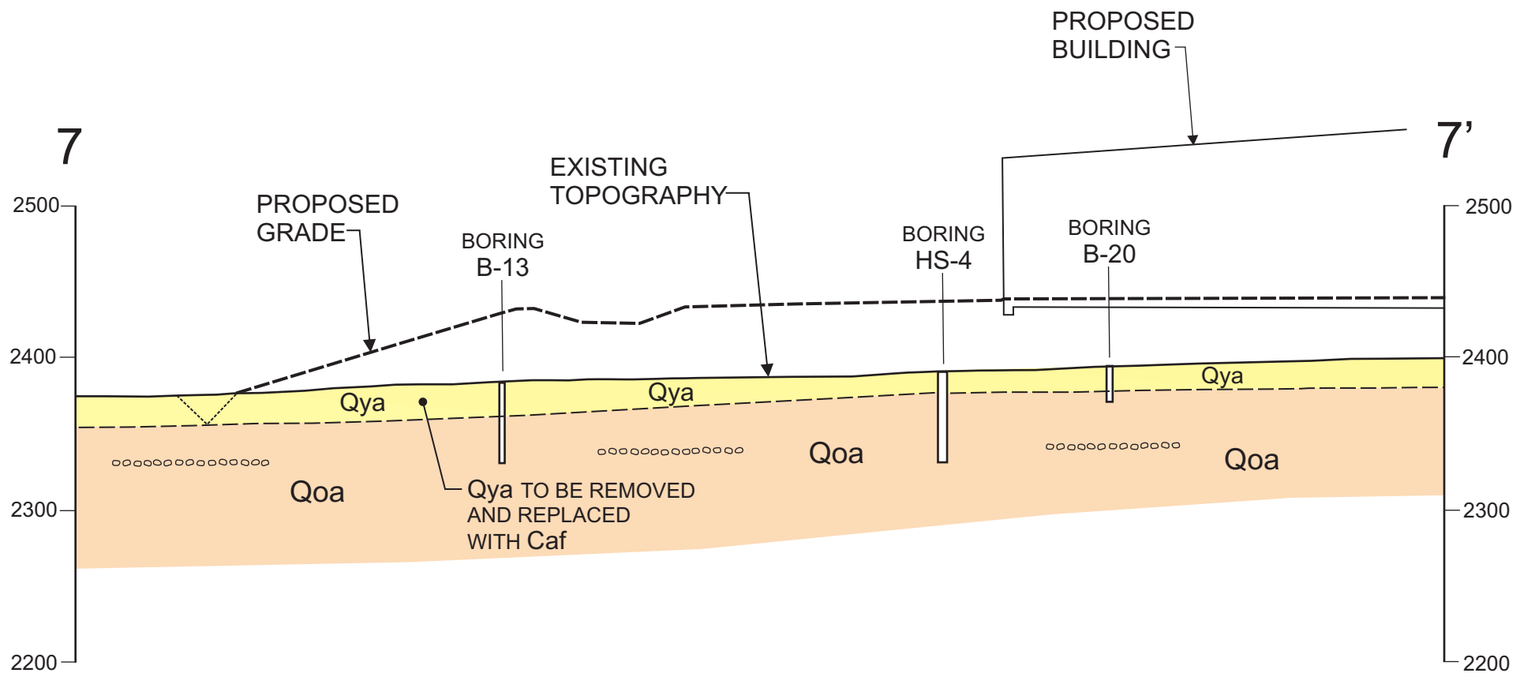
SCALE: 1”=100’ H&V

*SEE CROSS-SECTION 1-1’ FOR LEGEND

PROJECT NO. :
105-03

DATE :
11-24-2014

CVAR_09937



CROSS-SECTION 7-7’

SCALE: 1”=100’ H&V

*SEE CROSS-SECTION 1-1’ FOR LEGEND

PROJECT NO. :
105-03

DATE :
11-24-2014

CVAR_09938

SHOPOFF REALTY INVESTMENTS - SAN GORGONIO CROSSING
PLOT PLAN NO. 25337 & CONCEPTUAL GRADING PLAN
IN THE COUNTY OF RIVERSIDE

OWNER/APPLICANT:

COMPANY: TSG CHERRY VALLEY, L.P.,
C/O SHOPOFF REALTY INVESTMENTS
CONTACT: BRIAN RUPP
ADDRESS: 2 PARK PLAZA, SUITE 700
IRVINE, CA 92614
PHONE: (949) 417-1346

ENGINEER:

COMPANY: ALBERT A. WEBB ASSOCIATES
CONTACT: ROBERT BERNDT
ADDRESS: 3788 MCGRAY ST
RIVERSIDE, CA 92506
PHONE: (951) 686-1070
FAX: (951) 788-1256

ARCHITECT:

COMPANY: HILL PINCKERT ARCHITECTS (HPA)
CONTACT: YONG NAM
ADDRESS: 18831 BARDEEN AVENUE, SUITE 100
IRVINE, CA 92612
PHONE: (949) 863-1770
FAX: (949) 863-0851

SETBACKS:

MINIMUM SITE AREA: 20,000 SF
MINIMUM SITE WIDTH: 100'

MINIMUM SETBACKS
CHERRY VALLEY BLVD. 25'

A.P.N.:

407-220-004,-007,-008,-009,-014,-016,-017,
413-210-012 & -013

LAND USE / ZONING:

EXISTING LAND USE: VACANT
PROPOSED LAND USE: DISTRIBUTION CENTER
EXISTING ZONING: CONTROLLED DEVELOPMENT AREAS (W-2)
PROPOSED ZONING: INDUSTRIAL PARK (I-P)

ACERAGE:

GROSS SITE AREA: 229.98 AC.
NET SITE AREA: 225.03 AC.

LANDSCAPE AREA:

44.1% PROPOSED
10% REQUIRED
3,208,680 S.F. PROPOSED COVERAGE

EARTHWORK ESTIMATE:

CUT: 3,040,000 CY
FILL: 2,342,000 CY
SHRINKAGE: 5413,000 CY
NET: 185,000 CY EXPORT

UTILITY COMPANIES:

WATER: YUCAIPA VALLEY WATER DISTRICT
SEWER: YUCAIPA VALLEY WATER DISTRICT
ELECTRIC: SOUTHERN CALIFORNIA EDISON
TELEPHONE: VERIZON
GAS: SOUTHERN CALIFORNIA GAS COMPANY
CABLE: TIME WARNER CABLE

PROJECT DESCRIPTION:

THE SITE WILL INCLUDE THE DEVELOPMENT OF TWO WAREHOUSE/DISTRIBUTION BUILDINGS WITH 1,193,760 SQUARE FEET OF WAREHOUSE SPACE, 30,000 SQUARE FEET OF OFFICE SPACE, 531 TRUCK AND TRAILER PARKING SPACES, 706 AUTOMOBILE PARKING SPACES AND 306 LOADING DOCKS ON A 229.98 GROSS ACRE SITE.

LEGAL DESCRIPTION:

IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, BEING A PORTION OF THE NORTH HALF OF SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST, SAN BERNARDINO MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF.

EASEMENT NOTES:

(A) INDICATES AN EASEMENT IN FAVOR OF SOUTHERN CALIFORNIA EDISON COMPANY, FOR ELECTRICAL LINES AND INCIDENTAL PURPOSES, RECORDED APRIL 17, 1958 AS INSTRUMENT NO. 27945 IN BOOK 2257, PAGE 22, OF OFFICIAL RECORDS.

(B) INDICATES AN EASEMENT IN FAVOR OF SOUTHERN CALIFORNIA EDISON COMPANY, FOR ELECTRICAL LINES AND INCIDENTAL PURPOSES, RECORDED JULY 14, 1954 AS INSTRUMENT NO. 60488, OF OFFICIAL RECORDS.

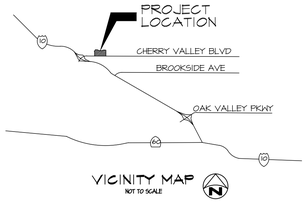
(C) INDICATES AN EASEMENT IN FAVOR OF COUNTY OF RIVERSIDE, FOR MAINTENANCE, EMBANKMENT SLOPES AND INCIDENTAL PURPOSES,RECORDED JUNE 21, 1918 AS INSTRUMENT NO. 126809, OF OFFICIAL RECORDS.

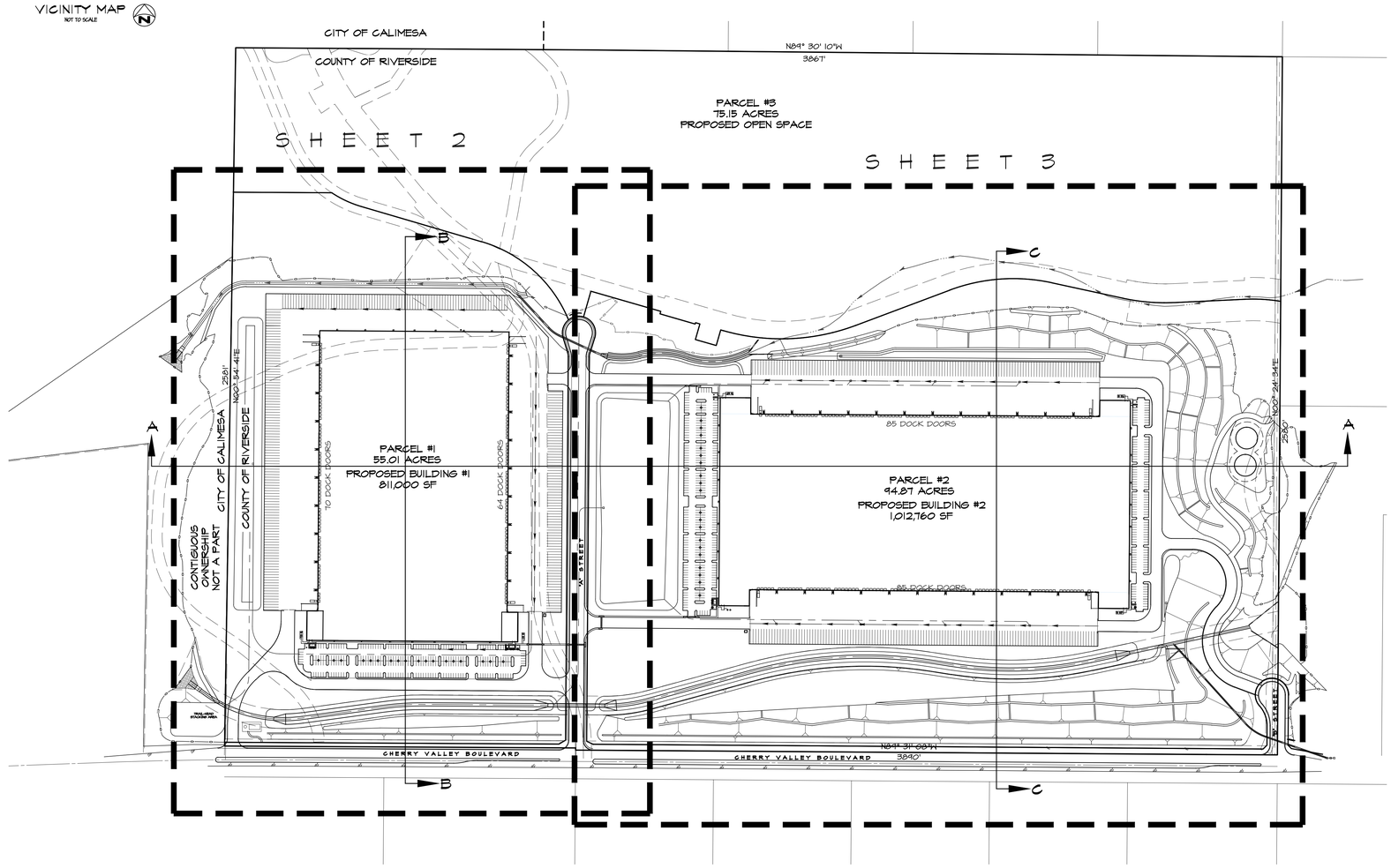
(D) INDICATES AN EASEMENT IN FAVOR OF EVERETT L. HILLARD AND ETHEL M. HILLARD, FOR ROAD, PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED OCTOBER 16, 1981 AS INSTRUMENT NO. 81-195388, OF OFFICIAL RECORDS.

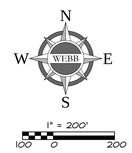
(E) INDICATES AN EASEMENT IN FAVOR OF THE SAN GORGORNIO PASS WATER AGENCY FOR PIPELINE AND INCIDENTAL PURPOSES, RECORDED AUGUST 16, 2000 AS INSTRUMENT NO. 00-320588, OF OFFICIAL RECORDS.

(F) INDICATES AN EASEMENT IN FAVOR OF SOUTHERN CALIFORNIA EDISON COMPANY, FOR POLE LINES, CONDUITS OR UNDERGROUND FACILITIES AND INCIDENTAL PURPOSES, RECORDED FEBRUARY 01, 1980 AS INSTRUMENT NO. 80-22477, OF OFFICIAL RECORDS.

(G) INDICATES AN EASEMENT IN FAVOR OF GENERAL TELEPHONE COMPANY OF CALIFORNIA FOR POLE LINES, CONDUITS OR UNDERGROUND FACILITIES AND INCIDENTAL PURPOSES, RECORDED SEPTEMBER 15, 1980 AS INSTRUMENT NO. 80-167344, OF OFFICIAL RECORDS.







LEGEND

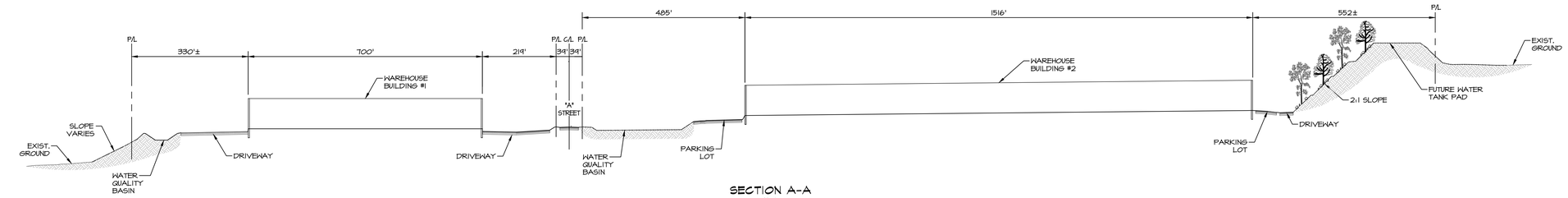
- PROPOSED CONCRETE PAVEMENT
- PROPOSED LANDSCAPE AREA
- ADA PATH OF TRAVEL
- MULTIPURPOSE TRAIL
- PROPOSED SCREEN WALL
- PROPOSED CHAINLINK FENCE
- EXISTING CHAINLINK FENCE
- GRADEBREAK/RIDGELINE
- FLOWLINE
- (1475') EXISTING CONTOURS
- 1475 PROPOSED CONTOURS
- EX W EXISTING WATER LINE

FL	FLOW LINE
GB	GRADE BREAK
GRND	GROUND
INV	INVERT
LS	LANDSCAPE AREA
LP	LOW POINT
MAX	MAXIMUM
PL	PROPERTY LINE
RG	ROUGH GRADE
R/W	RIGHT OF WAY
TYP	TYPICAL

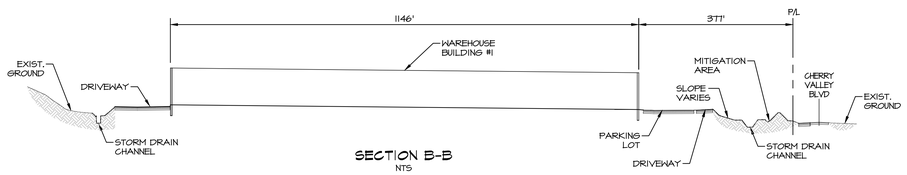
NOTES:

1. THOMAS GUIDE RIVERSIDE COUNTY (2006 ED.) PAGE 690, PORTION OF GRID B4, B5, C4, C5, D4, AND D5.
2. THIS PROJECT SITE IS LOCATED WITHIN SECTION 30, RANGE 1 WEST, AND TOWNSHIP 2 SOUTH.
3. SURROUNDING ZONING:
   NORTH - RESIDENTIAL AGRICULTURE (R-A-1), COUNTY OF RIVERSIDE AND RESIDENTIAL LOW/MEDIUM (R-L-M), CITY OF CALIMESA
   SOUTH - CONTROLLED DEVELOPMENT AREAS (W-2) AND RESIDENTIAL AGRICULTURE (R-A-1)
   EAST - CONTROLLED DEVELOPMENT AREAS (W-2) AND RESIDENTIAL AGRICULTURE (R-A-1)
   WEST - RESIDENTIAL LOW/MEDIUM (R-L-M), CITY OF CALIMESA
4. FEMA COMMUNITY PANEL NO. 06065C0785G ZONE X.
5. THIS PROJECT IS NOT LOCATED WITHIN A SPECIFIC PLAN.
6. THIS PROJECT SITE IS LOCATED WITHIN THE CHERRY VALLEY GATEWAY POLICY AREA.
7. THIS PROJECT SITE IS LOCATED WITHIN THE BEAUMONT UNIFIED SCHOOL DISTRICT.
8. THIS AREA IS NOT SUBJECT TO LIQUEFACTION OR OTHER GEOLOGIC HAZARDS WITHIN A SPECIAL STUDIES ZONE.
9. THIS PROJECT SITE IS POTENTIALLY SUBJECT TO SURFACE FAULT RUPTURE (CHERRY VALLEY FAULT), SUBSIDENCE POTENTIAL, AND SOIL SLUMPS/BLOCK SLIDES.
10. THIS PROJECT SIT IS LOCATED WITHIN ZONE C, AREAS OF MINIMAL FLOODING PER FIRM MAP PANEL 06024C0785A EFFECTIVE APRIL 15, 1980.
11. ANY DISCHARGE ACROSS PROPERTY LINES WILL BE IN ACCORDANCE WITH APPENDIX J SECTION J 109.4 DRAINAGE ACROSS PROPERTY LINES.
12. THERE ARE NO EXISTING BUILDINGS ON THIS SITE.
13. THERE ARE NO EXISTING STREET LIGHTS ON THIS SITE.
14. THERE ARE NO MOBILEHOMES OR RECREATIONAL VEHICLES ON THIS SITE.
15. ALL EXISTING ENCROACHMENTS WILL BE REMOVED OR RELOCATED.
16. SUBSURFACE SEPTIC SEWAGE IS NOT INTENDED FOR THIS SITE.
17. EXISTING AND PROPOSED EASEMENTS ARE SHOWN ON THIS SITE.
18. ALL EXISTING UTILITIES ON THIS PLAN ARE APPROXIMATE IN LOCATION AND SIZE.
19. PARKING STALLS ARE; STANDARD: 9'x18'
    COMPACT: 8.5'x16' (20% MAX)
20. END AISLE PARKING STALLS ARE 11' WIDE PER COUNTY ORD. 348, SECTION 18.12.
21. PROJECT DOES NOT COVER THE ENTIRE OWNERSHIP OF THE LAND DIVIDER.
22. THERE ARE OPEN CHANNELS PROPOSED ON THIS SITE.
23. PARKING LOT SHALL BE AC PAVED WITH CONCRETE CURB AND GUTTERS. MINIMUM GRADE FOR CONCRETE IS 0.35% AND FOR ALL OTHER SURFACES 1.0%.
24. PROPOSED DEDICATIONS/EASEMENTS TO BE MADE BY SEPARATE DOCUMENTS.
25. THIS PROJECT IS NOT PHASED.
26. REFER TO ARCHITECTURAL ELEVATIONS FOR WALL AND FENCE DETAILS.
27. ALL DRIVEWAYS ARE PER COUNTY STANDARD NO. 207A
28. TPM 36564 IS BEING PROCESSED INDIVIDUALLY.

SITE TABULATION:	BLDG. #1	BLDG. #2	TOTAL
PROPOSED PARCEL NET AREA	2,396,341 SF (55.01 AC)	4,132,543 SF (94.87 AC)	6528,884 SF (149.88 AC)
BUILDING AREA	811,000 SF	1,012,760 SF	1,823,760 SF
OFFICE	10,000 SF	20,000 SF	30,000 SF
WAREHOUSE	801,000 SF	992,760 SF	1,793,760 SF
TOTAL BUILDING AREA	811,000SF	1,012,760 SF	1,823,760 SF
LOT COVERAGE	33.1%	24.5%	27.9%
LANDSCAPING REQUIRED (10%)	239,634 SF	413,254 SF	652,888 SF
LANDSCAPING PROVIDED	484,762 SF	2,223,918 SF	3,208,680 SF
LANDSCAPE COVERAGE	41.0%	53.0%	44.1%
OFFICE PARKING (REQ'D) 0 - 90,000 SF @ 1/250 SF	40 STALLS	80 STALLS	120 STALLS
WAREHOUSE PARKING (REQ'D) 0 - 20,000 SF @ 1/1,000 SF 20,001 - 40,000 SF @ 1/2,000 SF OVER 40,001 SF @ 1/4,000 SF	20 STALLS 10 STALLS 190 STALLS	20 STALLS 10 STALLS 238 STALLS	40 STALLS 20 STALLS 428 STALLS
TOTAL REQUIRED PARKING	220 STALLS	268 STALLS	488 STALLS
TRAILER PARKING (REQ'D) 1/1 DOOR RATIO	130 STALLS	170 STALLS	300 STALLS
PARKING PROVIDED:			
STANDARD PER (9'X18')	266 STALLS	424 STALLS	690 STALLS
TRAILER PARKING (10'X55')	275 STALLS	256 STALLS	531 STALLS
HANDICAPPED PARKING (9'X18')	5 STALLS	5 STALLS	10 STALLS
HANDICAPPED PARKING (14'X18')	2 STALLS	4 STALLS	6 STALLS
TOTAL PARKING PROVIDED:	548 STALLS	684 STALLS	1237 STALLS



SECTION A-A
NTS



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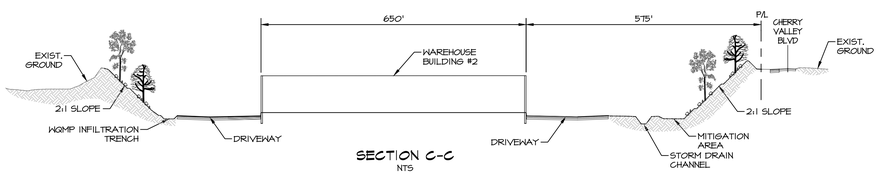

SECTION C-C
NTS

REVISIONS	DATE	BY

COUNTY OF RIVERSIDE

PLOT PLAN NO. 25337
SAN GORGONIO CROSSING
TITLE SHEET

SCALE:	1"=200'	ALBERT A. WEBB ASSOCIATES	ENGINEERING CONSULTANTS 3788 McGRAY STREET RIVERSIDE CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256
DATE:	04/03/14		
DESIGNED:	D.J.		
CHECKED:	BB		
PLN CK REF:	REF		
F.B.	F.B.		

W.O. W0
SHEET 1 OF 3 SHEETS
DWG. NO.

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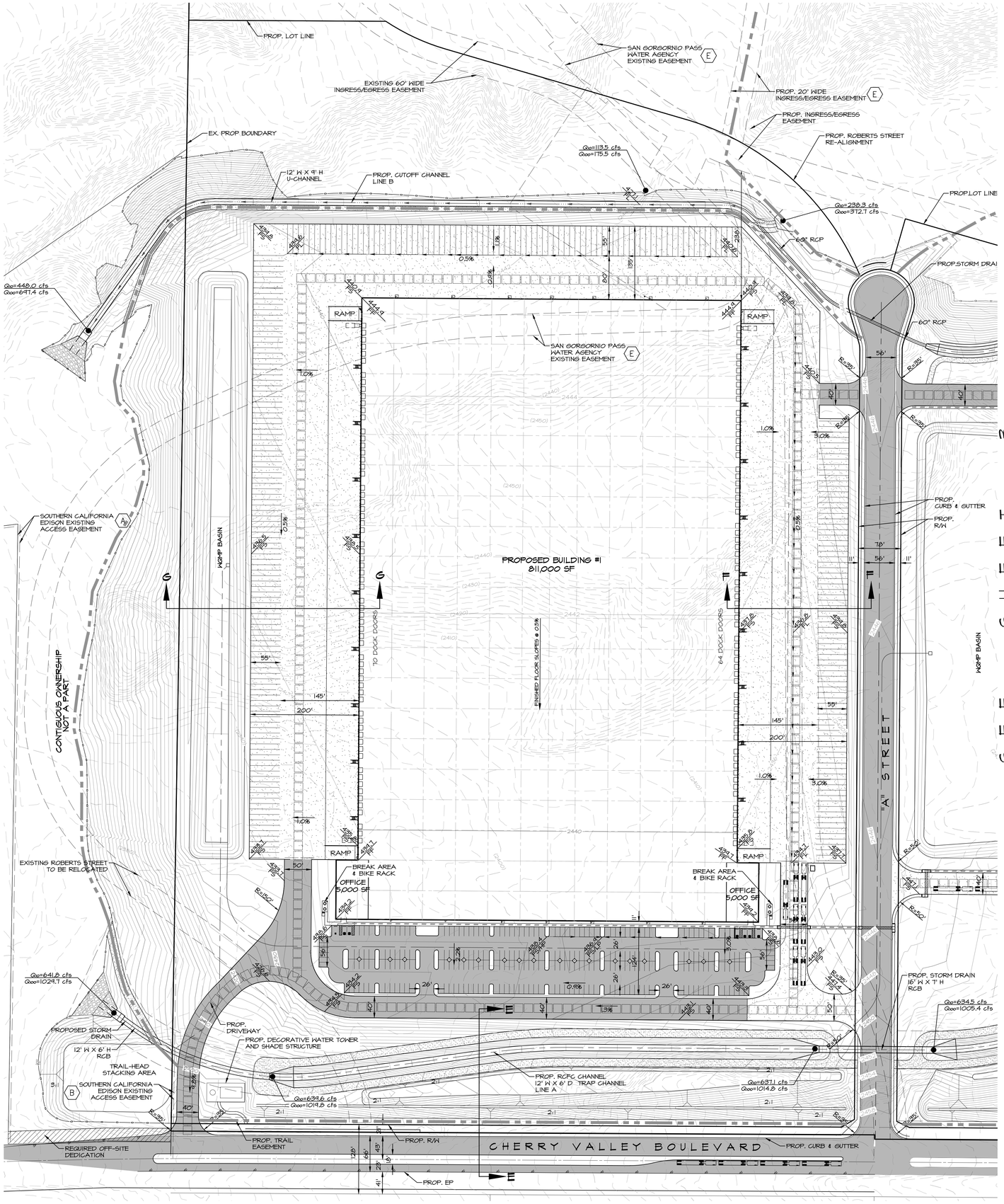
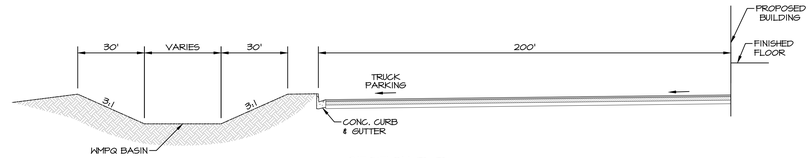
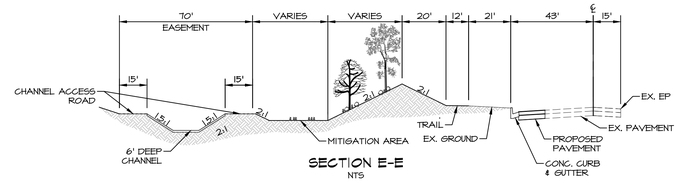




SECTION D-D
NTS



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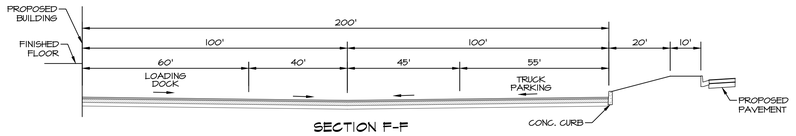

SECTION F-F
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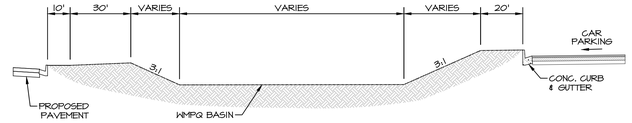
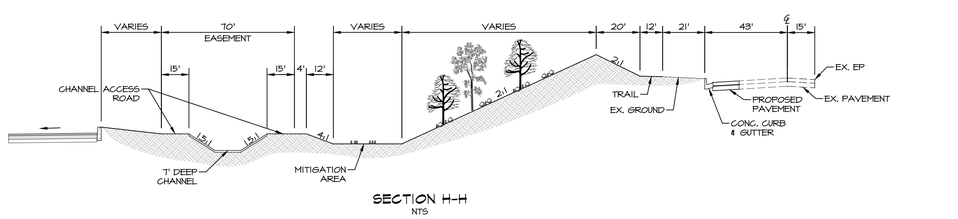


SECTION G-G
NTS



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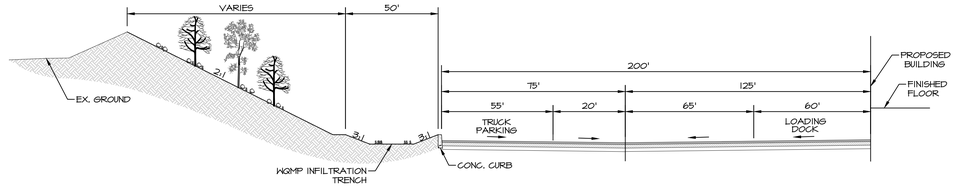

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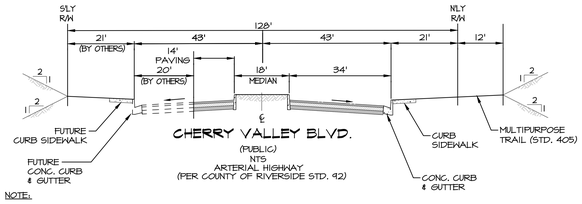
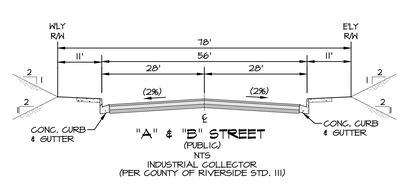
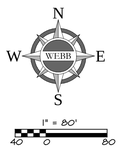




NOTE:

EXISTING ENCROACHMENTS WITHIN CHERRY VALLEY BLVD. TO BE REMOVED OR RELOCATED.



REVISIONS	DATE	BY

COUNTY OF RIVERSIDE

PLOT PLAN NO. 25337
SAN GORGONIO CROSSING
CONCEPTUAL GRADING

SCALE:	1"=80'
DATE:	09/03/14
DESIGNED:	DJ
CHECKED:	BB
PLN CK REF:	REF
F.B.	F.B.

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

W.O. W0
SHEET 2
OF 3 SHEETS
DWG. NO.

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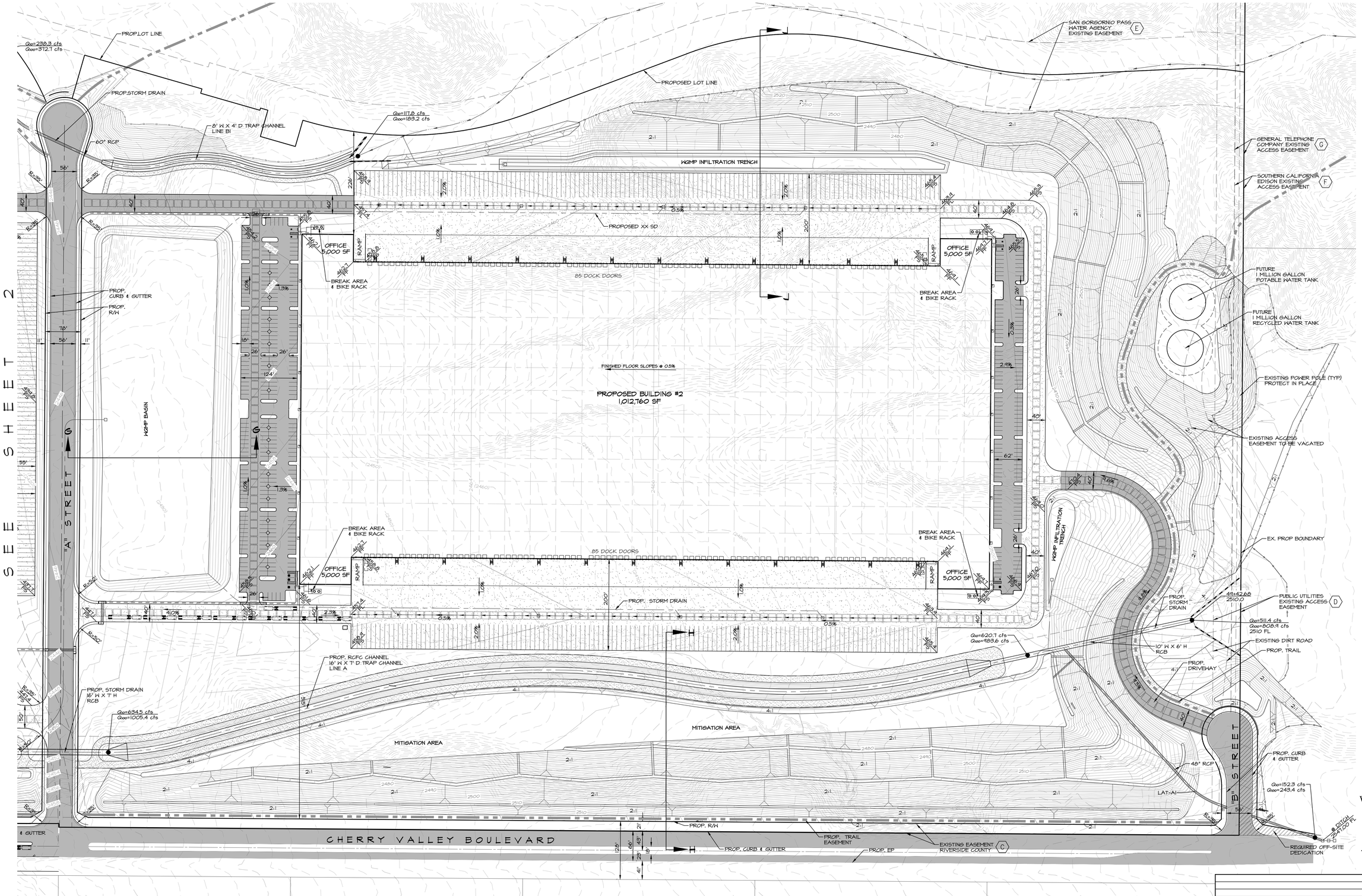

REVISIONS	DATE	BY

COUNTY OF RIVERSIDE

PLOT PLAN NO. 25337
SAN GORGONIO CROSSING
CONCEPTUAL GRADING

SCALE: 1"=80'	ALBERT A. WEBB ASSOCIATES	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	W.O. W0
DATE: 09/03/14			SHEET 3
DESIGNED: DJ			OF 3 SHEETS
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Appendix F:
Phase I Environmental Site Assessment

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R M Environmental, Inc.

Geology - Environmental - Geotechnical Engineering

April 6, 2009
Project No. 09-613

Mr. Brian Rupp
The Shopoff Group
8951 Research drive
Irvine, CA 92618

SUBJECT: **REPORT OF FINDINGS**
Updated Phase I Environmental Site Assessment
201± Acres, TSG Property
APNs 407-220-(004, 007-009, 014, 016, 017)
Cherry Valley Area, Riverside County, California

Dear Mr. Rupp:

1.0 INTRODUCTION

This report presents the findings of our updated Phase I Environmental Site Assessment (PSA) of the site conducted in accordance with our Proposal No. 09-009 dated March 19, 2009. The prior PSA of the site (RME, June 2007) had revealed no significant evidence of recognized environmental conditions pertaining to the site.

The purpose of this investigation was to further assess the potential for the presence or likely presence of hazardous substances or petroleum products on the property under conditions which indicate an existing release, a past release, or a material threat of a release of hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water in connection with the property.

The scope of work completed for this investigation included a field reconnaissance of the site and surrounding areas, record and document review, historic map and aerial photo review, and submittal of this report.

ACCOMPANYING MAPS AND APPENDICES
Figure 1 - Site Location Map
Figure 2 - Site Map

Appendix A - References
Appendix B - Selected Site Photographs
Appendix C - Transaction Screen Questionnaire
Appendix D - Site Assessment Data Report (EDR, dated May 7 and 22, 2007, and March 23 and 25, 2009)

2.0 SITE DESCRIPTION

The site consists of 201 ± acres of land located north of Cherry Valley Boulevard, Cherry Valley, Riverside County, California. The site is identified as Assessor Parcel Numbers (APNs) 407-220-(004, 007, 008, 009, 014, 016, 017). The geographic relationships of the site are shown on Figure 1 - Site Location Map.

Our field reconnaissance of the site for this investigation was performed between March 19 and 24, 2009.

2.1 General Site Description

The site consists of APNs 407-220-(004, 007, 008, 009, 014, 016, 017) located in the N 1/2 of Section 30, Township 2 South, Range 1 West, San Bernardino Base Meridian, Cherry Valley, County of Riverside, California.

The site currently consists of undeveloped land with miscellaneous dirt access roads. Several areas of miscellaneous non-hazardous debris were observed throughout the property. Two burned mobile trailers and miscellaneous non-hazardous debris were observed in the central portion of the site. A transmission waterline with associated structures was observed to traverse through the northern portion of the property. No additional site developments were observed on the subject property.

A site map is presented as Figure 2 - Site Map.

2.2 Current Site Operations

Currently, the entire site consists of undeveloped land with miscellaneous dirt access roads.

2.3 Surrounding Properties

The surrounding properties of the site were observed as sparse residential properties and undeveloped land to the north, an apparent drainage structure and agricultural land with an associated well to the east, Cherry Valley Boulevard to the south, and Windfall Farms ranch and undeveloped land to the east.

3.0 SITE RECONNAISSANCE/INTERVIEWS

3.1 Site Reconnaissance

The site reconnaissance for this investigation was performed between March 19 and 24, 2009. The site reconnaissance consisted of traversing the site in order to observe surficial soil conditions, structures, possible generators or storage of hazardous materials, drainage, land use, vegetation, and any notable surface conditions which would indicate the presence of hazardous waste or petroleum product contamination on or near the site.

3.2 Interviews

On March 20, 2009, our environmental assessor interviewed Mr. Randy Downing, property owner of a parcel located north and adjacent to the site. Mr. Downing indicated he had lived at his location for approximately nine years. According to Mr Downing, he had no knowledge of hazardous substances ever being present on the subject site. Mr. Downing also indicated he had no knowledge of any storage or use of petroleum substances on the subject property.

3.3 Transaction Screen Questionnaire

For this investigation, in accordance with ASTM E 1528, a Transaction Screen Questionnaire was completed by Mr. Randy Downing, adjacent property owner, and our environmental assessor performing this investigation. The completed questionnaires are included in Appendix C of this report.

4.0 RECORD AND DOCUMENT REVIEW

4.1 Government Agency Review

For this investigation, R M Environmental, Inc. (RME), retained the services of Environmental Data Resources, Inc. (EDR), to perform a database review in accordance with ASTM E1527-05 - *Standard Practice for Environmental Site Assessment: Phase I Environmental Site Assessment Process*. The EDR environmental database report is presented in Appendix D. The following environmental databases were reviewed by EDR for this environmental investigation:

- Federal- National Priority List (NPL), proposed and delisted NPL, Comprehensive Environmental Response, Compensation, and Liability Information (CERCLIS/CERC-NFRAP), Corrective Action Report (CORRACTS), Resource Conservation and Recovery Information System (RCRIS-TSD/LQG/SQG), Emergency Response Notification System (ERNS), Superfund (CERCLA) Consent Decrees, ROD, Facility Index System/Facility Identification Initiative Program Summary Report (FINDS), Hazardous Materials Information Reporting System (HMIRS), Material Licensing Tracking System (MLTS), Mines Master Index File (MINES), NPL Liens, PCB Activity Database System, Department of Defense Sites, RCRA Administrative Action Tracking System, Toxic Chemical Release Inventory System, Toxic Substances Control Act, Section 7 Tracking Systems, FIFRA/ TSCA Tracking System.

- State and Local- Annual Workplan Sites, Cal-Sites, Cortese, Notify 65, Toxic Pits, Solid Waste Information System, WMUDS/SWAT, LUST, Bond Expenditure Plan, Underground Storage Tank Facilities, Voluntary Cleanup Program Properties, INDIAN UST, CA FID UST, HIST UST, Aboveground Storage Tank Facilities (AST), Cleaner Facilities, Waste Discharge System, List of Deed Restrictions, No Further Action Determination, School Property Evaluation Program, Properties Referred to Another Agency, No Further Action Determination, Properties Needing Further Evaluation, CA SLIC, and HAZNET.

- Tribal Records- Indian LUST, Indian UST.

- EDR Proprietary Records- Manufacturing Gas Plants, EDR Historical Auto Stations, EDR Historical Cleaners.

Additional governmental agencies contacted by RME included the following:

- Riverside County Assessors Office

- Riverside County Department of Flood Control

4.2 Agency Findings

Information obtained by the database search and our governmental agency review indicated the following:

- No Federal, NPL, RCRA, CORRACTS,or TSD sites are located within 1 mile of the site;
- No known oil or gas wells are on record within 1 mile of the site;
- There are no known CAL-SITES (formerly ASPIS), CHMIRS, or HAZNET sites located within 1 mile of the site;
- There are no Solid Waste Facility/Landfill or LUST sites within ½ mile of the site.

The EDR environmental database report is presented in Appendix D.

From the records of Riverside County, the Assessor Parcel Numbers (APNs) of the site are 407-220-(004, 007, 008, 009, 014, 016, 017). The current owner of the site is recorded as Levinkel & TSG Cherry Valley, L.P., c/o William Shopoff.

4.3 Sanborn Map Report

Sanborn fire insurance maps consist of documented sites which previously or currently contain chemicals/substances that pose a possible increase in fire potential or threat.

For this investigation, a Sanborn fire insurance map search was conducted for the area north of Cherry Valley Boulevard, Cherry Valley, California. A copy of the Sanborn Map report is included in Appendix D of this report. No Sanborn Maps were found for the information submitted.

4.4 Environmental Lien Search

For the preparation of the referenced Phase I Environmental Assessment process of the site (RME, June 2007), an environmental lien search was conducted by Environmental Data Resources, Inc. (EDR) for APN 407-220-009 of the subject site. No environmental liens were identified for APN 407-220-009.

4.5 Review of Previous Environmental Investigations

In May 2007, R M Environmental, Inc., performed a Phase I Environmental Site Assessment of the subject property and the adjacent property (APNs 413-270-(012, 013)). The scope of work completed for the investigation included a field reconnaissance of the site and surrounding areas, personal interviews, record and document review, historic map and aerial photo review, selected soil sampling and laboratory analysis, evaluation of the data collected, and submittal of a report.

The findings of the above Phase I Environmental Site Assessment indicated no significant evidence of recognized environmental conditions pertaining to the site. No additional environmental investigation was recommended for the project site.

5.0 HISTORICAL SITE USAGE

Presented below is the historical review of the usage of the site based on historical maps and aerial photographs for the site.

5.1 Aerial Photograph Review

The referenced aerial photographs were carefully reviewed to evaluate past developments of the site. Based on this review, man-made developments of the site included the following:

Date of Flight	Comments
1938	The central and southern portions of the site were observed to be developed as agricultural land. The north portion of the site was observed as undeveloped. An apparent drainage wash was observed on the southern portion of the property, adjacent to Cherry Valley Boulevard. The surrounding properties were observed as undeveloped land to the north, west, and east, and Cherry Valley Boulevard (formerly Woodland Avenue) to the south.
May 25, 1949	An apparent irrigation reservoir, a horse ranch, and several apparent drainage structures were observed to border the subject site to the west. The site and remaining surrounding properties appeared similar to that observed in the 1938 photographs.
1953	The site and surrounding properties appeared similar to that observed in the 1949 photographs.
January 29, 1962	The hilly terrain throughout the site was observed to have been cleared of vegetation. The remaining site and surrounding properties appeared similar to that observed in the 1953 photographs.
1967	The site was observed as fallow agricultural land with terraces cleared of vegetation. Several apparent small structures were observed to border the site to the east. The remaining site and surrounding properties appeared similar to that observed in the 1962 photographs.
May 24, 1974	The irrigation reservoir and drainage structures formerly present to the west of the site were not observed. The site and remaining surrounding properties appeared similar to that observed in the 1967 photographs.

1980	The site and surrounding properties appeared similar to that observed in the 1974 photographs.
January 23, 1980	The site and surrounding properties appeared similar to that observed in the 1980 photographs.
February 23, 1984	Several residential structures were observed on the property north of the subject site. The site and remaining surrounding properties appeared similar to that observed in the 1980 photographs.
1990	The site and surrounding properties appeared similar to that observed in the 1984 photographs.
January 21, 1990	The site and surrounding properties appeared similar to that observed in the 1990 photographs.
1994	The site and surrounding properties appeared similar to that observed in the 1990 photographs.
January 30, 1995	The site and surrounding properties appeared similar to that observed in the 1994 photographs.
March 2, 2000	The site and surrounding properties appeared similar to that observed in the 1995 photographs.
2002	An apparent disturbance related to the placement of a water pipeline in the north portion of the site was observed. The remaining site and surrounding properties appeared similar to that observed in the 2000 photographs.
April 18, 2005	The site and surrounding properties appeared similar to that observed in the 2002 photographs.

Selected site aerial photographs are included in Appendix D.

5.2 Findings of Historic Maps

For this investigation, we reviewed the following historic maps of the project:

- 5,208-scale U.S.G.S. map, Perris Quadrangle, 15 Minute Series, dated 1943. The site appeared as undeveloped land with an apparent access road. An apparent drainage was observed to traverse the southern portion of the site.

- 2,000-scale U.S.G.S. map, El Casco Quadrangle, 7.5 Minute Series, dated 1953. The site appeared similar to that observed in the 1943 map.

- 2,000-scale U.S.G.S. map, El Casco Quadrangle, 7.5 Minute Series, dated 1967. The site appeared similar to that observed in the 1953 map.

- 2,000-scale U.S.G.S. map, El Casco Quadrangle, 7.5 Minute Series, dated 1967, photo-revised 1979. The site appeared similar to that observed in the 1967 map.

Copies of the historical topographic maps used for this investigation are included in Appendix D.

5.3 Site History

The site has reportedly been used for agricultural purposes dating back to the early 1930's. The reported site history and significant site usage includes:

* Prior 1938 - Prior 1967: The site appeared to be developed with agriculture fields

* 1980-Present: - The subject site consists of cleared/undeveloped land

Site history is based on historical maps and aerial photographs and information gathered from interviews. Several of the historical resources utilized for the review of the site history are included in Appendix D of this report.

6.0 SITE GEOLOGY/HYDROGEOLOGY

6.1 Site Geology

The site is located in the western margin of the San Gorgonio Pass between the Traverse Ranges Geomorphic Province to the north and the Peninsular Ranges Geomorphic Province to the south. Lateral displacement and uplift of the region has occurred on a series of major, northwest-trending faults which are thought to be related to the regional tectonic framework. Some of these fault zones have remained active to the present time which include the Cherry Valley Fault zone which is located approximately 1/4 to ½ mile to the northeast, the Banning Fault zone located approximately 2 miles to the northeast, the San Andreas Fault zone located approximately 7 miles to the northeast, and the San Jacinto Fault zone located approximately 8 miles to the southwest.

Locally, the site is underlain by several hundred feet of Quaternary age sedimentary deposits.

6.2 Hydrogeologic Setting

The site is located in the Singleton storage unit of the San Timoteo Creek Drainage Basin. Based on review of the "San Gorgonio Pass Water Agency - Engineer's Report on Water Conditions' (San Gorgonio Pass Water Agency, November 1997) and the Geocheck - Physical Setting Source Addendum to the EDR environmental database report for this project, the depth to the regional groundwater in the vicinity of the site is approximately 150 to 200 feet below the ground surface.

Two inactive groundwater wells (Well Nos. 1 & 2) are located west and adjacent to the site. Based on well measurements of Well No. 1 conducted on May 22, 2007, the depth to groundwater is approximately 195 feet below ground surface (bgs). In a conversation with Mr. Randy Downing, owner of property north and adjacent to the site, the depth to groundwater in wells located in Mr. Downing's property have varied from 50 to 100 feet bgs.

7.0 CONCLUSIONS AND OPINION

"We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527 of the TSG Property located north of Cherry Valley Boulevard, Cherry Valley, Riverside County, California [APNs 407-220-(004, 007-009, 014, 016, 017)], the property. Any exceptions to, or deletions from, this practice are described in Section 8.0 of this report. This assessment has revealed no evidence of recognized environmental conditions in connection with the property except for the following:"

* Areas of miscellaneous non-hazardous debris were observed on the subject property. These materials should be properly removed and disposed from the site prior to site development.

In the event that any hazardous materials are found during subsequent site operations, **R M Environmental, Inc.,** and the proper authorities should be notified immediately.

8.0 DATA GAPS

The information gathered for this investigation is presented in this report. Considering this information, several areas of gaps in data in regard to the site still remain. Listed below are the specific data gaps identified for this investigation and the significance of the missing data.

* An environmental lien search was not conducted for this investigation. Based on the findings of the prior PSA of the site (RME, June 2007), environmental liens were not identified for the site. It is our opinion, the absence of an additional environmental lien search is insignificant.

No additional data gaps are know for the subject property.

9.0 LIMITS OF INVESTIGATION

This Phase I Environmental Site Assessment was performed using the degree of care and skill ordinarily exercised under similar circumstances by engineers and geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report.

In preparing this report, we were provided information derived from secondary sources and personal interviews. Except as described in this report, we have made no independent investigation as to the accuracy or completeness of the information derived from these sources. We have assumed the information provided to us by our sources was accurate and complete.

10.0 QUALIFICATIONS & SIGNATURE

"We declare that, to the best of our knowledge and belief, we meet the definition of Environmental Professional as defined in §312.21 of this part."

"We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312."

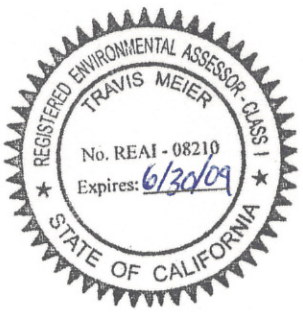
The opportunity to be of service is sincerely appreciated. If you have any questions, please call us at (909) 446-0041.

Sincerely,

R M ENVIRONMENTAL, INC.,

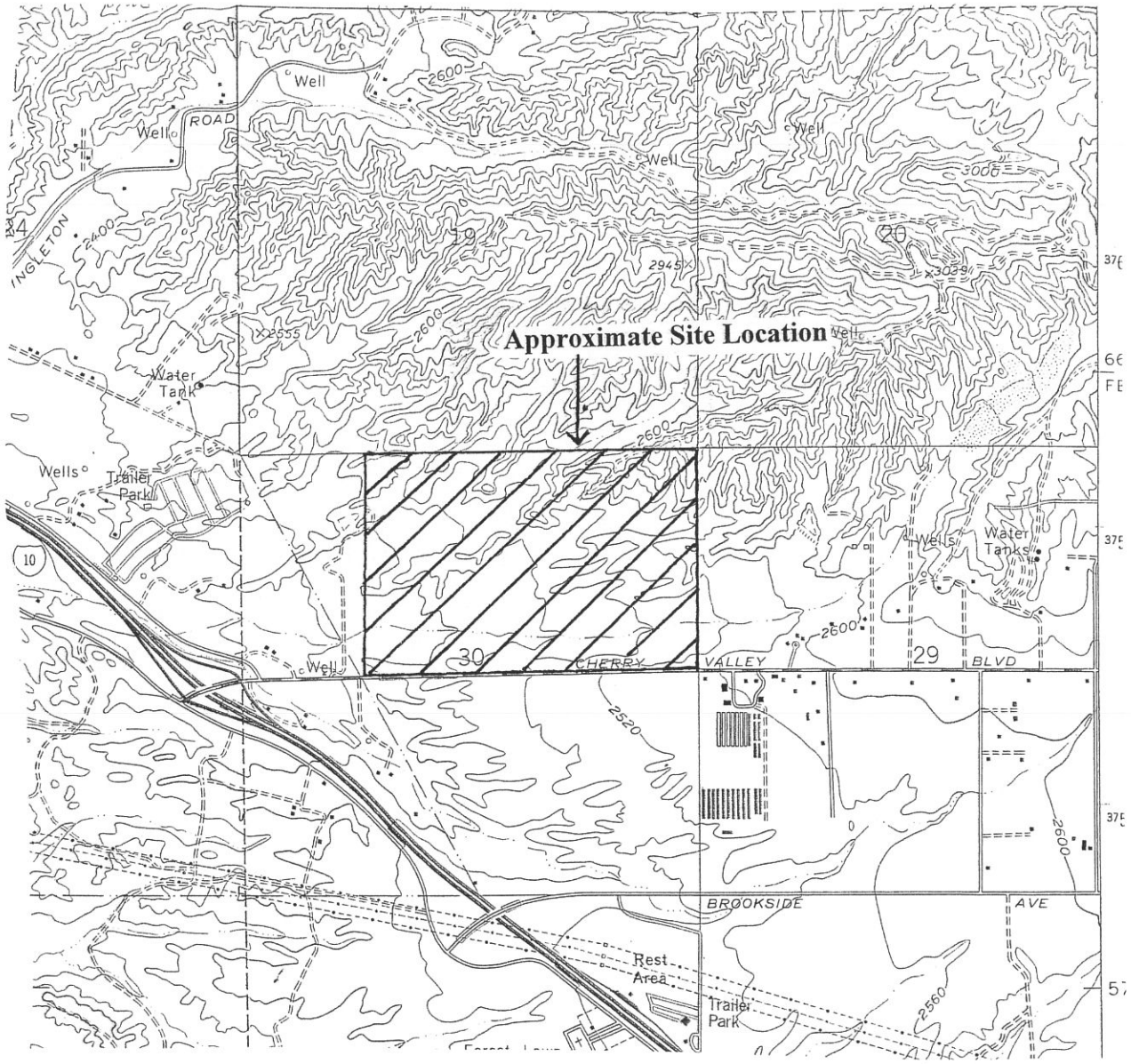
Travis Meier, M.S.E.S., REA 08210
Registered Environmental Assessor I

Reviewed By: Robert C. Manning, CEG 1768
President





R M ENVIRONMENTAL, Inc.



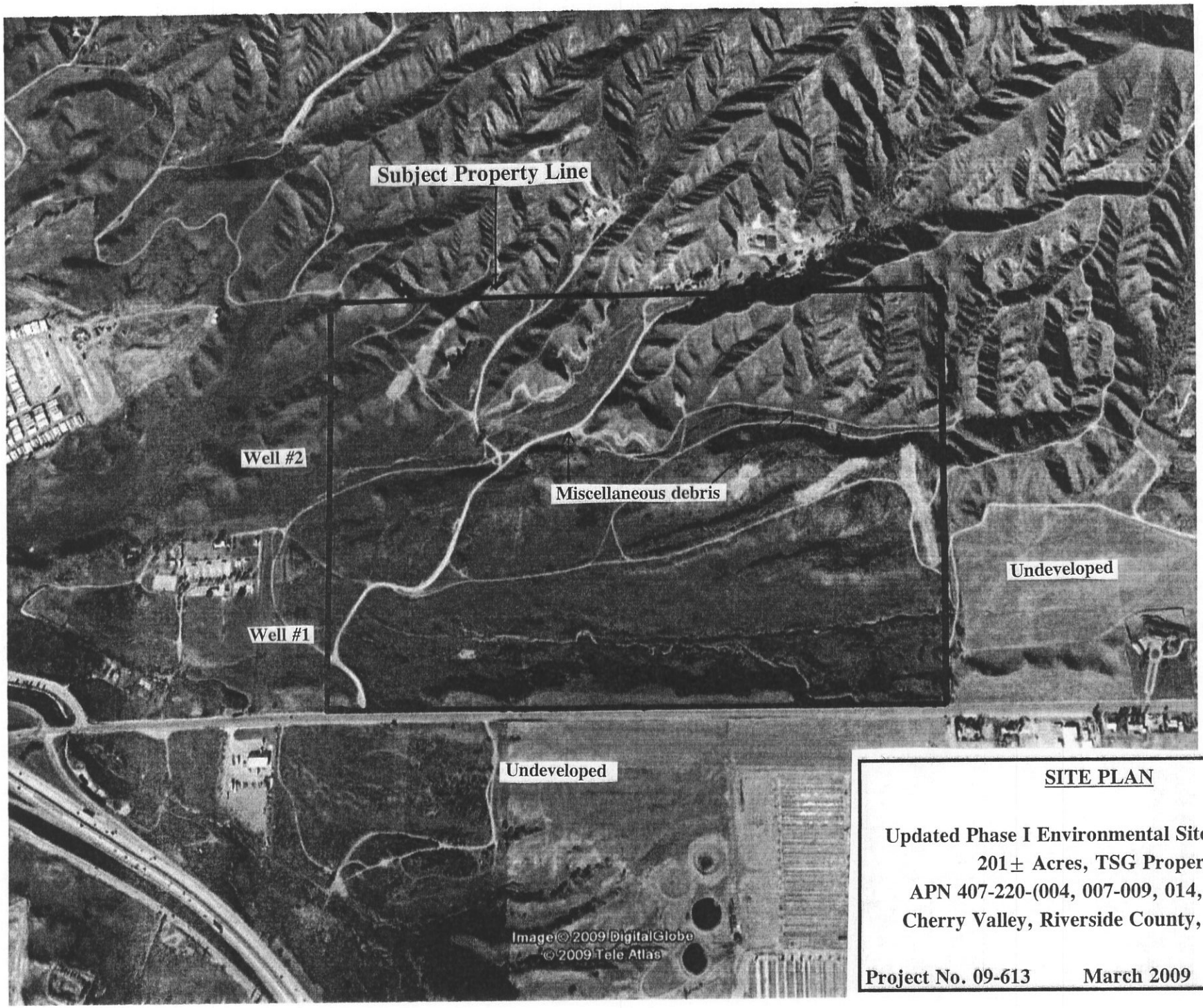
Scale 1"=2,000'

Reference:
U.S.G.S. Map, dated 1967, photo-revised 1979, El Casco Quadrangle, 7.5 Minute Series

LOCATION MAP - Updated PSA I, 201± Acres, TSG Property, Cherry Valley, California

PROJECT NO. 09-613	DATE : MARCH 2009	FIGURE 1

CVAR_09958



SITE PLAN

Updated Phase I Environmental Site Assessment
201± Acres, TSG Property
APN 407-220-(004, 007-009, 014, 016, 017)
Cherry Valley, Riverside County, California

Project No. 09-613 **March 2009** **Figure 2**

CVAR_09959

APPENDIX A

References

REFERENCES

R M Environmental, Inc., June 29, 2007, "Report of Findings, Phase I Environmental Site Assessment, 243± Acres, TSG Property, APNs 413-270-(012, 013) & 4-7-220-(004,007-009, 014, 016, 017), Cherry Valley, Riverside County, California"

California Department of Conservation, Division of Mines and Geology, Digital Images of Official Maps of Alquist-Priolo Earthquake Fault Zones of California, Southern Region, 2000-2003.

Environmental Protection Agency (EPA), Preliminary Remediation Goals (PRGs) Tables, 2004 Standards.

U.S.G.S., dated 1943, Perris Quadrangle, 15 Minute Series, Scale: 1"= 5,208'.

U.S.G.S., dated 1953, El Casco Quadrangle, 7.5 Minute Series, Scale: 1"= 2,000'.

U.S.G.S., dated 1967, El Casco Quadrangle, 7.5 Minute Series, Scale: 1"= 2,000'.

U.S.G.S., dated 1967, photo-revised 1979, El Casco Quadrangle, 7.5 Minute Series, Scale: 1"= 2,000'.

AERIAL PHOTOGRAPHS UTILIZED

YEAR/SCALE	FLIGHT NO.	AGENCY
1938/1"= 555'	-	Laval
May 25, 1949/ No Scale	AXM-11F-72	Riverside Co. Flood Control.
1953/1"= 555'	-	Pacific Air
January 29, 1962/1"= 2,000'	3-348	Riverside Co. Flood Control.
1967/1"= 555'	-	Western
May 24, 1974/1"= 2,000'	102/103	Riverside Co. Flood Control.
1980/1"= 600'	-	AMI
January 23, 1980/1"= 2,000'	102/103	Riverside Co. Flood Control.
February 23, 1984/1"= 1,600'	1645/1646	Riverside Co. Flood Control.
1990/1"= 666'	-	U.S.G.S.
January 21, 1990/1"= 1,600'	3-36/3-37	Riverside Co. Flood Control.
1994/1"= 666'	-	U.S.G.S.
January 30, 1995/1"= 1,600'	3-34/3-35	Riverside Co. Flood Control.
March 2, 2000/1"= 1,600'	3-36/3-37	Riverside Co. Flood Control.
2002/ 1"= 666'	-	U.S.G.S.
April 20, 2005/1"= 1,600'	3-34/3-36	Riverside Co. Flood Control.

APPENDIX B

Selected Site Photographs



Construction debris located on
eastern border of the site.



Warning sign for high-pressure waterline
Buried beneath the northern portion of the site.



Mobile home trailer debris located in the
central portion of the subject site.

SELECTED SITE PHOTOGRAPHS

Updated Phase I Environmental Site Assessment
201± Acres, TSG Property
407-220-(004, 007-009, 014, 016, 017)
Cherry Valley, Riverside County, California

Project No. 09-613 March 2009 Figure B-1

CVAR_09963



Miscellaneous non-hazardous debris
located in the central portion of the site.



Electrical transformers located on
the eastern border of the site.



Concrete structures associated with the
high-pressure waterline that traverses the site.

SELECTED SITE PHOTOGRAPHS

Updated Phase I Environmental Site Assessment
201± Acres, TSG Property
407-220-(004, 007-009, 014, 016, 017)
Cherry Valley, Riverside County, California

Project No. 09-613 **March 2009** **Figure B-2**



Panoramic view of site looking south from the northern portion of the subject site.



Panoramic view of site looking west from the eastern portion of the subject site.

SELECTED SITE PHOTOGRAPHS

Updated Phase I Environmental Site Assessment
201± Acres, TSG Property
407-220-(004, 007-009, 014, 016, 017)
Cherry Valley, Riverside County, California

Project No. 09-613 **March 2009** **Figure B-3**

CVAR_09965







Panora

SELECTED SITE PHOTOGRAPHS

Updated Phase I Environmental Site Assessment
201± Acres, TSG Property
407-220-(004, 007-009, 014, 016, 017)
Cherry Valley, Riverside County, California

oject No. 09-613 **March 2009** **Figure B-3**

CVAR_09966

APPENDIX C

Transaction Screen Questionnaire

TRANSACTION SCREENING QUESTIONNAIRE
ASTM (E 1528-93)

Description of Site: Address:
PSAI - TSG Property
APN 407-220 (004, 007-009, 014, 016, 017)
Cherry Valley, CA

North Adjacent Site

Question — ~~Owner~~ — Occupants (if applicable) — Observed During Site Visit

Question	Owner			Occupants (if applicable)			Observed During Site Visit		
1. Is the *property* or any *adjoining property* used for an industrial use?	*Yes*	*No* ✓	*Unk*	*Yes*	*No*	*Unk*	*Yes*	*No*	*Unk*
2. *To the best of your knowledge, has the property* or any *adjoining property* been used for an industrial use in the past?	Yes	No ✓	Unk	Yes	No	Unk	Yes	No	Unk
3. Is the *property* or any *adjoining property used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing or recycling facility?*	Yes	No ✓	Unk	Yes	No	Unk	Yes	No	Unk
4. To the best of your knowledge has the *property* or any *adjacent property* been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?	Yes	No ✓	Unk	Yes	No	Unk	Yes	No	Unk
5. Are there currently, or to the best of your knowledge have there been previously, any damaged or discarded automotive or industrial batteries, or pesticides, paints, or other chemicals in individual containers of greater than 5 gal(19L) in volume or 50 gal(190L) in the aggregate, stored on or used at the *property* or at the facility?	Yes	No ✓	Unk	Yes	No	Unk	Yes	No	Unk
6. Are there currently, or to the best of your knowledge have there been previously, any industrial *drums* (typically 55 gal(208 L) or sacks of chemicals located on the *property* or at the facility?	Yes	No ✓	Unk	Yes	No	Unk	Yes	No	Unk
7. Has *fill dirt* been brought onto the *property* that originated from a contaminated site or that is of an unknown origin?	Yes	No	Unk ✓	Yes	No	Unk	Yes	No	Unk
8. Are there currently, or to the best of your knowledge have there been previously, any *pits, ponds, or lagoons* located on the *property* in connection with waste treatment or waste disposal?	Yes	No	Unk ✓	Yes	No	Unk	Yes	No	Unk
9. Is there currently, or to the best of your knowledge has there been previously, any *stained soil* on the *property*?	Yes	No ✓	Unk	Yes	No	Unk	Yes	No	Unk
10. Are there currently, or to the best of your knowledge have there been previously, any registered or unregistered *storage tanks* (above or underground) located on the *property*?	Yes	No ✓	Unk	Yes	No	Unk	Yes	No	Unk
11. Are there currently, or to the best of your knowledge have there been previously, any *vent pipes, fill pipes, or access ways* indicating a fill pipe protruding from the ground on the *property* or adjacent to any structure located on the *property*?	Yes	No ✓	Unk	Yes	No	Unk	Yes	No	Unk

12. Are there currently, or to the best of your knowledge have there been previously, any *flooring, drains, or walls* located within the facility that are stained by substances other than water or are emitting foul odors?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
13. If the *property* is served by a private well or non-public water system, have contaminants been identified in the well or system that exceed guidelines applicable to the water system or has the well be designated as contaminated by any government environmental/health agency?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
14. Does the *owner* or *occupant* of the *property* have any knowledge of *environmental liens* or governmental notification relating to past or recurrent violations of environmental laws with respect to the *property* or any facility located on the *property*?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
15. Has the *owner* or *occupant* of the *property* been informed of the past or current existence of *hazardous substances* or *petroleum products* or environmental violations with respect to the *property* or any facility located on the *property*?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
16. Does the *owner* or *occupant* of the *property* have any knowledge of any *environmental site assessment* of the *property* or facility that indicated the presence of *hazardous substances* or *petroleum products* on, or contamination of, the *property* or recommended further assessment of the *property*	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
17. Does the *owner* or *occupant* of the *property* know of any past, threatened, or pending lawsuits or administrative proceedings concerning a release or threatened release of any *hazardous substance* or *petroleum products* involving the *property* by any *owner* or *occupant* of the *property*?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
18. Does the *property* discharge waste water on or adjacent to the *property* other than storm water into a sanitary sewer system?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
19. To the best of your knowledge, have any *hazardous substances* or *petroleum products*, unidentified waste materials, tires, automotive or industrial batteries or any other waste materials been dumped above grade, buried and/or burned on the *property*?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
20. Is there a *transformer, capacitor*, or any hydraulic equipment for which there are any records indicating the presence of PCBs?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk

Signature

Name of Respondent: Randy Downing

Title: _____

No. of years familiar with property 9

Date: 3-20-09

Phone: 951-543-5855

Work Order No. 09-613

TRANSACTION SCREENING QUESTIONNAIRE
ASTM (E 1528-93)

Description of Site: Address:
TSG Property
APN 407-220-(004,007-009,014,016,017)
Cherry Valley, CA

Question	Owner			Occupants (if applicable)			Observed During Site Visit		
1. Is the *property* or any *adjoining property* used for an industrial use?	*Yes*	*No*	*Unk*	*Yes*	*No*	*Unk*	*Yes*	*No*	*Unk*
2. *To the best of your knowledge, has the property* or any *adjoining property* been used for an industrial use in the past?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
3. Is the *property* or any *adjoining property used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing or recycling facility?*	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
4. To the best of your knowledge has the *property* or any *adjacent property* been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
5. Are there currently, or to the best of your knowledge have there been previously, any damaged or discarded automotive or industrial batteries, or pesticides, paints, or other chemicals in individual containers of greater than 5 gal(19L) in volume or 50 gal(190L) in the aggregate, stored on or used at the *property* or at the facility?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
6. Are there currently, or to the best of your knowledge have there been previously, any industrial *drums* (typically 55 gal(208 L) or sacks of chemicals located on the *property* or at the facility?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
7. Has *fill dirt* been brought onto the *property* that originated from a contaminated site or that is of an unknown origin?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
8. Are there currently, or to the best of your knowledge have there been previously, any *pits, ponds, or lagoons* located on the *property* in connection with waste treatment or waste disposal?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
9. Is there currently, or to the best of your knowledge has there been previously, any *stained soil* on the *property*?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
10. Are there currently, or to the best of your knowledge have there been previously, any registered or unregistered *storage tanks* (above or underground) located on the *property*?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
11. Are there currently, or to the best of your knowledge have there been previously, any *vent pipes, fill pipes, or access ways* indicating a fill pipe protruding from the ground on the *property* or adjacent to any structure located on the *property*?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk

12. Are there currently, or to the best of your knowledge have there been previously, any *flooring, drains, or walls* located within the facility that are stained by substances other than water or are emitting foul odors?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
13. If the *property* is served by a private well or non-public water system, have contaminants been identified in the well or system that exceed guidelines applicable to the water system or has the well be designated as contaminated by any government environmental/health agency?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
14. Does the *owner* or *occupant* of the *property* have any knowledge of *environmental liens* or governmental notification relating to past or recurrent violations of environmental laws with respect to the *property* or any facility located on the *property*?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
15. Has the *owner* or *occupant* of the *property* been informed of the past or current existence of *hazardous substances* or *petroleum products* or environmental violations with respect to the *property* or any facility located on the *property*?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
16. Does the *owner* or *occupant* of the *property* have any knowledge of any *environmental site assessment* of the *property* or facility that indicated the presence of *hazardous substances* or *petroleum products* on, or contamination of, the *property* or recommended further assessment of the *property*	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
17. Does the *owner* or *occupant* of the *property* know of any past, threatened, or pending lawsuits or administrative proceedings concerning a release or threatened release of any *hazardous substance* or *petroleum products* involving the *property* by any *owner* or *occupant* of the *property*?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
18. Does the *property* discharge waste water on or adjacent to the *property* other than storm water into a sanitary sewer system?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
19. To the best of your knowledge, have any *hazardous substances* or *petroleum products*, unidentified waste materials, tires, automotive or industrial batteries or any other waste materials been dumped above grade, buried and/or burned on the *property*?	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk
20. Is there a *transformer, capacitor*, or any hydraulic equipment for which there are any records indicating the presence of PCBs? No staining	Yes	No	Unk	Yes	No	Unk	Yes	No	Unk

Signature

No. of years familiar with property 2

Name of Respondent: Travis Meier

Date: March 27, 2009

Title: Registered Environmental Assessor

Phone: (909) 446-0041

Work Order No. 09-613

APPENDIX D

Site Assessment Data Report
(EDR, May 7 and 22, 2007, and March 23 and 25, 2009)

TSP Property - Shopoff
North of Cherry Valley Blvd.
Cherry Valley, CA 92320

Inquiry Number: 2449248.2s
March 25, 2009

The EDR Radius Map™ Report with GeoCheck®

Prepared using the EDR FieldCheck® System

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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CVAR_09974

EXECUTIVE SUMMARY

A search of the environmental records was conducted by Environmental Data Resources, Inc. (EDR). RM ENVIRONMENTAL used the EDR FieldCheck System to review and/or revise the results of this search, based on independent data verification by RM ENVIRONMENTAL. The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

NORTH OF CHERRY VALLEY BLVD.
CHERRY VALLEY, CA 92320

COORDINATES

Latitude (North):	33.972000 - 33° 58' 19.2"
Longitude (West):	117.023100 - 117° 1' 23.2"
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	497866.0
UTM Y (Meters):	3758857.2
Elevation:	2440 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	33117-H1 EL CASCO, CA
Most Recent Revision:	1979

AERIAL PHOTOGRAPHY IN THIS REPORT

Photo Year:	2005
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No sites were identified in following databases.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ..... National Priority List
Proposed NPL ..... Proposed National Priority List Sites

CVAR_09975

EXECUTIVE SUMMARY

NPL LIENS..... Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL..... National Priority List Deletions

Federal CERCLIS list

CERCLIS..... Comprehensive Environmental Response, Compensation, and Liability Information System

Federal CERCLIS NFRAP site List

CERC-NFRAP..... CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS..... Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF..... RCRA - Transporters, Storage and Disposal

Federal RCRA generators list

RCRA-LQG..... RCRA - Large Quantity Generators
RCRA-SQG..... RCRA - Small Quantity Generators
RCRA-CESQG..... RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS..... Engineering Controls Sites List
US INST CONTROL..... Sites with Institutional Controls

Federal ERNS list

ERNS..... Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE..... State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR..... EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF..... Solid Waste Information System

State and tribal leaking storage tank lists

LUST..... Geotracker's Leaking Underground Fuel Tank Report
SLIC..... Statewide SLIC Cases
INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST..... Active UST Facilities

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AST ..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST ..... Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

VCP ..... Voluntary Cleanup Program Properties
INDIAN VCP ..... Voluntary Cleanup Priority Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
ODI ..... Open Dump Inventory
WMUDS/SWAT ..... Waste Management Unit Database
SWRCY ..... Recycler Database
HAULERS ..... Registered Waste Tire Haulers Listing
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL ..... Clandestine Drug Labs
HIST Cal-Sites ..... Historical Calsites Database
SCH ..... School Property Evaluation Program
Toxic Pits ..... Toxic Pits Cleanup Act Sites
CDL ..... Clandestine Drug Labs

Local Lists of Registered Storage Tanks

CA FID UST ..... Facility Inventory Database
HIST UST ..... Hazardous Substance Storage Container Database
SWEEPS UST ..... SWEEPS UST Listing

Local Land Records

LIENS 2 ..... CERCLA Lien Information
LUCIS ..... Land Use Control Information System
LIENS ..... Environmental Liens Listing
DEED ..... Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ..... Hazardous Materials Information Reporting System
CHMIRS ..... California Hazardous Material Incident Report System
LDS ..... Land Disposal Sites Listing
MCS ..... Military Cleanup Sites Listing

Other Ascertainable Records

RCRA-NonGen ..... RCRA - Non Generators

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DOT OPS	Incident and Accident Data
DOD	Department of Defense Sites
FUDS	Formerly Used Defense Sites
CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
MINES	Mines Master Index File
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
RADINFO	Radiation Information Database
FINDS	Facility Index System/Facility Registry System
RAATS	RCRA Administrative Action Tracking System
CA BOND EXP. PLAN	Bond Expenditure Plan
CA WDS	Waste Discharge System
Cortese	"Cortese" Hazardous Waste & Substances Sites List
Notify 65	Proposition 65 Records
DRYCLEANERS	Cleaner Facilities
WIP	Well Investigation Program Case List
HAZNET	Facility and Manifest Data
EMI	Emissions Inventory Data
INDIAN RESERV	Indian Reservations
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants	EDR Proprietary Manufactured Gas Plants
EDR Historical Auto Stations	EDR Proprietary Historic Gas Stations
EDR Historical Cleaners	EDR Proprietary Historic Dry Cleaners

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

Unmappable (orphan) sites are not considered in the foregoing analysis.

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EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped:

Site Name	Database(s)
COMMUNICATIONS - MT DAVID	SWEEPS UST
GTE MT DAVIS MICRO	SWEEPS UST
INLAND DISPOSAL INC	SWEEPS UST
SOUTHERN CAL GAS - INLAND TRAN	SWEEPS UST
BEAUMONT CITY OF/PUBLIC WORKS	SWEEPS UST
TEXACO BOWIE'S	SWEEPS UST
CIRCLE K #509	SWEEPS UST
CDF/BEAUMONT FOREST FIRE STAT	SWEEPS UST
ARCO AM/PM MINI MARKET	SWEEPS UST
DINOSAUR TIRE CENTER	SWEEPS UST
UNOCAL #5636	SWEEPS UST
GRISHY GVE WINDMACHINE #1	CA FID UST, SWEEPS UST
FIORI AND RAMIREZ	CA FID UST, SWEEPS UST
FRQUHAR, RICHARD L	CA FID UST, SWEEPS UST
SCHOOL HOUSE WINDMACHINE	CA FID UST, SWEEPS UST
BERT P. MARCUM JR ET. AL.	SWEEPS UST
HIGHLAND ACRES RANCH	CA FID UST, SWEEPS UST
KELLY ROOFING	CA FID UST, SWEEPS UST
JORCO CHEMICAL COMPANY	SWEEPS UST
TEXACO SERVICE STATION	SWEEPS UST
FRANK JACINTO, JR.	SWEEPS UST
SCHNEIDER. DR SANFORD	CA FID UST, SWEEPS UST
LUGONIA 15 WINDMACHINE	CA FID UST, SWEEPS UST
SOUTHERN CALIF GAS CO	CA FID UST, SWEEPS UST
FLETCHER, G. LOUIS	CA FID UST, SWEEPS UST
NEVADA 15 WINDMACHINE	CA FID UST, SWEEPS UST
BEAUMONT GROVES	CA FID UST, SWEEPS UST
SUNRISE RANCH	CA FID UST, SWEEPS UST
FARQUOR LEASE WIND MCHNE	CA FID UST, SWEEPS UST
HOWARD KING	CA FID UST, SWEEPS UST
D.E.D. LOMBARD RANCH	CA FID UST, SWEEPS UST
THE PAVILLIAN AT REDLANDS	SWEEPS UST
DAVIDS BUILDING MATERIALS	SWEEPS UST
ALLESSANDRO GROVES	CA FID UST, SWEEPS UST
LANGFORD WINDMACHINE	HIST UST, SWEEPS UST
REDLANDS	SWEEPS UST
QALITY FARMS - SAN TIMOTEO	SWEEPS UST
KPT CORPORATION	San Bern. Co. Permit, CA FID UST, SWEEPS UST
AG GRISBY GROVE - WINDMACHINE	CA FID UST, SWEEPS UST
CIRCLE K MARKET	CA FID UST, SWEEPS UST
FARMER ORCHARD CO	CA FID UST, SWEEPS UST
LOCKHEED PROPULSION CO. (BEAUMONT)	RESPONSE, ENVIROSTOR
9856 CHERRY AVE (CROSS DUTTON AVE)	CDL
38649 CHERRY VALLEY BLVD, UNIT C	CDL
PALM CLEANERS	DRYCLEANERS
UNIVERSITY DRY CLEANERS	DRYCLEANERS, HAZNET
DUTCH GIRL DRY CLEANERS	DRYCLEANERS, HAZNET
SQUARE D COMPANY	DEED
1200 BLOCK CHERRY AVE	CHMIRS
CHERRY AVE. AT ANTONELL COURT	CHMIRS
CHERRY AV NEAR 10TH ST	CHMIRS

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EXECUTIVE SUMMARY

NOBLE CREEK LIFT STATION, 1799 OAK VALLEY PARKWAY	CHMIRS
OAK VALLEY PKWY AT I 10	CHMIRS
1899 OAK VALLEY PKWY	CHMIRS
STATE HWY 60 2056 FT NORTH AND 1810 FT EAST OF 6T3	CHMIRS
CALIMESA BLVD 1/4 MILE NORTH OF SANDELWOOD	CHMIRS
SAN TIMOTEO ROAD AND REDLANDS BLVD	CHMIRS
WESTBOUND I-10 , JUST WEST OF CALIMESA BLVD OFF RA	CHMIRS
#20411220203 1213 CALISMESA BLVD	CHMIRS
I-10 AT CHERRY VALLEY BLVD	CHMIRS
CHERRY VALLEY, 39100 ORCHARD STREET	CHMIRS
EASTBOUND I-10 AT CHERRY VALLEY BLVD	CHMIRS
INDIO BLVD BETWEEN CIVIC CENTER / DILLION RD	CHMIRS
NORTHBOUND I 215, NORTH OF PENNSYLVANIA AVE	CHMIRS
81929 EAST VALLEY PARKWAY	CHMIRS
SOUTHWEST MOTORS	Cortese
SO CAL GAS/BEAUMONT MGP	Cortese
LOCKHEED PROPULSION-BEAUM	Cortese
GTT	Cortese
HOLIDAY SHELL STATION	Cortese, LUST
SO CAL GAS/REDLANDS (STAT	Cortese
LOMA LINDA UNIVERSITY	CERCLIS, FINDS
LOCKHEED CORP AIRCRAFT LDFL	CERC-NFRAP
CHURCH ST. LANDFILL	CERC-NFRAP
UNIVERSAL RUNDEL	CERC-NFRAP
CITY OF REDLANDS WELL FIELD	CERC-NFRAP
REDLANDS FARMING CO	CERC-NFRAP
THRIFTY #347/ARCO #9719	LUST
JAMES P. HEALEY (BUNJES)	LUST
SOUTHWEST MOTORS	LUST
SEVEN ELEVEN #33571	UST, LUST
ARCO #6052	LUST
CITY OF ALAMEDA	HAZNET, UST
WONG & ASSOC	HAZNET, UST
FASTRIP FOOD STORE #331	UST
CI-YUCAIPA VLY WATER TRTM	UST
MATICH CORP	UST
AG-JACINTO, FRANK JR	UST
AG-NEVADA 15 WINDMACHINE	UST
AG-P S 80	UST
AG-FARQUOR LEASE WINDMCNE	UST
AG-D E D LOMBARD RANCH	UST
AERODYNAMICS INC	UST
AG-ALESSANDRO GROVES	UST
AG-REDLANDS SECURITY CO	UST
AG-LANGFORD WINDMACHINE	UST
AG-FLETCHER, G LOUIS	UST
SO CAL GAS/REDLANDS I (STATE ST.) MGP	VCP, ENVIROSTOR
THREE RINGS RANCH	HIST UST
UNION OIL SERVICE STATION #563	HIST UST
U.S. SPRINT COMMUNICATIONS COM	HIST UST
FIORI AND RAMIREZ	HIST UST
SCHOOL HOUSE WINDMACHINE	HIST UST
DANIEL C MCMASTERS	HIST UST
HIGHLAND ACRES RANCH	HIST UST
FRANK JACINTO, JR.	HIST UST

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EXECUTIVE SUMMARY

LUGONIA 15 WINDMACHINE	HIST UST
NEVADA 15 WINDMACHINE	HIST UST
SUNRISE RANCH	HIST UST
FARQUOR LEASE WINDMACHINE	HIST UST
D.E.D. LOMBARD RANCH	HIST UST
SOCAL-WEST CONSTRUCTORS	HIST UST
REDLANDS	HIST UST
RANCHO TIMOTEO	HIST UST
QALITY FARMS - SAN TIMOTEO	HIST UST
GRISBY GROVE WINDMACHINE #1	HIST UST
GRISBY GROVE - WINDMACHINE #II	HIST UST
L.B.T.	HIST UST
G. LOUIS FLETCHER	HIST UST
DR. SANFORD SCHNEIDER	HIST UST
ALESSANDRO GROVES	HIST UST
BEAUMONT HIGH SCHOOL	HAZNET
JOE ARVAKAIN	HAZNET
JACO OIL CO	HAZNET
SHOP THE	HAZNET
J AND M SILKSCREEN	FINDS, RCRA-SQG, HAZNET
CITY OF REDLANDS WASTE DIV	FINDS, RCRA-SQG, HAZNET
SOUTHERN CALIFORNIA GAS REDLANDS FMR MGP	HAZNET
RITE AIDE INC	HAZNET
A&H SPECIALIST	HAZNET
RICHARD TUNELL	HAZNET
LONGS DRUG STORE #196	San Bern. Co. Permit, HAZNET
HOME DEPOT NO HD8987	RCRA-SQG
RISCO, INC	RCRA-SQG
SKAT TRAK INC	FINDS, RCRA-SQG
EMPIRE KARTS	FINDS, RCRA-SQG
SOUTHERN CALIFORNIA GAS CO-REDLANDS MGP	RCRA-LQG
HOME DEPOT NO HD8987	RCRA-NonGen
FOUR COR PIPELINE CO BEAUMONT	FINDS, RCRA-NonGen
QUEST DIAGNOSTICS REDLANDS RRL	RCRA-NonGen
I-10/CHERRY VALLEY BLVD SAN TIMOTEO	ERNS
1213 CALISMESA BLVD 20411220203	ERNS
EB I-10 AT CHERRY VALLEY BLVD	ERNS
OUT IN THE OPEN DESERT NORTH ON I-20 **	ERNS
CHURCH STREET LANDFILL	FINDS
NM COLTON LANDFILL LLC	San Bern. Co. Permit
MICRO TECHNICAL LABORATORY	San Bern. Co. Permit
AT&T MOBILITY #69153/51809	San Bern. Co. Permit
RICHARD LINDEN ORANGE GROVE	San Bern. Co. Permit
ICON HEALTH FITNESS	San Bern. Co. Permit
ALL STATE INSTANT PRESS	San Bern. Co. Permit
A & H AUTO SPECIALISTS INC	San Bern. Co. Permit
G.L. MACHINE	San Bern. Co. Permit
A & H AUTO SPECIALISTS	San Bern. Co. Permit
CRAIG & SON'S TERMITE PEST CONTROL	San Bern. Co. Permit
WUCHENICH, GARY T DDS MS	San Bern. Co. Permit
REDLANDS DAILY FACTS	San Bern. Co. Permit
HORACE HINCKLEY WATER TRT	San Bern. Co. Permit
BNSF RAILWAY CO-REDLANDS	San Bern. Co. Permit
AT&T MOBILITY #68135/50979	San Bern. Co. Permit

TOM BELL CHEV - USED CARS	San Bern. Co. Permit
WELL #39	San Bern. Co. Permit
PANSY JACINTO TRUST	San Bern. Co. Permit
SCHNEIDER, SANFORD DR	San Bern. Co. Permit
NATIONWIDE MARKETING SOLUTIONS	San Bern. Co. Permit
THE SMART SHOP	San Bern. Co. Permit
G.L. MACHINE	San Bern. Co. Permit
AG-NEVADA 15 WINDMACHINE	San Bern. Co. Permit
NATURAL DESIGN	San Bern. Co. Permit
PALM SQUARE ASSOCIATES	San Bern. Co. Permit
AG-REDLAND CITRUS ASSO.	San Bern. Co. Permit
LOMA LINDA UNIV MEDICAL CENTER	San Bern. Co. Permit
JORCO CHEMICAL COMPANY	San Bern. Co. Permit
AG-D E D LOMBARD RANCH	San Bern. Co. Permit
LINCARE, INC	San Bern. Co. Permit
ALPINE SHUTTER CRAFT	San Bern. Co. Permit
HUTCHISON MANUFACTURING	San Bern. Co. Permit
FLETCHER, G LOUIS	San Bern. Co. Permit
WELL #2-MAGUET	San Bern. Co. Permit
AG-ALESSANDRO GROVES	San Bern. Co. Permit
RITE AID #5701	San Bern. Co. Permit
TRANSMISSIONS PLUS	San Bern. Co. Permit
B & T AUTO REPAIR CENTER, INC.	San Bern. Co. Permit
ABANDONED UST	San Bern. Co. Permit
REDLANDS SECURITY CO	San Bern. Co. Permit
REDLANDS COLOR LAB	San Bern. Co. Permit
LARRY JACINTO CONSTRUCTION	San Bern. Co. Permit
LOOKHEED PROPULSION CO (J)	SLIC
LOCKHEED PROPULSION CO (J)	SLIC
ARCO PIPELINE - BEAUMONT PUMP STATION	SLIC
LOCKHEED PROPULSION CO (P)	SLIC
LOCKHEED PROPULSION CO.	SLIC
JORCO CHEMICAL CO.	SLIC
COMMUNITY DAY SCHOOL NO. 1	SCH, ENVIROSTOR
FST SAND & GRAVEL, INC.	MINES
SHAMROCK SAND & ROCK, INC.	MINES
AUDREY LYNN MINE	MINES
ROBERTSONS READY MIX, INC.	MINES
ROBERTSONS READY MIX, INC.	MINES
COACHELLA VALLEY AGGREGATE	MINES
WEST COAST AGGREGATES, INC.	MINES
VULCAN MATERIALS CO.	MINES
MINNESOTA MINING & MANUFACTURING CO.	MINES
ALL AMERICAN AGGREGATES	MINES
TXI RIVERSIDE CEMENT	MINES
JAMES E SIMON CO.	MINES
HANSON AGGREGATES WEST, INC.	MINES
ELSINORE READY MIX CO., INC.	MINES
FST SAND & GRAVEL, INC.	MINES
GRANITE CONSTRUCTION CO.	MINES
FOSTER SAND & GRAVEL CO.	MINES
CEMEX, INC.	MINES
WYROC INC.	MINES
ROBERT R. FORD TRUCKING, INC.	MINES
WHITEWATER ROCK & SUPPLY CO	MINES

EXECUTIVE SUMMARY

E. L. YEARGER CONSTRUCTION	MINES
PAUL HUBBS CONSTRUCTION CO.	MINES
KEC ENGINEERING	MINES
PACIFIC CLAY PRODS CO	MINES
WHITEWATER ROCK & SUPPLY CO.	MINES
CHANDLER AGGREGATES, INC.	MINES
SAN JACINTO AGGREGATES, INC	MINES
WYROC, INC.	MINES

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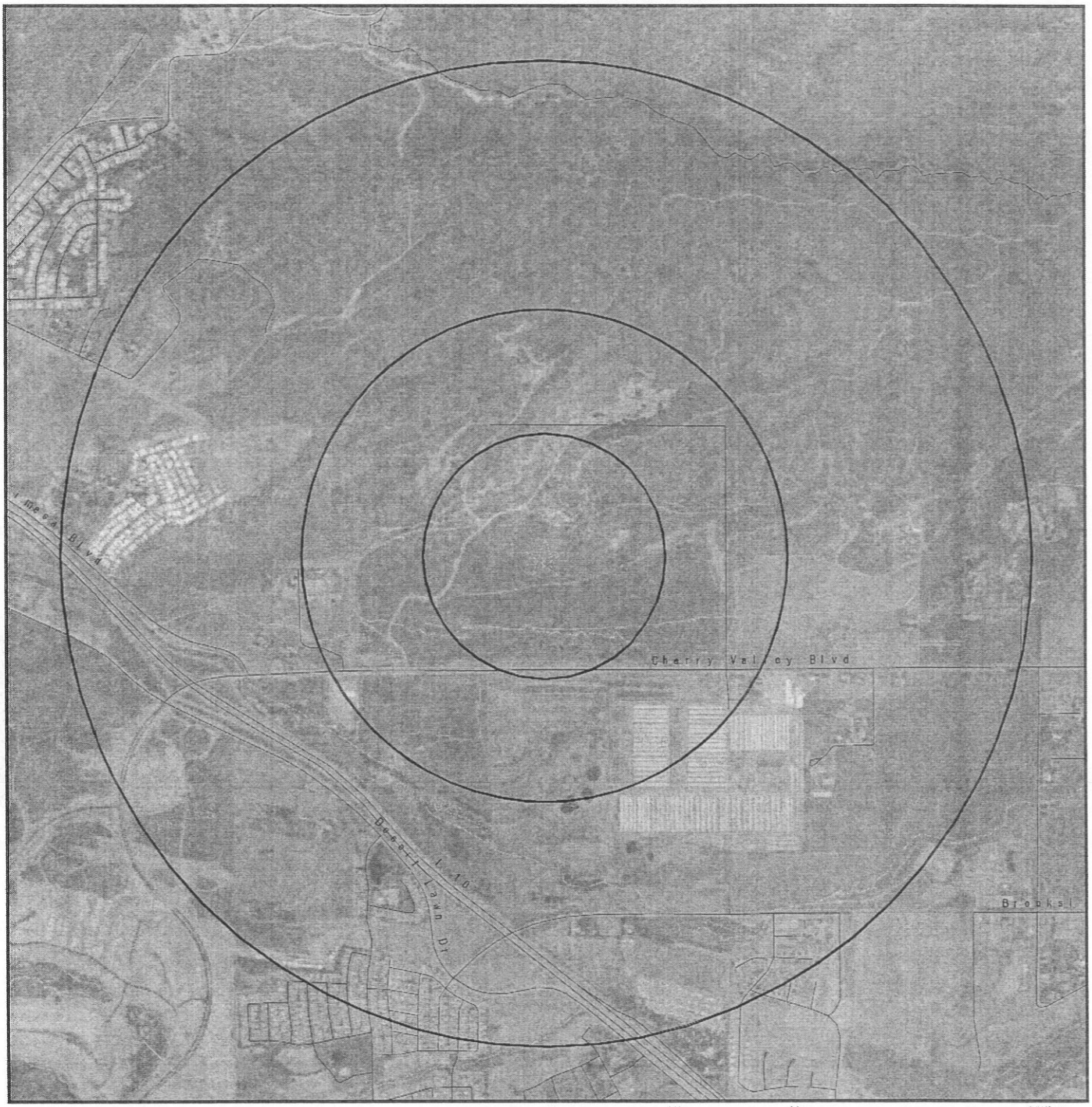
OVERVIEW MAP - 2449248.2s



0 1/4 1/2 1 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: TSP Property - Shopoff	CLIENT: RM Environmental
ADDRESS: North of Cherry Valley Blvd. Cherry Valley CA 92320	CONTACT: Travis Meier
LAT/LONG: 33.9720 / 117.0231	INQUIRY #: 2449248.2s
	DATE: March 25, 2009 4:58 pm

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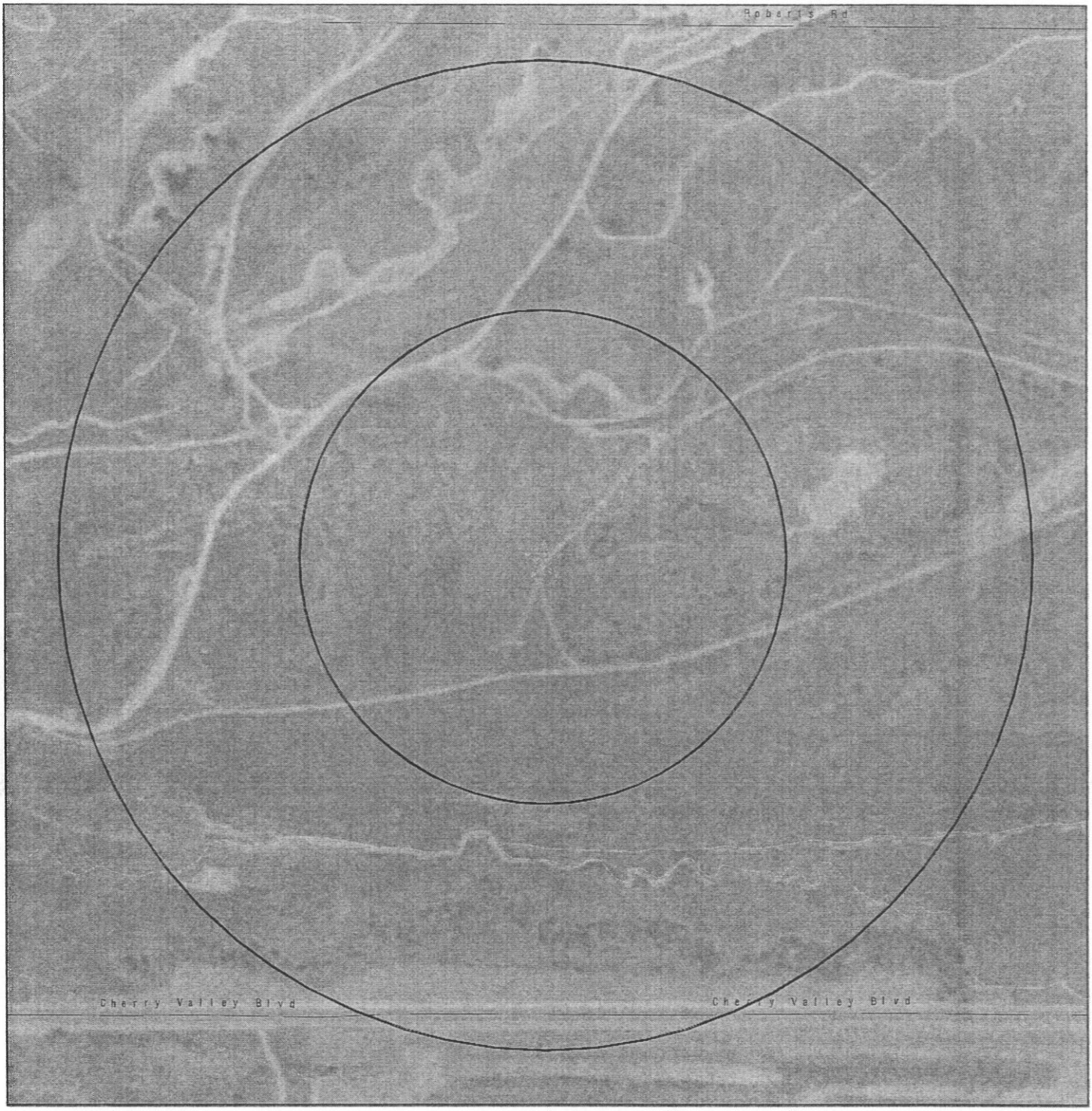
DETAIL MAP - 2449248.2s



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Oil & Gas pipelines
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	TSP Property - Shopoff	CLIENT:	RM Environmental
ADDRESS:	North of Cherry Valley Blvd. Cherry Valley CA 92320	CONTACT:	Travis Meier
		INQUIRY #:	2449248.2s
LAT/LONG:	33.9720 / 117.0231	DATE:	March 25, 2009 4:58 pm

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL		1.000	0	0	0	0	NR	0
Proposed NPL		1.000	0	0	0	0	NR	0
NPL LIENS		TP	NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL		1.000	0	0	0	0	NR	0
Federal CERCLIS list								
CERCLIS		0.500	0	0	0	NR	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP		0.500	0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS		1.000	0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF		0.500	0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG		0.250	0	0	NR	NR	NR	0
RCRA-SQG		0.250	0	0	NR	NR	NR	0
RCRA-CESQG		0.250	0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS		0.500	0	0	0	NR	NR	0
US INST CONTROL		0.500	0	0	0	NR	NR	0
Federal ERNS list								
ERNS		TP	NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE		1.000	0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR		1.000	0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF		0.500	0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST		0.500	0	0	0	NR	NR	0
SLIC		0.500	0	0	0	NR	NR	0
INDIAN LUST		0.500	0	0	0	NR	NR	0

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
State and tribal registered storage tank lists								
UST		0.250	0	0	NR	NR	NR	0
AST		0.250	0	0	NR	NR	NR	0
INDIAN UST		0.250	0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP		0.500	0	0	0	NR	NR	0
INDIAN VCP		0.500	0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS		0.500	0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
DEBRIS REGION 9		0.500	0	0	0	NR	NR	0
ODI		0.500	0	0	0	NR	NR	0
WMUDS/SWAT		0.500	0	0	0	NR	NR	0
SWRCY		0.500	0	0	0	NR	NR	0
HAULERS		TP	NR	NR	NR	NR	NR	0
INDIAN ODI		0.500	0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL		TP	NR	NR	NR	NR	NR	0
HIST Cal-Sites		1.000	0	0	0	0	NR	0
SCH		0.250	0	0	NR	NR	NR	0
Toxic Pits		1.000	0	0	0	0	NR	0
CDL		TP	NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
CA FID UST		0.250	0	0	NR	NR	NR	0
HIST UST		0.250	0	0	NR	NR	NR	0
SWEEPS UST		0.250	0	0	NR	NR	NR	0
Local Land Records								
LIENS 2		TP	NR	NR	NR	NR	NR	0
LUCIS		0.500	0	0	0	NR	NR	0
LIENS		TP	NR	NR	NR	NR	NR	0
DEED		0.500	0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS		TP	NR	NR	NR	NR	NR	0
CHMIRS		TP	NR	NR	NR	NR	NR	0
LDS		TP	NR	NR	NR	NR	NR	0
MCS		TP	NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen		0.250	0	0	NR	NR	NR	0

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MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DOT OPS		TP	NR	NR	NR	NR	NR	0
DOD		1.000	0	0	0	0	NR	0
FUDS		1.000	0	0	0	0	NR	0
CONSENT		1.000	0	0	0	0	NR	0
ROD		1.000	0	0	0	0	NR	0
UMTRA		0.500	0	0	0	NR	NR	0
MINES		0.250	0	0	NR	NR	NR	0
TRIS		TP	NR	NR	NR	NR	NR	0
TSCA		TP	NR	NR	NR	NR	NR	0
FTTS		TP	NR	NR	NR	NR	NR	0
HIST FTTS		TP	NR	NR	NR	NR	NR	0
SSTS		TP	NR	NR	NR	NR	NR	0
ICIS		TP	NR	NR	NR	NR	NR	0
PADS		TP	NR	NR	NR	NR	NR	0
MLTS		TP	NR	NR	NR	NR	NR	0
RADINFO		TP	NR	NR	NR	NR	NR	0
FINDS		TP	NR	NR	NR	NR	NR	0
RAATS		TP	NR	NR	NR	NR	NR	0
CA BOND EXP. PLAN		1.000	0	0	0	0	NR	0
CA WDS		TP	NR	NR	NR	NR	NR	0
Cortese		0.500	0	0	0	NR	NR	0
Notify 65		1.000	0	0	0	0	NR	0
DRYCLEANERS		0.250	0	0	NR	NR	NR	0
WIP		0.250	0	0	NR	NR	NR	0
HAZNET		TP	NR	NR	NR	NR	NR	0
EMI		TP	NR	NR	NR	NR	NR	0
INDIAN RESERV		1.000	0	0	0	0	NR	0
SCRD DRYCLEANERS		0.500	0	0	0	NR	NR	0
EDR PROPRIETARY RECORDS								
EDR Proprietary Records								
Manufactured Gas Plants		1.000	0	0	0	0	NR	0
EDR Historical Auto Stations		0.250	0	0	NR	NR	NR	0
EDR Historical Cleaners		0.250	0	0	NR	NR	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

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MAP FINDINGS

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

NO SITES FOUND

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ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
ALAMEDA	U003347381	CITY OF ALAMEDA	2040 GRAND ST GARAGE	94501	HAZNET, UST
BEAUMONT	S105022736	SOUTHWEST MOTORS	449451 06TH		Cortese
BEAUMONT	1010313573	HOME DEPOT NO HD8987	1480 E 2ND ST	92223	RCRA-NonGen
BEAUMONT	1010313546	HOME DEPOT NO HD8987	1480 E 2ND ST	92223	RCRA-SQG
BEAUMONT	U001573592	THREE RINGS RANCH	W. 8TH ST	92223	HIST UST
BEAUMONT	S108541152	PALM CLEANERS	1440 BEAUMONT AVE STE A4	92223	DRYCLEANERS
BEAUMONT	S109035785		1200 BLOCK CHERRY AVE	92223	CHMIRS
BEAUMONT	S109043441		CHERRY AVE. AT ANTONELL COURT	92223	CHMIRS
BEAUMONT	S109043206		CHERRY AV NEAR 10TH ST		CHMIRS
BEAUMONT	S107736152	COMMUNITY DAY SCHOOL NO. 1	CHERRY AVENUE/ANTONELLE AVENUE	92223	SCH, ENVIROSTOR
BEAUMONT	S105085179	BEAUMONT HIGH SCHOOL	3171 CHERRY AVE	92223	HAZNET
BEAUMONT	S106924834	COMMUNICATIONS - MT DAVID	31 MT DAVID	92223	SWEEPS UST
BEAUMONT	S106926942	GTE MT DAVIS MICRO	38110 MT DAVIS	92223	SWEEPS UST
BEAUMONT	S109284930	THRIFTY #347/ARCO #9719	401 E E SIXTH ST	92223	LUST
BEAUMONT	S109284859	JAMES P. HEALEY (BUNJES)	1151 E E SIXTH ST	92723	LUST
BEAUMONT	S105022732	SO CAL GAS/BEAUMONT MGP	S. E. CNR. CALIFORNIA / 3	92223	Cortese
BEAUMONT	S106927519	INLAND DISPOSAL INC	517 E EIGHT ST	92223	SWEEPS UST
BEAUMONT	S106932401	SOUTHERN CAL GAS - INLAND TRAN	215 E FIRST ST	92223	SWEEPS UST
BEAUMONT	S106923199	BEAUMONT CITY OF/PUBLIC WORKS	713 W FOURTH ST	92223	SWEEPS UST
BEAUMONT	S107736622	LOCKHEED PROPULSION CO. (BEAUMONT)	HIGHLAND SPRINGS ROAD		RESPONSE, ENVIROSTOR
BEAUMONT	S103617700	LOCKHEED PROPULSION-BEAUM	HIGHLAND SPRINGS RD	92501	Cortese
BEAUMONT	1003878770	LOCKHEED CORP AIRCRAFT LDFL	HIGHLAND SPRINGS RD	92223	CERC-NFRAP
BEAUMONT	91234830	I-10/CHERRY VALLEY BLVD SAN TIMOTEO	I-10/CHERRY VALLEY BLVD SAN TIMOTEO	92223	ERNS
BEAUMONT	S108985913	LOOKHEED PROPULSION CO (J)	N/A JACK RABBIT ROAD		SLIC
BEAUMONT	S104549206	LOCKHEED PROPULSION CO (J)	N/A JACK RABBIT ROAD		SLIC
BEAUMONT	1001491831	LOMA LINDA UNIVERSITY	NEAR PENNSYLVANIA AND 3RD ST.	92223	CERCLIS, FINDS
BEAUMONT	S106399719		NOBLE CREEK LIFT STATION, 1799 OAK VALLEY PARKWAY	92223	CHMIRS
BEAUMONT	S108402848		OAK VALLEY PKWY AT I 10		CHMIRS
BEAUMONT	S107449003		1899 OAK VALLEY PKWY		CHMIRS
BEAUMONT	S106487194	ARCO PIPELINE - BEAUMONT PUMP STATION	OAK TREE CANYON ROAD		SLIC
BEAUMONT	S108985914	LOCKHEED PROPULSION CO (P)	N/A POTRERO ROAD		SLIC
BEAUMONT	S106486912	LOCKHEED PROPULSION CO.	1000 POTRERO		SLIC
BEAUMONT	1010313267	RISCO, INC	390 RISCO CIRCLE	92223	RCRA-SQG
BEAUMONT	1000698009	FOUR COR PIPELINE CO BEAUMONT	7 MI S OF BEAUMONT	92223	FINDS, RCRA-NonGen
BEAUMONT	S106932868	TEXACO BOWIE'S	695 E SIXTH ST	92223	SWEEPS UST
BEAUMONT	S106924500	CIRCLE K #509	1201 E SIXTH ST	92223	SWEEPS UST
BEAUMONT	S106924110	CDF/BEAUMONT FOREST FIRE STAT	1550 E SIXTH ST	92223	SWEEPS UST
BEAUMONT	S106922788	ARCO AM/PM MINI MARKET	1696 E SIXTH ST	92223	SWEEPS UST
BEAUMONT	S109043209		STATE HWY 60 2056 FT NORTH AND 1810 FT EAST OF 6T3	91770	CHMIRS
BEAUMONT	S106544856	SQUARE D COMPANY	1060 E. THIRD STREET	92223	DEED
BEAUMONT	S109284843	SOUTHWEST MOTORS	449 W W SIXTH ST	92223	LUST
CALEXICO	U003643973	WONG & ASSOC	325 337 IMPERIAL AVE	92231	HAZNET, UST
CALIMESA	1004678391	SKAT TRAK INC	654 AVE K	92320	FINDS, RCRA-SQG

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ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
CALIMESA	U003976881	FASTRIP FOOD STORE #331	13710 CALIMESA BLVD	92320	UST
CALIMESA	S108210354	JOE ARVAKAIN	1007 CALIMESA BLVD STE D	92320	HAZNET
CALIMESA	S106925391	DINOSAUR TIRE CENTER	13715 CALIMESA BLVD	92320	SWEEPS UST
CALIMESA	S105645333		CALIMESA BLVD 1/4 MILE NORTH OF SANDELWOOD	92320	CHMIRS
CALIMESA	S103629358	JACO OIL CO	13710 CALIMESA BLVD	92320	HAZNET
CALIMESA	S103628700	SHOP THE	13394 CALIMESA BLVD	92320	HAZNET
CALIMESA	93305317	1213 CALISMESA BLVD 20411220203	1213 CALISMESA BLVD 20411220203	92320	ERNS
CALIMESA	U004050785	CI-YUCAIPA VLY WATER TRTM	880 COUNTY LINE RD	92320	UST
CALIMESA	U001574623	UNION OIL SERVICE STATION #563	66K W COUNTY LINE ROAD	92320	HIST UST
CALIMESA	S106933470	UNOCAL #5636	66 W COUNTY LINE RD	92320	SWEEPS UST
CALIMESA	S105666619		SAN TIMOTEO ROAD AND REDLANDS BLVD	92320	CHMIRS
CALIMESA	S109047042		WESTBOUND I-10 , JUST WEST OF CALIMESA BLVD OFF RA	90805	CHMIRS
CALISMESA	S105631949		#20411220203 1213 CALISMESA BLVD	92320	CHMIRS
CHERRY BLVD	94379642	EB I-10 AT CHERRY VALLEY BLVD	EB I-10 AT CHERRY VALLEY BLVD	92223	ERNS
CHERRY VALLEY	S105669051		I-10 AT CHERRY VALLEY BLVD		CHMIRS
CHERRY VALLEY	S107537380		9856 CHERRY AVE (CROSS DUTTON AVE)	92223	CDL
CHERRY VALLEY	S107533520		38649 CHERRY VALLEY BLVD, UNIT C	92223	CDL
CHERRY VALLEY	S106396656		CHERRY VALLEY, 39100 ORCHARD STREET	92570	CHMIRS
CHERRY VALLEY	S105635514		EASTBOUND I-10 AT CHERRY VALLEY BLVD		CHMIRS
COLTON	S106544619	NM COLTON LANDFILL LLC	21230 TROPICANA RANCH RD	92320	San Bern. Co. Permit
HEMET	U003802069	SEVEN ELEVEN #33571	104 N SAN JACINTO ST	92543	UST, LUST
REDLANDS	S105025718	GTT	11 04TH	92374	Cortese
REDLANDS	U001575486	U.S. SPRINT COMMUNICATIONS COM	RR 2 BOX 766	92373	HIST UST
REDLANDS	S101591794	GRISHY GVE WINDMACHINE #1	R 30 SAN BERNANDINO AVE	92373	CA FID UST, SWEEPS UST
REDLANDS	U003976883	MATICH CORP	8397 ALABAMA ST	92373	UST
REDLANDS	U001575409	FIORI AND RAMIREZ	ALABAMA ST.	92373	HIST UST
REDLANDS	S109349337	MICRO TECHNICAL LABORATORY	325 ALABAMA ST STE 6	92373	San Bern. Co. Permit
REDLANDS	S108985842	AT&T MOBILITY #69153/51809	351 ALABAMA ST	92737	San Bern. Co. Permit
REDLANDS	S101619357	FIORI AND RAMIREZ	ALABAMA ST	92373	CA FID UST, SWEEPS UST
REDLANDS	1004676797	EMPIRE KARTS	302 ALABAMA NO 9	92373	FINDS, RCRA-SQG
REDLANDS	1004676308	J AND M SILKSCREEN	325 ALABAMA ST STE 1	92373	FINDS, RCRA-SQG, HAZNET
REDLANDS	S108536487	RICHARD LINDEN ORANGE GROVE	ALESSANDRO RD	92373	San Bern. Co. Permit
REDLANDS	S108985817	ICON HEALTH FITNESS	2220 ALMOND AVE	92373	San Bern. Co. Permit
REDLANDS	S106910667	ALL STATE INSTANT PRESS	609 AMIGO DR 2	92373	San Bern. Co. Permit
REDLANDS	S109254410	A & H AUTO SPECIALISTS INC	522 AMIGOS DR STE A / B	92373	San Bern. Co. Permit
REDLANDS	S106911218	G.L. MACHINE	618 AMIGOS DR B	92373	San Bern. Co. Permit
REDLANDS	S105698082	A & H AUTO SPECIALISTS	618 AMIGOS DR A	92373	San Bern. Co. Permit
REDLANDS	S105698081	CRAIG & SON'S TERMITE PEST CONTROL	602 AMIGOS DR 'B'	92373	San Bern. Co. Permit
REDLANDS	S101591768	FRQUHAR, RICHARD L	544 005TH AVE	92373	CA FID UST, SWEEPS UST
REDLANDS	S106911195	WUCHENICH, GARY T DDS MS	415 BROOKSIDE AVE A	92373	San Bern. Co. Permit
REDLANDS	S106911054	REDLANDS DAILY FACTS	700 E BROOKSIDE	92373	San Bern. Co. Permit
REDLANDS	U001575470	SCHOOL HOUSE WINDMACHINE	CALIFORNIA STREET	92373	HIST UST
REDLANDS	U001575402	DANIEL C MCMASTERS	10354 CALIFORNIA ST	92373	HIST UST
REDLANDS	S101619377	SCHOOL HOUSE WINDMACHINE	CALIFORNIA ST	92373	CA FID UST, SWEEPS UST
REDLANDS	1003877956	CHURCH ST. LANDFILL	CHURCH ST. (AT THE SANTA ANA RIVER)	92373	CERC-NFRAP
REDLANDS	S106923270	BERT P. MARCUM JR ET. AL.	NW COR HIGHLAND / WALNU	92373	SWEEPS UST
REDLANDS	S105698092	HORACE HINCKLEY WATER TRT	1604 N CRAFTON AVE	92373	San Bern. Co. Permit

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ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
REDLANDS	1006829421	CHURCH STREET LANDFILL	NORTH END OF CHURCH ST., NORTH	92373	FINDS
REDLANDS	S105974395	BNSF RAILWAY CO-REDLANDS	1975 ESSEX CT UNIT 9	92373	San Bern. Co. Permit
REDLANDS	1007989097	QUEST DIAGNOSTICS REDLANDS RRL	2 W FERN STREET REDLANDS RRL	92373	RCRA-NonGen
REDLANDS	U001575421	HIGHLAND ACRES RANCH	GREENSPOT RD.	92373	HIST UST
REDLANDS	S101619360	HIGHLAND ACRES RANCH	GREENSPOT RD	92373	CA FID UST, SWEEPS UST
REDLANDS	S109117831	AT&T MOBILITY #68135/50979	31280 HELEN CT B	92373	San Bern. Co. Permit
REDLANDS	S101619365	KELLY ROOFING	310 HIGH ST	92373	CA FID UST, SWEEPS UST
REDLANDS	S106927976	JORCO CHEMICAL COMPANY	32185 E HIGHWAY 10	92373	SWEEPS UST
REDLANDS	S106932894	TEXACO SERVICE STATION	1600 INDUSTRIAL RD	92373	SWEEPS UST
REDLANDS	S106911353	TOM BELL CHEV - USED CARS	1590 INDUSTRIAL AVE	92373	San Bern. Co. Permit
REDLANDS	S105974396	WELL #39	71 IOWA ST	92373	San Bern. Co. Permit
REDLANDS	U004050653	AG-JACINTO, FRANK JR	KING ST	92373	UST
REDLANDS	U003785003	PANSY JACINTO TRUST	KING ST	92373	San Bern. Co. Permit
REDLANDS	U003784654	SCHNEIDER, SANFORD DR	KING ST	92373	San Bern. Co. Permit
REDLANDS	U001575410	FRANK JACINTO, JR.	KING ST.	92373	HIST UST
REDLANDS	S106926405	FRANK JACINTO, JR.	KING ST	92373	SWEEPS UST
REDLANDS	S101619358	SCHNEIDER. DR SANFORD	KING ST	92373	CA FID UST, SWEEPS UST
REDLANDS	U001575440	LUGONIA 15 WINDMACHINE	LUGONIA AVE.	92373	HIST UST
REDLANDS	S106166736	UNIVERSITY DRY CLEANERS	800 E LUGONIA STEC	92373	DRYCLEANERS, HAZNET
REDLANDS	S103771206	HOLIDAY SHELL STATION	800 M LUGONIA AVE	92373	Cortese, LUST
REDLANDS	S101619368	LUGONIA 15 WINDMACHINE	LUGONIA AVE	92373	CA FID UST, SWEEPS UST
REDLANDS	S101591110	SOUTHERN CALIF GAS CO	1981 LUGONIA ST	92373	CA FID UST, SWEEPS UST
REDLANDS	S107863382	NATIONWIDE MARKETING SOLUTIONS	446 MISSOURI CT	92373	San Bern. Co. Permit
REDLANDS	S106803312	THE SMART SHOP	451 MISSOURI CT	92373	San Bern. Co. Permit
REDLANDS	S106803311	G.L. MACHINE	451 MISSOURI CT	92373	San Bern. Co. Permit
REDLANDS	S101591814	FLETCHER, G. LOUIS	N/SIDE PIONEER 3 E O	92373	CA FID UST, SWEEPS UST
REDLANDS	U004050772	AG-NEVADA 15 WINDMACHINE	NEVADA ST	92373	UST
REDLANDS	U003785087	AG-NEVADA 15 WINDMACHINE	NE NEVADA / PALMETTO ST	92373	San Bern. Co. Permit
REDLANDS	U001575448	NEVADA 15 WINDMACHINE	NEVADA STREET	92373	HIST UST
REDLANDS	S108419385	NATURAL DESIGN	721 NEVADA ST STE 204	92373	San Bern. Co. Permit
REDLANDS	S101619371	NEVADA 15 WINDMACHINE	NEVADA ST	92373	CA FID UST, SWEEPS UST
REDLANDS	S101591715	BEAUMONT GROVES	NEVADA / LUGONIA ST	92373	CA FID UST, SWEEPS UST
REDLANDS	1004675395	CITY OF REDLANDS WASTE DIV	1950 NEVADA ST	92373	FINDS, RCRA-SQG, HAZNET
REDLANDS	U001575479	SUNRISE RANCH	NEWPORT ST.	92373	HIST UST
REDLANDS	S101619381	SUNRISE RANCH	NEWPORT ST	92373	CA FID UST, SWEEPS UST
REDLANDS	U004050735	AG-P S 80	OLIVE & NEVADA NW COR	92373	UST
REDLANDS	U003937448	PALM SQUARE ASSOCIATES	OLIVE / NEVADA NW COR	92373	San Bern. Co. Permit
REDLANDS	S105158873	AG-REDLAND CITRUS ASSO.	SW OLIVE / NEVADA AVE	92373	San Bern. Co. Permit
REDLANDS	U004050744	AG-FARQUOR LEASE WINDMCNE	OPAL AVE	92373	UST
REDLANDS	U001575408	FARQUOR LEASE WINDMACHINE	OPAL AVENUE	92373	HIST UST
REDLANDS	S101619356	FARQUOR LEASE WIND MCHNE	OPAL AVE	92373	CA FID UST, SWEEPS UST
REDLANDS	1003877955	UNIVERSAL RUNDEL	OPAL AVE-300 FT. N OF SAN BERNARDINO AV.	92373	CERC-NFRAP
REDLANDS	S108985829	LOMA LINDA UNIV MEDICAL CENTER	26735 ORANGE AVE	92373	San Bern. Co. Permit
REDLANDS	S101591028	HOWARD KING	1550 N ORANGE	92373	CA FID UST, SWEEPS UST
REDLANDS	S109277155	JORCO CHEMICAL CO.	32185 E OUTER HIGHWAY I-10	92373	SLIC
REDLANDS	S106910941	JORCO CHEMICAL COMPANY	32185 S OUTER HWY 10	92373	San Bern. Co. Permit
REDLANDS	U004050745	AG-D E D LOMBARD RANCH	PALMETTO & ALABAMA SW CR	92373	UST

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ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
REDLANDS	U003937441	AG-D E D LOMBARD RANCH	PALMETTO / ALABAMA SW CR	92373	San Bern. Co. Permit
REDLANDS	U001575399	D.E.D. LOMBARD RANCH	SW PALMETTO ALABAMA	92373	HIST UST
REDLANDS	S101619354	D.E.D. LOMBARD RANCH	SW PALMETTO ALABAMA	92373	CA FID UST, SWEEPS UST
REDLANDS	S108536466	LINCARE, INC	2015 PARK AVE STE 16	92373	San Bern. Co. Permit
REDLANDS	S108240192	ALPINE SHUTTER CRAFT	1107 PARK AVE A / B	92374	San Bern. Co. Permit
REDLANDS	S106803205	HUTCHISON MANUFACTURING	1113 W PARK AVE B	92373	San Bern. Co. Permit
REDLANDS	1003878710	CITY OF REDLANDS WELL FIELD	PENNSYLVANIA AVE	92373	CERC-NFRAP
REDLANDS	S106910653	FLETCHER, G LOUIS	PIONEER E/O ALABAMA	92373	San Bern. Co. Permit
REDLANDS	S105974416	WELL #2-MAGUET	3706 PLANT B-7	92359	San Bern. Co. Permit
REDLANDS	U004050790	AERODYNAMICS INC	RED MUN AIRPORT PARCEL 5	92373	UST
REDLANDS	U004050654	AG-ALESSANDRO GROVES	REDLANDS	92373	UST
REDLANDS	U003784649	AG-ALESSANDRO GROVES	REDLANDS	92373	San Bern. Co. Permit
REDLANDS	S109285205	ARCO #6052	539 E REDLANDS BLVD	92373	LUST
REDLANDS	S109254336	RITE AID #5701	700 E REDLANDS BLVD STE A	92373	San Bern. Co. Permit
REDLANDS	S108221125	SOUTHERN CALIFORNIA GAS REDLANDS FMR MGP	620 W REDLANDS BLVD	92373	HAZNET
REDLANDS	S108218400	RITE AIDE INC	700 W REDLANDS BLVD	92373	HAZNET
REDLANDS	S108196537	A&H SPECIALIST	1647 W REDLANDS BLVD UNIT L	92373	HAZNET
REDLANDS	S107142955	RICHARD TUNELL	9160 REDLANDS BLVD	92373	HAZNET
REDLANDS	S107030277	TRANSMISSIONS PLUS	1647 W REDLANDS BLVD STE F	92373	San Bern. Co. Permit
REDLANDS	S106932931	THE PAVILLIAN AT REDLANDS	REDLANDS BLVD / N J	92373	SWEEPS UST
REDLANDS	S106925213	DAVIDS BUILDING MATERIALS	27095 REDLANDS BLVD	92373	SWEEPS UST
REDLANDS	S106718462	B & T AUTO REPAIR CENTER, INC.	1647 W REDLANDS BLVD STE E	92373	San Bern. Co. Permit
REDLANDS	S101591716	ALLESSANDRO GROVES	REDLANDS S	92373	CA FID UST, SWEEPS UST
REDLANDS	1010313398	SOUTHERN CALIFORNIA GAS CO-REDLANDS MGP	620 WEST REDLANDS BLVD	92373	RCRA-LQG
REDLANDS	U001575471	SOCAL-WEST CONSTRUCTORS	SAME AS ABOVE	92373	HIST UST
REDLANDS	U004050751	AG-REDLANDS SECURITY CO	SAN TIMOTEO CANYON RD	92373	UST
REDLANDS	U004050741	AG-LANGFORD WINDMACHINE	SAN BERNARDINO AVE	92373	UST
REDLANDS	U001575457	REDLANDS	SAN TIMOTEO CANYON ROAD	92373	HIST UST
REDLANDS	U001575456	RANCHO TIMOTEO	SAN TIMOTEO CANYON ROAD	92373	HIST UST
REDLANDS	U001575451	QALITY FARMS - SAN TIMOTEO	SAN TIMOTEO CYN ROAD	92373	HIST UST
REDLANDS	U001575437	LANGFORD WINDMACHINE	SAN BERNARDINO AVE	92373	HIST UST, SWEEPS UST
REDLANDS	U001575418	GRISBY GROVE WINDMACHINE #1	SAN BERNANDINO AVE.	92373	HIST UST
REDLANDS	U001575417	GRISBY GROVE - WINDMACHINE #II	SAN BERNARDINO AVE.	92373	HIST UST
REDLANDS	S109254420	ABANDONED UST	27495 SAN BERNARDINO	92373	San Bern. Co. Permit
REDLANDS	S108724277	REDLANDS SECURITY CO	28370 SAN TIMOTEO CANYON RD	92373	San Bern. Co. Permit
REDLANDS	S106931212	REDLANDS	SAN TIMOTEO CANYON RD	92373	SWEEPS UST
REDLANDS	S106930960	QALITY FARMS - SAN TIMOTEO	SAN TIMOTEO CANYON RD	92373	SWEEPS UST
REDLANDS	S101619372	KPT CORPORATION	SAN TIMOTEO CANYON RD	92373	San Bern. Co. Permit, CA FID UST, SWEEPS UST
REDLANDS	S101619367	AG GRISBY GROVE - WINDMACHINE	SAN BERNARDINO AVE	92373	CA FID UST, SWEEPS UST
REDLANDS	S101591512	CIRCLE K MARKET	1550 SAN BERNARDINO RD	92373	CA FID UST, SWEEPS UST
REDLANDS	1003879085	REDLANDS FARMING CO	SAN BERNARDINO AVE E OF TEXAS	92373	CERC-NFRAP
REDLANDS	U004050750	AG-FLETCHER, G LOUIS	N SIDE PIONEER/E ALABAMA	92373	UST
REDLANDS	U001575436	L.B.T.	S SIDE LUGOMA 600 FEET W OF WA	92373	HIST UST
REDLANDS	U001575414	G. LOUIS FLETCHER	N SIDE PIONEER 3 EAST OF ALABA	92373	HIST UST
REDLANDS	U001575404	DR. SANFORD SCHNEIDER	EAST SIDE KING ST.	92373	HIST UST
REDLANDS	S106568286	SO CAL GAS/REDLANDS I (STATE ST.) MGP	STATE STREET AT REDLANDS BL.	92373	VCP, ENVIROSTOR

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ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
REDLANDS	S105025717	SO CAL GAS/REDLANDS (STAT	STATE ST AT REDLANDS BLVD	92373	Cortese
REDLANDS	S106077047	DUTCH GIRL DRY CLEANERS	414 TENNESSE PLAZA #K	92373	DRYCLEANERS, HAZNET
REDLANDS	S104769461	REDLANDS COLOR LAB	461 TENNESSEE ST F	92374	San Bern. Co. Permit
REDLANDS	S105857431	LONGS DRUG STORE #196	800 TRI CITY CENTER DR	92373	San Bern. Co. Permit, HAZNET
REDLANDS	U001575380	ALESSANDRO GROVES	6748 VALLON DR.	92373	HIST UST
REDLANDS	S101619507	FARMER ORCHARD CO	25492 VICTORIA AVE	92373	CA FID UST, SWEEPS UST
REDLANDS	S107863375	LARRY JACINTO CONSTRUCTION	9555 N WABASH AVE	92373	San Bern. Co. Permit
RIVERSIDE COUNTY	M300003145	FST SAND & GRAVEL, INC.	3M		MINES
RIVERSIDE COUNTY	M300003135	SHAMROCK SAND & ROCK, INC.	AGUANGA PLANT		MINES
RIVERSIDE COUNTY	M300002115	AUDREY LYNN MINE	AUDREY LYNN MINE		MINES
RIVERSIDE COUNTY	M300003134	ROBERTSONS READY MIX, INC.	BANNING PIT		MINES
RIVERSIDE COUNTY	M300003133	ROBERTSONS READY MIX, INC.	CABAZON PIT		MINES
RIVERSIDE COUNTY	M300003147	COACHELLA VALLEY AGGREGATE	COACHELLA VALLEY AGGREGATE		MINES
RIVERSIDE COUNTY	M300003140	WEST COAST AGGREGATES, INC.	WEST COAST AGGREGATES INC		MINES
RIVERSIDE COUNTY	M300006399	VULCAN MATERIALS CO.	CORONA ROCK (#171)		MINES
RIVERSIDE COUNTY	M300006397	MINNESOTA MINING & MANUFACTURING CO.	CORONA PLANT		MINES
RIVERSIDE COUNTY	M300003136	ALL AMERICAN AGGREGATES	CORONA PLANT		MINES
RIVERSIDE COUNTY	M300000942	TXI RIVERSIDE CEMENT	CRESTMORE PLANT		MINES
RIVERSIDE COUNTY	M300003142	JAMES E SIMON CO.	DILLION ROAD PIT		MINES
RIVERSIDE COUNTY	M300006400	HANSON AGGREGATES WEST, INC.	EAGLE VALLEY QUARRY		MINES
RIVERSIDE COUNTY	M300003132	ELSINORE READY MIX CO., INC.	ELSINORE PIT		MINES
RIVERSIDE COUNTY	M300003146	FST SAND & GRAVEL, INC.	FST OGLEBAY NORTON		MINES
RIVERSIDE COUNTY	S105632241		INDIO BLVD BETWEEN CIVIC CENTER / DILLION RD		CHMIRS
RIVERSIDE COUNTY	M300003131	GRANITE CONSTRUCTION CO.	INDIO AGGREGATE PLANT		MINES
RIVERSIDE COUNTY	M300003129	FOSTER SAND & GRAVEL CO.	MAITRI CANYON PLANT		MINES
RIVERSIDE COUNTY	M300003138	CEMEX, INC.	MAYHEW PLANT		MINES
RIVERSIDE COUNTY	S105637710		NORTHBOUND I 215, NORTH OF PENNSYLVANIA AVE		CHMIRS
RIVERSIDE COUNTY	90179309	OUT IN THE OPEN DESERT NORTH ON I-20 **	OUT IN THE OPEN DESERT NORTH ON I-20 **		ERNS
RIVERSIDE COUNTY	M300003150	WYROC INC.	PACIFIC CLAY		MINES
RIVERSIDE COUNTY	M300003149	ROBERT R. FORD TRUCKING, INC.	PACIFIC CLAY / FORD PIT		MINES
RIVERSIDE COUNTY	M300001891	WHITEWATER ROCK & SUPPLY CO	PAINTED HILLS OPERATION		MINES
RIVERSIDE COUNTY	M300003143	E. L. YEARGER CONSTRUCTION	PLANTS A & B		MINES
RIVERSIDE COUNTY	M300006398	PAUL HUBBS CONSTRUCTION CO.	PYRITE QUARRY		MINES
RIVERSIDE COUNTY	M300003151	KEC ENGINEERING	RIVER ROAD SAND JOB		MINES
RIVERSIDE COUNTY	M300002452	PACIFIC CLAY PRODS CO	RIVERSIDE COUNTY PITS (5 OPERATIONS)		MINES
RIVERSIDE COUNTY	M300003130	WHITEWATER ROCK & SUPPLY CO.	SAND & GRAVEL OPERATION		MINES
RIVERSIDE COUNTY	M300003139	CHANDLER AGGREGATES, INC.	SIERRA PLANT		MINES
RIVERSIDE COUNTY	M300003141	SAN JACINTO AGGREGATES, INC	SOBOBA PLANT		MINES
RIVERSIDE COUNTY	S105630657		81929 EAST VALLEY PARKWAY		CHMIRS
RIVERSIDE COUNTY	M300003144	WYROC, INC.	WYROC LAKE STREET PLANT		MINES

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GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 09/29/2008
Date Data Arrived at EDR: 10/10/2008
Date Made Active in Reports: 11/19/2008
Number of Days to Update: 40

Source: EPA
Telephone: N/A
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 09/29/2008
Date Data Arrived at EDR: 10/10/2008
Date Made Active in Reports: 11/19/2008
Number of Days to Update: 40

Source: EPA
Telephone: N/A
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: No Update Planned

CVAR_09995

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 09/29/2008
Date Data Arrived at EDR: 10/10/2008
Date Made Active in Reports: 11/19/2008
Number of Days to Update: 40

Source: EPA
Telephone: N/A
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 10/07/2008
Date Data Arrived at EDR: 10/16/2008
Date Made Active in Reports: 12/08/2008
Number of Days to Update: 53

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 01/30/2009
Next Scheduled EDR Contact: 04/13/2009
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 12/03/2007
Date Data Arrived at EDR: 12/06/2007
Date Made Active in Reports: 02/20/2008
Number of Days to Update: 76

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 03/16/2009
Next Scheduled EDR Contact: 06/15/2009
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 09/11/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 10/16/2008
Number of Days to Update: 27

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/03/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Transporters, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

CVAR_09996

Date of Government Version: 11/12/2008
Date Data Arrived at EDR: 11/18/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 118

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/25/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 11/12/2008
Date Data Arrived at EDR: 11/18/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 118

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/25/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 11/12/2008
Date Data Arrived at EDR: 11/18/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 118

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/25/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 11/12/2008
Date Data Arrived at EDR: 11/18/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 118

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/25/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 10/06/2008
Date Data Arrived at EDR: 10/17/2008
Date Made Active in Reports: 12/08/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 12/29/2008
Next Scheduled EDR Contact: 03/30/2009
Data Release Frequency: Varies

CVAR_09997

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 10/06/2008
Date Data Arrived at EDR: 10/17/2008
Date Made Active in Reports: 12/08/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 12/29/2008
Next Scheduled EDR Contact: 03/30/2009
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 01/23/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 54

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 01/30/2009
Next Scheduled EDR Contact: 04/19/2009
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 11/25/2008
Date Data Arrived at EDR: 11/26/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 62

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/24/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 11/25/2008
Date Data Arrived at EDR: 11/26/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 62

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/24/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

CVAR_09998

Date of Government Version: 12/01/2008
Date Data Arrived at EDR: 12/09/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 49

Source: Integrated Waste Management Board
Telephone: 916-341-6320
Last EDR Contact: 03/10/2009
Next Scheduled EDR Contact: 06/08/2009
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 01/12/2009
Next Scheduled EDR Contact: 04/13/2009
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 02/02/2009
Next Scheduled EDR Contact: 05/04/2009
Data Release Frequency: Varies

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 12/29/2008
Next Scheduled EDR Contact: 03/30/2009
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 03/03/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

CVAR_09999

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 01/19/2009
Next Scheduled EDR Contact: 04/19/2009
Data Release Frequency: Quarterly

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 01/06/2009
Date Data Arrived at EDR: 01/08/2009
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 19

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 01/08/2009
Next Scheduled EDR Contact: 04/06/2009
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 01/05/2009
Next Scheduled EDR Contact: 04/06/2009
Data Release Frequency: Quarterly

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 02/09/2009
Next Scheduled EDR Contact: 05/11/2009
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

SLIC: Statewide SLIC Cases

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 01/06/2009
Date Data Arrived at EDR: 01/08/2009
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 19

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 01/08/2009
Next Scheduled EDR Contact: 04/06/2009
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2008
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 01/05/2009
Next Scheduled EDR Contact: 04/06/2009
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 02/09/2009
Next Scheduled EDR Contact: 05/11/2009
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 01/19/2009
Next Scheduled EDR Contact: 04/19/2009
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 12/29/2008
Next Scheduled EDR Contact: 03/30/2009
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 12/29/2008
Next Scheduled EDR Contact: 03/30/2009
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 03/03/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 03/03/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 12/29/2008
Next Scheduled EDR Contact: 03/30/2009
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: Annually

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 11/18/2008
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 12/23/2008
Number of Days to Update: 34

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Quarterly

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 12/02/2008
Date Data Arrived at EDR: 12/04/2008
Date Made Active in Reports: 12/23/2008
Number of Days to Update: 19

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 12/15/2008
Date Data Arrived at EDR: 12/16/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 90

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 02/19/2009
Date Data Arrived at EDR: 02/19/2009
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 25

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 06/06/2008
Date Data Arrived at EDR: 10/09/2008
Date Made Active in Reports: 11/19/2008
Number of Days to Update: 41

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Semi-Annually

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 02/15/2009
Date Data Arrived at EDR: 02/27/2009
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 17

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/01/2008
Date Data Arrived at EDR: 12/03/2008
Date Made Active in Reports: 12/23/2008
Number of Days to Update: 20

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/20/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Varies

State and tribal registered storage tank lists

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 01/06/2009
Date Data Arrived at EDR: 01/08/2009
Date Made Active in Reports: 01/30/2009
Number of Days to Update: 22

Source: SWRCB
Telephone: 916-480-1028
Last EDR Contact: 01/08/2009
Next Scheduled EDR Contact: 04/06/2009
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
Registered Aboveground Storage Tanks.

Date of Government Version: 11/01/2007
Date Data Arrived at EDR: 11/27/2007
Date Made Active in Reports: 02/14/2008
Number of Days to Update: 79

Source: State Water Resources Control Board
Telephone: 916-341-5712
Last EDR Contact: 02/09/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: Quarterly

CVAR_10003

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 02/19/2009
Date Data Arrived at EDR: 02/19/2009
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 25

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 06/06/2008
Date Data Arrived at EDR: 10/09/2008
Date Made Active in Reports: 11/19/2008
Number of Days to Update: 41

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 09/08/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 10/16/2008
Number of Days to Update: 27

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 11/25/2008
Date Data Arrived at EDR: 11/26/2008
Date Made Active in Reports: 12/23/2008
Number of Days to Update: 27

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Semi-Annually

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/01/2008
Date Data Arrived at EDR: 12/30/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 76

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/20/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 12/01/2008
Date Data Arrived at EDR: 12/04/2008
Date Made Active in Reports: 12/23/2008
Number of Days to Update: 19

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 11/18/2008
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 12/23/2008
Number of Days to Update: 34

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 12/15/2008
Date Data Arrived at EDR: 12/16/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 90

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Quarterly

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 01/19/2009
Next Scheduled EDR Contact: 04/19/2009
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 04/02/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 01/19/2009
Next Scheduled EDR Contact: 04/19/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 11/25/2008
Date Data Arrived at EDR: 11/26/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 62

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/24/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 10/01/2008
Date Data Arrived at EDR: 11/14/2008
Date Made Active in Reports: 12/23/2008
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 02/10/2009
Next Scheduled EDR Contact: 04/13/2009
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 03/25/2008
Date Data Arrived at EDR: 04/17/2008
Date Made Active in Reports: 05/15/2008
Number of Days to Update: 28

Source: EPA, Region 9
Telephone: 415-972-3336
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 03/04/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: Quarterly

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 01/05/2009
Date Data Arrived at EDR: 01/08/2009
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 19

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 01/08/2009
Next Scheduled EDR Contact: 04/06/2009
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 12/22/2008
Date Data Arrived at EDR: 12/22/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 36

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/08/2009
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 10/31/2008
Date Made Active in Reports: 12/23/2008
Number of Days to Update: 53

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 10/31/2008
Next Scheduled EDR Contact: 03/23/2009
Data Release Frequency: Quarterly

HIST CAL-SITES: Calsites Database
The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program
This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 11/25/2008
Date Data Arrived at EDR: 11/26/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 62

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/24/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites
Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

CVAR_10007

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 09/30/2008
Date Data Arrived at EDR: 10/06/2008
Date Made Active in Reports: 10/13/2008
Number of Days to Update: 7

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 03/16/2009
Next Scheduled EDR Contact: 04/19/2009
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 12/29/2008
Date Data Arrived at EDR: 12/29/2008
Date Made Active in Reports: 01/30/2009
Number of Days to Update: 32

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Varies

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

CVAR_10008

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 11/20/2008
Date Data Arrived at EDR: 12/23/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 03/03/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 03/09/2009
Next Scheduled EDR Contact: 06/08/2009
Data Release Frequency: Varies

LIENS: Environmental Liens Listing

A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 11/06/2008
Date Data Arrived at EDR: 11/07/2008
Date Made Active in Reports: 11/26/2008
Number of Days to Update: 19

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/02/2009
Next Scheduled EDR Contact: 05/04/2009
Data Release Frequency: Varies

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 12/30/2008
Date Data Arrived at EDR: 12/30/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 28

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 12/30/2009
Next Scheduled EDR Contact: 03/30/2009
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 09/30/2008
Date Data Arrived at EDR: 10/16/2008
Date Made Active in Reports: 11/19/2008
Number of Days to Update: 34

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 01/30/2009
Next Scheduled EDR Contact: 04/13/2009
Data Release Frequency: Annually

CVAR_10009

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 05/09/2008
Date Made Active in Reports: 06/20/2008
Number of Days to Update: 42

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing

The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 01/06/2009
Date Data Arrived at EDR: 01/08/2009
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 19

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 01/08/2009
Next Scheduled EDR Contact: 04/06/2009
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing

The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 01/06/2009
Date Data Arrived at EDR: 01/08/2009
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 19

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 01/08/2009
Next Scheduled EDR Contact: 04/06/2009
Data Release Frequency: Quarterly

Other Ascertainable Records

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 11/12/2008
Date Data Arrived at EDR: 11/18/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 118

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/25/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 05/14/2008
Date Data Arrived at EDR: 05/28/2008
Date Made Active in Reports: 08/08/2008
Number of Days to Update: 72

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 02/24/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

CVAR_10010

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 703-692-8801
Last EDR Contact: 02/06/2009
Next Scheduled EDR Contact: 05/04/2009
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 09/05/2008
Date Made Active in Reports: 09/23/2008
Number of Days to Update: 18

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 12/29/2008
Next Scheduled EDR Contact: 03/30/2009
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 09/15/2008
Date Data Arrived at EDR: 10/22/2008
Date Made Active in Reports: 12/23/2008
Number of Days to Update: 62

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 01/19/2009
Next Scheduled EDR Contact: 04/19/2009
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 10/21/2008
Date Data Arrived at EDR: 10/29/2008
Date Made Active in Reports: 12/23/2008
Number of Days to Update: 55

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 12/29/2008
Next Scheduled EDR Contact: 03/30/2009
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 07/13/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 03/16/2009
Next Scheduled EDR Contact: 06/15/2009
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/07/2008
Date Data Arrived at EDR: 09/23/2008
Date Made Active in Reports: 10/16/2008
Number of Days to Update: 23

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 03/24/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

CVAR_10011

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 03/17/2009
Next Scheduled EDR Contact: 06/15/2009
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2002
Date Data Arrived at EDR: 04/14/2006
Date Made Active in Reports: 05/30/2006
Number of Days to Update: 46

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 02/18/2009
Next Scheduled EDR Contact: 04/13/2009
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/08/2008
Date Data Arrived at EDR: 10/17/2008
Date Made Active in Reports: 12/08/2008
Number of Days to Update: 52

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 03/16/2009
Next Scheduled EDR Contact: 06/15/2009
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 10/08/2008
Date Data Arrived at EDR: 10/17/2008
Date Made Active in Reports: 12/08/2008
Number of Days to Update: 52

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 03/16/2009
Next Scheduled EDR Contact: 06/15/2009
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 03/14/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 12/04/2008
Next Scheduled EDR Contact: 01/12/2009
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 07/31/2008
Date Data Arrived at EDR: 08/13/2008
Date Made Active in Reports: 09/09/2008
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 01/12/2009
Next Scheduled EDR Contact: 04/13/2009
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 12/04/2007
Date Data Arrived at EDR: 02/07/2008
Date Made Active in Reports: 03/17/2008
Number of Days to Update: 39

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 02/02/2009
Next Scheduled EDR Contact: 05/04/2009
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/03/2008
Date Data Arrived at EDR: 10/15/2008
Date Made Active in Reports: 11/19/2008
Number of Days to Update: 35

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 12/29/2008
Next Scheduled EDR Contact: 03/30/2009
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 10/28/2008
Date Data Arrived at EDR: 10/29/2008
Date Made Active in Reports: 12/08/2008
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 01/30/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: Quarterly

CVAR_10013

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 10/30/2008
Date Data Arrived at EDR: 10/31/2008
Date Made Active in Reports: 12/23/2008
Number of Days to Update: 53

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 12/29/2008
Next Scheduled EDR Contact: 03/30/2009
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 03/06/2007
Date Made Active in Reports: 04/13/2007
Number of Days to Update: 38

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 02/19/2009
Next Scheduled EDR Contact: 06/08/2009
Data Release Frequency: Biennially

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CA WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 03/16/2009
Next Scheduled EDR Contact: 06/15/2009
Data Release Frequency: Quarterly

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites). This listing is no longer updated by the state agency.

CVAR_10014

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 05/29/2001
Date Made Active in Reports: 07/26/2001
Number of Days to Update: 58

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: 04/19/2009
Data Release Frequency: No Update Planned

NOTIFY 65: Proposition 65 Records

Proposition 65 Notification Records. NOTIFY 65 contains facility notifications about any release which could impact drinking water and thereby expose the public to a potential health risk.

Date of Government Version: 10/21/1993
Date Data Arrived at EDR: 11/01/1993
Date Made Active in Reports: 11/19/1993
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 01/12/2009
Next Scheduled EDR Contact: 04/13/2009
Data Release Frequency: No Update Planned

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/23/2008
Date Data Arrived at EDR: 09/24/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 5

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 02/11/2009
Next Scheduled EDR Contact: 03/30/2009
Data Release Frequency: Annually

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 10/31/2008
Date Data Arrived at EDR: 11/03/2008
Date Made Active in Reports: 11/26/2008
Number of Days to Update: 23

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 01/23/2009
Next Scheduled EDR Contact: 04/19/2009
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 10/04/2007
Date Made Active in Reports: 11/07/2007
Number of Days to Update: 34

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 02/17/2009
Next Scheduled EDR Contact: 05/04/2008
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 10/16/2008
Date Made Active in Reports: 11/26/2008
Number of Days to Update: 41

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 01/16/2009
Next Scheduled EDR Contact: 04/13/2009
Data Release Frequency: Varies

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 02/06/2009
Next Scheduled EDR Contact: 05/04/2009
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 12/08/2008
Date Data Arrived at EDR: 12/09/2008
Date Made Active in Reports: 03/16/2009
Number of Days to Update: 97

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 05/11/2009
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 02/06/2009
Next Scheduled EDR Contact: 05/04/2009
Data Release Frequency: N/A

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Historical Auto Stations: EDR Proprietary Historic Gas Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

CVAR_10016

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EDR Historical Cleaners: EDR Proprietary Historic Dry Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 10/28/2008
Date Data Arrived at EDR: 10/30/2008
Date Made Active in Reports: 11/26/2008
Number of Days to Update: 27

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 01/19/2009
Next Scheduled EDR Contact: 04/19/2009
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 10/28/2008
Date Data Arrived at EDR: 10/30/2008
Date Made Active in Reports: 12/05/2008
Number of Days to Update: 36

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 01/19/2009
Next Scheduled EDR Contact: 04/19/2009
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 11/24/2008
Date Data Arrived at EDR: 11/25/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 63

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: Semi-Annually

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 01/14/2009
Date Data Arrived at EDR: 01/15/2009
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 12

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 02/02/2009
Next Scheduled EDR Contact: 05/04/2009
Data Release Frequency: Semi-Annually

KERN COUNTY:

CVAR_10017

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 01/06/2009
Date Data Arrived at EDR: 01/07/2009
Date Made Active in Reports: 01/30/2009
Number of Days to Update: 23

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 03/16/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: Quarterly

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 07/07/1999
Date Made Active in Reports: N/A
Number of Days to Update: 0

Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 02/20/2009
Next Scheduled EDR Contact: 04/13/2009
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 07/31/2008
Date Data Arrived at EDR: 10/17/2008
Date Made Active in Reports: 11/26/2008
Number of Days to Update: 40

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 02/09/2009
Next Scheduled EDR Contact: 05/11/2009
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 11/10/2008
Date Data Arrived at EDR: 11/25/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 63

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 02/11/2009
Next Scheduled EDR Contact: 05/11/2009
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 03/01/2008
Date Data Arrived at EDR: 03/20/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 25

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 03/10/2009
Next Scheduled EDR Contact: 06/08/2009
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 02/14/2008
Date Data Arrived at EDR: 04/10/2008
Date Made Active in Reports: 05/06/2008
Number of Days to Update: 26

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 02/09/2009
Next Scheduled EDR Contact: 05/11/2009
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

CVAR_10018

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 10/06/2008
Date Made Active in Reports: 10/16/2008
Number of Days to Update: 10

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 02/09/2009
Next Scheduled EDR Contact: 05/11/2009
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank

Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/28/2003
Date Data Arrived at EDR: 10/23/2003
Date Made Active in Reports: 11/26/2003
Number of Days to Update: 34

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 02/20/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Annually

City of Torrance Underground Storage Tank

Underground storage tank sites located in the city of Torrance.

Date of Government Version: 12/11/2008
Date Data Arrived at EDR: 12/11/2008
Date Made Active in Reports: 01/30/2009
Number of Days to Update: 50

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/11/2009
Data Release Frequency: Semi-Annually

MARIN COUNTY:

Underground Storage Tank Sites

Currently permitted USTs in Marin County.

Date of Government Version: 08/04/2008
Date Data Arrived at EDR: 08/29/2008
Date Made Active in Reports: 09/15/2008
Number of Days to Update: 17

Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: Semi-Annually

NAPA COUNTY:

Sites With Reported Contamination

A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 07/09/2008
Date Data Arrived at EDR: 07/09/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 22

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Semi-Annually

Closed and Operating Underground Storage Tank Sites

Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Annually

ORANGE COUNTY:

CVAR_10019

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 12/02/2008
Date Data Arrived at EDR: 12/16/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 42

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 03/05/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 12/02/2008
Date Data Arrived at EDR: 12/23/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 35

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 03/05/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 12/02/2008
Date Data Arrived at EDR: 12/23/2008
Date Made Active in Reports: 01/30/2009
Number of Days to Update: 38

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 07/23/2007
Date Data Arrived at EDR: 07/23/2007
Date Made Active in Reports: 08/09/2007
Number of Days to Update: 17

Source: Placer County Health and Human Services
Telephone: 530-889-7312
Last EDR Contact: 02/09/2009
Next Scheduled EDR Contact: 03/16/2009
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 11/06/2008
Date Data Arrived at EDR: 11/17/2008
Date Made Active in Reports: 11/26/2008
Number of Days to Update: 9

Source: Department of Public Health
Telephone: 951-358-5055
Last EDR Contact: 03/03/2009
Next Scheduled EDR Contact: 04/13/2009
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 11/12/2008
Date Data Arrived at EDR: 11/25/2008
Date Made Active in Reports: 12/05/2008
Number of Days to Update: 10

Source: Health Services Agency
Telephone: 951-358-5055
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/13/2009
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Contaminated Sites

List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 09/08/2008
Date Data Arrived at EDR: 12/02/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 56

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 01/30/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: Quarterly

ML - Regulatory Compliance Master List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 09/08/2008
Date Data Arrived at EDR: 10/29/2008
Date Made Active in Reports: 11/26/2008
Number of Days to Update: 28

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 01/30/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 01/07/2009
Date Data Arrived at EDR: 01/09/2009
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 18

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 03/03/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 07/16/2008
Date Data Arrived at EDR: 10/29/2008
Date Made Active in Reports: 11/26/2008
Number of Days to Update: 28

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 12/31/2008
Next Scheduled EDR Contact: 03/30/2009
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 11/01/2008
Date Data Arrived at EDR: 12/23/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 35

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 11/17/2008
Data Release Frequency: Varies

CVAR_10021

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 11/05/2008
Date Data Arrived at EDR: 12/30/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 28

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 12/30/2008
Next Scheduled EDR Contact: 03/30/2009
Data Release Frequency: Varies

SAN FRANCISCO COUNTY:

Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 03/16/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: Quarterly

Underground Storage Tank Information

Underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 10/01/2008
Number of Days to Update: 12

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 03/16/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST

A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 11/07/2008
Date Data Arrived at EDR: 12/03/2008
Date Made Active in Reports: 01/30/2009
Number of Days to Update: 58

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 01/12/2009
Next Scheduled EDR Contact: 04/13/2009
Data Release Frequency: Semi-Annually

SAN MATEO COUNTY:

Business Inventory

List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 11/19/2008
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 11/26/2008
Number of Days to Update: 7

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 01/05/2009
Next Scheduled EDR Contact: 04/06/2009
Data Release Frequency: Annually

Fuel Leak List

A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 01/05/2009
Date Data Arrived at EDR: 01/06/2009
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 21

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 01/05/2009
Next Scheduled EDR Contact: 04/06/2009
Data Release Frequency: Semi-Annually

SANTA CLARA COUNTY:

CVAR_10022

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

HIST LUST - Fuel Leak Site Activity Report

A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing

A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 12/29/2008
Date Data Arrived at EDR: 12/29/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 29

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Varies

Hazardous Material Facilities

Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 12/01/2008
Date Data Arrived at EDR: 12/04/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 54

Source: City of San Jose Fire Department
Telephone: 408-277-4659
Last EDR Contact: 03/03/2009
Next Scheduled EDR Contact: 06/01/2009
Data Release Frequency: Annually

SOLANO COUNTY:

Leaking Underground Storage Tanks

A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 09/22/2008
Date Data Arrived at EDR: 10/06/2008
Date Made Active in Reports: 10/13/2008
Number of Days to Update: 7

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Quarterly

Underground Storage Tanks

Underground storage tank sites located in Solano county.

Date of Government Version: 09/22/2008
Date Data Arrived at EDR: 10/17/2008
Date Made Active in Reports: 12/05/2008
Number of Days to Update: 49

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: Quarterly

SONOMA COUNTY:

Leaking Underground Storage Tank Sites

A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 01/20/2009
Date Data Arrived at EDR: 01/21/2009
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 01/19/2009
Next Scheduled EDR Contact: 04/19/2009
Data Release Frequency: Quarterly

SUTTER COUNTY:

CVAR_10023

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 05/04/2007
Date Data Arrived at EDR: 05/04/2007
Date Made Active in Reports: 05/24/2007
Number of Days to Update: 20

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 12/29/2008
Next Scheduled EDR Contact: 03/30/2009
Data Release Frequency: Semi-Annually

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 11/26/2008
Date Data Arrived at EDR: 12/30/2008
Date Made Active in Reports: 01/27/2009
Number of Days to Update: 28

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/10/2009
Next Scheduled EDR Contact: 06/08/2009
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 08/01/2008
Date Data Arrived at EDR: 09/04/2008
Date Made Active in Reports: 09/18/2008
Number of Days to Update: 14

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 02/16/2009
Next Scheduled EDR Contact: 05/18/2009
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/09/2009
Next Scheduled EDR Contact: 06/08/2009
Data Release Frequency: Quarterly

Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 12/29/2008
Date Data Arrived at EDR: 01/08/2009
Date Made Active in Reports: 01/30/2009
Number of Days to Update: 22

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 01/08/2009
Next Scheduled EDR Contact: 04/06/2009
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 11/13/2008
Date Data Arrived at EDR: 12/03/2008
Date Made Active in Reports: 01/30/2009
Number of Days to Update: 58

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 01/12/2009
Next Scheduled EDR Contact: 04/13/2009
Data Release Frequency: Annually

CVAR_10024

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 12/11/2008
Date Made Active in Reports: 03/19/2009
Number of Days to Update: 98

Source: Department of Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 03/13/2009
Next Scheduled EDR Contact: 06/08/2009
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 09/30/2007
Date Data Arrived at EDR: 12/04/2007
Date Made Active in Reports: 12/31/2007
Number of Days to Update: 27

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 02/20/2009
Next Scheduled EDR Contact: 05/04/2009
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/27/2009
Date Data Arrived at EDR: 02/25/2009
Date Made Active in Reports: 03/12/2009
Number of Days to Update: 15

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 02/25/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 09/11/2008
Date Made Active in Reports: 10/02/2008
Number of Days to Update: 21

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 03/09/2009
Next Scheduled EDR Contact: 06/08/2009
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2008
Date Data Arrived at EDR: 02/12/2009
Date Made Active in Reports: 03/11/2009
Number of Days to Update: 27

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 03/16/2009
Next Scheduled EDR Contact: 06/15/2009
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2007
Date Data Arrived at EDR: 08/22/2008
Date Made Active in Reports: 09/08/2008
Number of Days to Update: 17

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 01/05/2009
Next Scheduled EDR Contact: 04/06/2009
Data Release Frequency: Annually

CVAR_10025

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: PennWell Corporation
Telephone: (800) 823-6277
This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

CVAR_10026

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

TSP PROPERTY - SHOPOFF
NORTH OF CHERRY VALLEY BLVD.
CHERRY VALLEY, CA 92320

TARGET PROPERTY COORDINATES

Latitude (North):	33.97200 - 33° 58' 19.2"
Longitude (West):	117.0231 - 117° 1' 23.2"
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	497866.0
UTM Y (Meters):	3758857.2
Elevation:	2440 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	33117-H1 EL CASCO, CA
Most Recent Revision:	1979

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

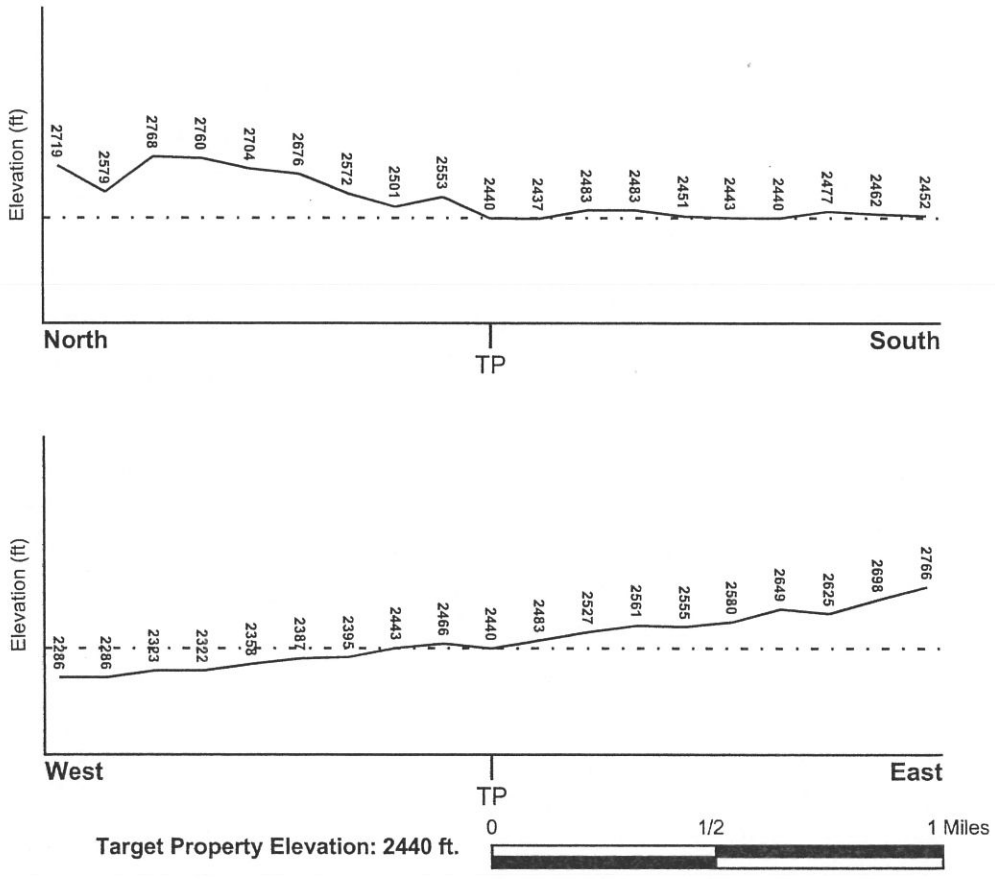
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General WSW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

CVAR_10029

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
RIVERSIDE, CA	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 0602450785A

Additional Panels in search area: 0607400000A

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
EL CASCO	Not Available

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius: 1.25 miles
Status: Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site-specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

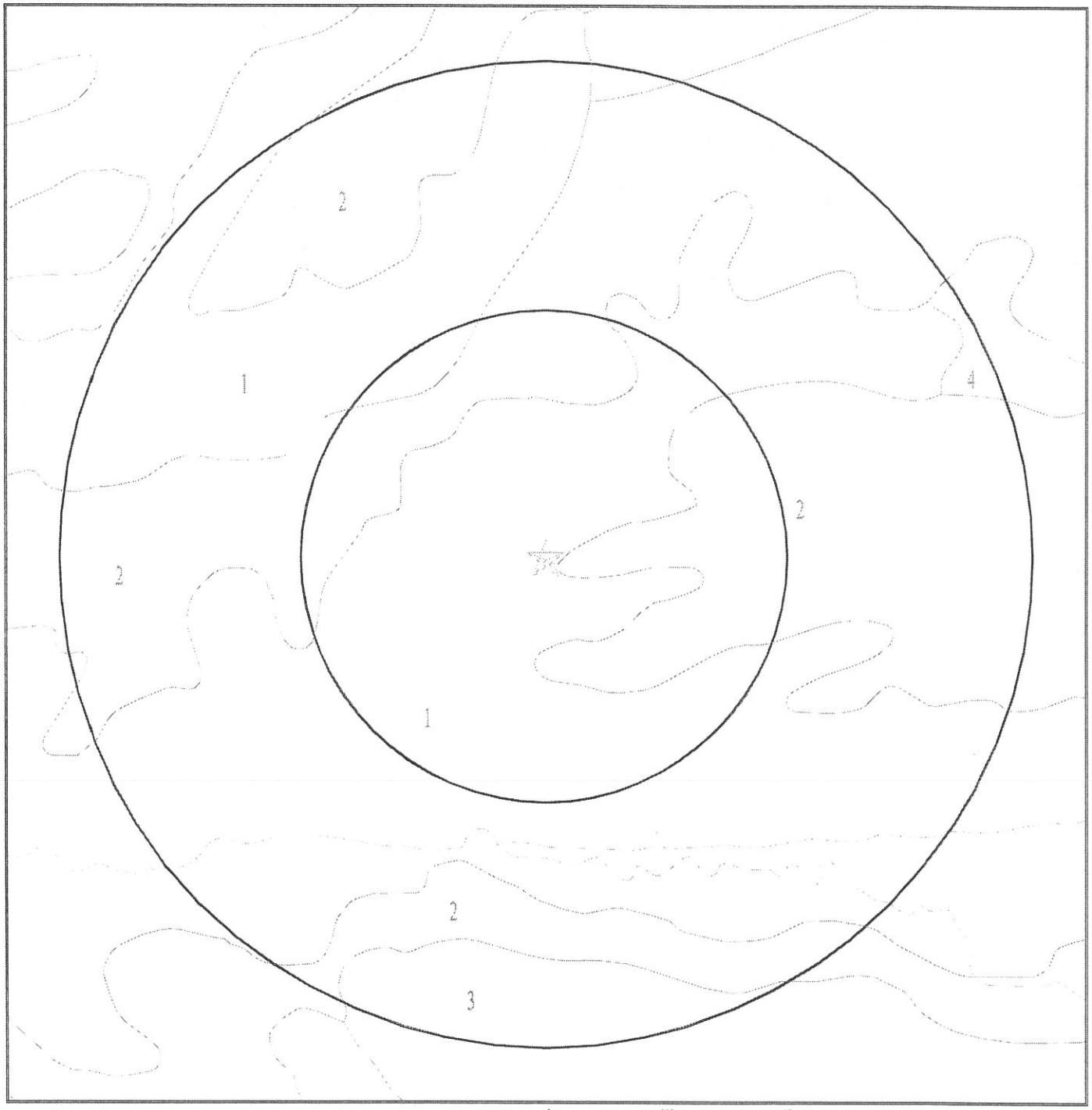
GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

CVAR_10031

SSURGO SOIL MAP - 2449248.2s



Target Property
SSURGO Soil
Water

SITE NAME:	TSP Property - Shopoff	CLIENT:	RM Environmental
ADDRESS:	North of Cherry Valley Blvd. Cherry Valley CA 92320	CONTACT:	Travis Meier
		INQUIRY #:	2449248.2s
LAT/LONG:	33.9720 / 117.0231	DATE:	March 25, 2009 4:58 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: HANFORD

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6
2	7 inches	40 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6
3	40 inches	59 inches	stratified loamy sand to coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 2

Soil Component Name: Terrace escarpments

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class:
Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

No Layer Information available.

Soil Map ID: 3

Soil Component Name: RAMONA

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	14 inches	22 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6
3	22 inches	68 inches	sandy clay loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6
4	68 inches	74 inches	gravelly sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6

Soil Map ID: 4

Soil Component Name: HANFORD

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6
2	7 inches	40 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6
3	40 inches	59 inches	stratified loamy sand to coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	USGS3124543	1/4 - 1/2 Mile West
2	USGS3124539	1/4 - 1/2 Mile West
B3	USGS3124535	1/4 - 1/2 Mile WSW
C6	USGS3124521	1/4 - 1/2 Mile SE
C8	USGS3124526	1/4 - 1/2 Mile SE

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
E10	USGS3124517	1/2 - 1 Mile SW
D11	USGS3124530	1/2 - 1 Mile ESE
12	USGS3124533	1/2 - 1 Mile WSW
14	USGS3124520	1/2 - 1 Mile ESE
15	USGS3124518	1/2 - 1 Mile SE
F16	USGS3124525	1/2 - 1 Mile ESE
17	USGS3124537	1/2 - 1 Mile West
F18	USGS3124524	1/2 - 1 Mile ESE
19	USGS3124515	1/2 - 1 Mile SW
20	USGS3124523	1/2 - 1 Mile ESE
G21	USGS3124362	1/2 - 1 Mile WNW
22	USGS3124514	1/2 - 1 Mile SE
23	USGS3124359	1/2 - 1 Mile WNW
28	USGS3124516	1/2 - 1 Mile WSW
I29	USGS3124532	1/2 - 1 Mile ESE
J30	USGS3124506	1/2 - 1 Mile South
31	USGS3124545	1/2 - 1 Mile West
J32	USGS3124500	1/2 - 1 Mile South
33	USGS3124371	1/2 - 1 Mile NW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

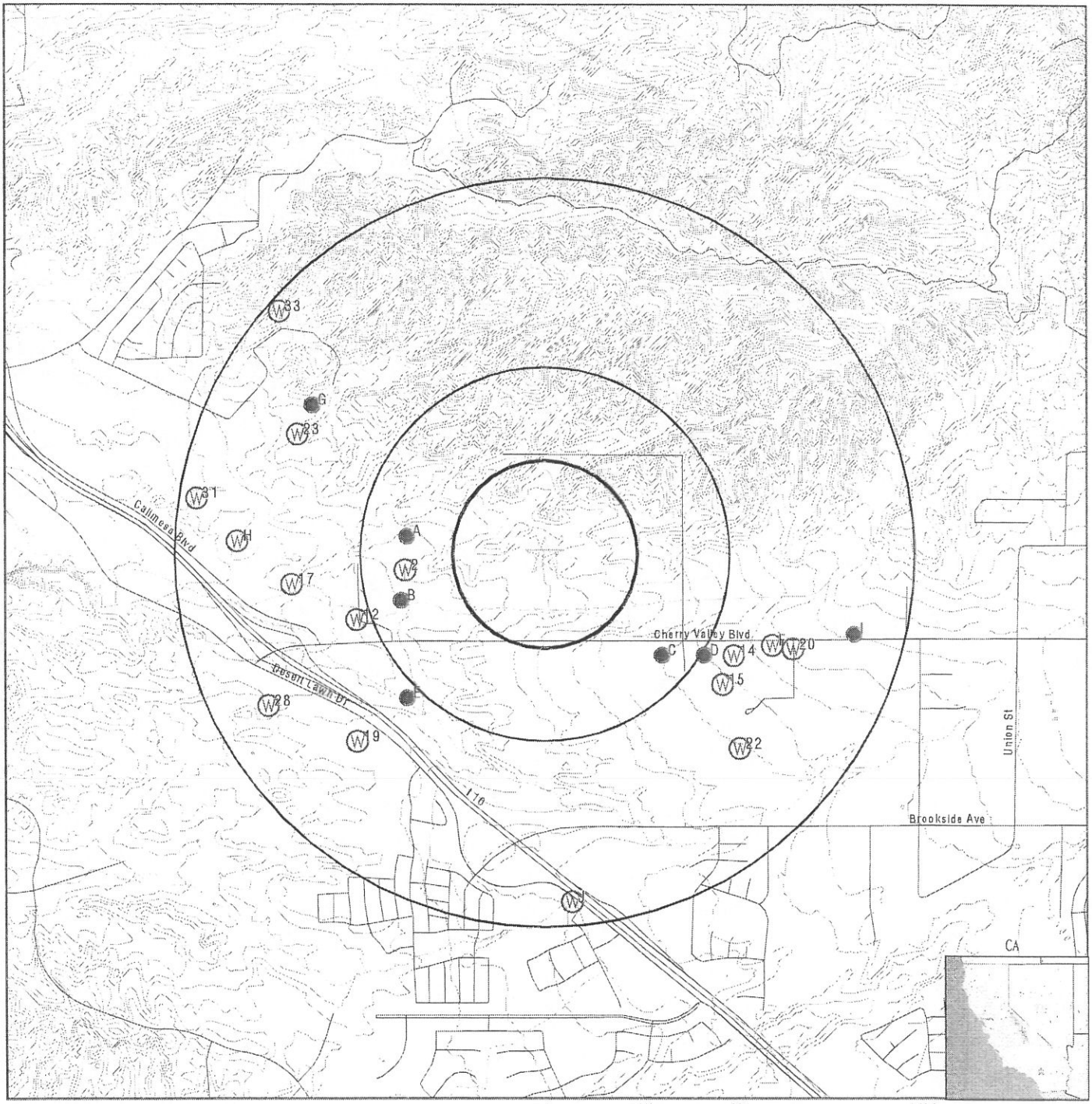
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
C4	CADW20000006278	1/4 - 1/2 Mile SE
A5	CADW20000006293	1/4 - 1/2 Mile West
B7	CADW20000006283	1/4 - 1/2 Mile WSW
D9	CADW20000006277	1/4 - 1/2 Mile ESE
E13	CADW20000006271	1/2 - 1 Mile SW
G24	CADW20000006321	1/2 - 1 Mile WNW
H25	2428	1/2 - 1 Mile West
H26	2429	1/2 - 1 Mile West
I27	CADW20000006281	1/2 - 1 Mile ESE

PHYSICAL SETTING SOURCE MAP - 2449248.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- Indeterminate Groundwater Flow at Location
- Groundwater Flow Varies at Location
- Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME: TSP Property - Shopoff	CLIENT: RM Environmental
ADDRESS: North of Cherry Valley Blvd. Cherry Valley CA 92320	CONTACT: Travis Meier
LAT/LONG: 33.9720 / 117.0231	INQUIRY #: 2449248.2s
	DATE: March 25, 2009 4:58 pm

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CVAR_10038

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
A1 **West** **1/4 - 1/2 Mile** **Lower**	**FED USGS**	**USGS3124543**

Agency cd:	USGS	Site no:	335822117014201
Site name:	002S001W30C001S		
Latitude:	335821.72		
Longitude:	1170145.24	Dec lat:	33.9727
Dec lon:	-117.02923333	Coor meth:	D
Coor accr:	H	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	EL CASCO	Map scale:	24000
Altitude:	2409.35		
Altitude method:	Differential Global Positioning System (GPS)		
Altitude accuracy:	1		
Altitude datum:	North American Vertical Datum of 1988		
Hydrologic:	Santa Ana. California. Area = 1680 sq.mi.		
Topographic:	Valley flat		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	19980608	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	470600222		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-06-07	Ground water data end date:	2004-10-25
Ground water data count:	30		

Ground-water levels, Number of Measurements: 30

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2004-10-25	207.9		2004-04-19	205.0	
2003-11-17	203.0		2003-04-28	200.5	
2002-11-04	199.8		2002-04-22	196.5	
2001-11-05	195.4		2001-05-14	192.7	
2000-10-23	192.6		2000-04-24	190.0	
1999-10-25	189.7		1999-04-26	187.8	
1998-11-09	190.1		1998-06-08	198.3	
1997-10-20		2199	1997-05-13		2201
1996-11-11		2200	1996-05-06		2201
1995-11-28		2200	1995-05-10		2201
1994-11-11	190.4				
Note: A nearby site that taps the same aquifer was being pumped.					
1994-05-09	189.4				
Note: A nearby site that taps the same aquifer was being pumped.					
1993-09-30	191.4				
Note: A nearby site that taps the same aquifer was being pumped.					

CVAR_10039

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1992-02-17	189.3				
Note: A nearby site that taps the same aquifer was being pumped.					
1965-01-13	178.5		1964-05-29	177.6	
1964-03-20	177		1963-12-12	177.3	
1963-08-01	176.5		1963-06-07	175.9	

2
West
1/4 - 1/2 Mile
Lower

FED USGS **USGS3124539**

Agency cd:	USGS	Site no:	335817117014701
Site name:	002S001W30F002S		
Latitude:	335817		
Longitude:	1170147	Dec lat:	33.97138889
Dec lon:	-117.02972222	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2460		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Not Reported		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19731002
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	415	Hole depth:	440
Source of depth data:	driller		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

B3
WSW
1/4 - 1/2 Mile
Lower

FED USGS **USGS3124535**

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Agency cd:	USGS	Site no:	335813117014301
Site name:	002S001W30E003S		
Latitude:	335812.77		
Longitude:	1170146.06	Dec lat:	33.97021389
Dec lon:	-117.02946111	Coor meth:	D
Coor accr:	H	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	EL CASCO	Map scale:	24000
Altitude:	2384.58		
Altitude method:	Differential Global Positioning System (GPS)		
Altitude accuracy:	1		
Altitude datum:	North American Vertical Datum of 1988		
Hydrologic:	Santa Ana. California. Area = 1680 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	19980608	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	201.5	Hole depth:	509.
Source of depth data:	reporting agency (generally USGS)		
Project number:	470600222		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1963-04-03	Ground water data end date:	1999-10-25
Ground water data count:	20		

Ground-water levels, Number of Measurements: 20

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1999-10-25					
Note: An obstruction was encountered in the well above the water surface (no water level recorded).					
1999-04-26					
Note: An obstruction was encountered in the well above the water surface (no water level recorded).					
1998-11-09					
Note: An obstruction was encountered in the well above the water surface (no water level recorded).					
1998-06-08	173.8		1997-10-20		2204
1997-05-13		2206	1996-11-11		2205
1996-05-06		2206	1995-11-28		2205
1995-05-10		2206			
1994-11-11	165.5				
Note: A nearby site that taps the same aquifer was being pumped.					
1994-05-09	164.5				
Note: A nearby site that taps the same aquifer was being pumped.					
1993-09-30	166.5				
Note: A nearby site that taps the same aquifer was being pumped.					
1992-02-17	168.7		1965-01-13	154.6	
1964-05-29	153		1963-12-12	152.4	
1963-08-01	151.9		1963-06-07	150.9	
1963-04-03	150				

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
C4 **SE** **1/4 - 1/2 Mile** **Higher**	**CA WELLS**	**CADW20000006278**

Longitude:	117.017
Latitude:	33.9681
Stwellno:	02S01W30J001S
Districtco:	3
Welluseco:	Z
Countycode:	33
Gwcode:	800208
Site id:	CADW20000006278

	Database	EDR ID Number
A5 **West** **1/4 - 1/2 Mile** **Lower**	**CA WELLS**	**CADW20000006293**

Longitude:	117.0292
Latitude:	33.9727
Stwellno:	02S01W30C001S
Districtco:	3
Welluseco:	Z
Countycode:	33
Gwcode:	800208
Site id:	CADW20000006293

	Database	EDR ID Number
C6 **SE** **1/4 - 1/2 Mile** **Higher**	**FED USGS**	**USGS3124521**

Agency cd:	USGS	Site no:	335805117012301
Site name:	002S001W30J002S		
Latitude:	335805		
Longitude:	1170101	Dec lat:	33.96807116
Dec lon:	-117.01780597	Coor meth:	M
Coor accr:	R	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	EL CASCO	Map scale:	24000
Altitude:	2550		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Not Reported		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19740213
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	750	Hole depth:	750
Source of depth data:	driller		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

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Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

B7
WSW
1/4 - 1/2 Mile
Lower

CA WELLS **CADW20000006283**

Longitude:	117.0295
Latitude:	33.9702
Stwellno:	02S01W30E003S
Districtco:	3
Welluseco:	Z
Countycode:	33
Gwcode:	800208
Site id:	CADW20000006283

C8
SE
1/4 - 1/2 Mile
Higher

FED USGS **USGS3124526**

Agency cd:	USGS	Site no:	335806117004701
Site name:	002S001W30J001S		
Latitude:	335805		
Longitude:	1170058	Dec lat:	33.96807116
Dec lon:	-117.01697259	Coor meth:	M
Coor accr:	F	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	EL CASCO	Map scale:	24000
Altitude:	2565		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Santa Ana. California. Area = 1680 sq.mi.		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19900821
Date inventoried:	19970820	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	1410	Hole depth:	1413
Source of depth data:	driller		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1990-09-19	Ground water data end date:	1997-10-20
Ground water data count:	7		

Ground-water levels, Number of Measurements: 7

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1997-10-20		2214	1997-05-13		2216
1996-11-11		2215	1996-05-06		2216
1991-11-20		2213	1991-09-10		2233
1990-09-19	317				

D9
ESE
1/4 - 1/2 Mile
Higher

CA WELLS **CADW20000006277**

Longitude:	117.015
Latitude:	33.9681
Stwellno:	02S01W29M005S
Districtco:	3
Welluseco:	Z
Countycode:	33
Gwcode:	800208
Site id:	CADW20000006277

E10
SW
1/2 - 1 Mile
Lower

FED USGS **USGS3124517**

Agency cd:	USGS	Site no:	335759117014201
Site name:	002S001W30L001S		
Latitude:	335759.11		
Longitude:	1170145.17	Dec lat:	33.96641944
Dec lon:	-117.02921389	Coor meth:	D
Coor accr:	H	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	EL CASCO	Map scale:	24000
Altitude:	2379.77		
Altitude method:	Differential Global Positioning System (GPS)		
Altitude accuracy:	1		
Altitude datum:	North American Vertical Datum of 1988		
Hydrologic:	Santa Ana. California. Area = 1680 sq.mi.		
Topographic:	Undulating		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	19980604	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	470600222		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

Peak flow data count: 0
Water quality data end date:0000-00-00
Ground water data begin date: 1946-04-02
Ground water data count: 15
Water quality data begin date: 0000-00-00
Water quality data count: 0
Ground water data end date: 2004-04-19

Ground-water levels, Number of Measurements: 15

Date	Feet below Surface	Feet to Sealevel
2004-04-19	174.0	
2003-04-28	169.8	
2002-04-22	165.8	
2001-05-14	161.8	
2000-04-24	159.2	
1999-04-26	156.9	
1998-06-04	157.1	
1991-11-20	161.2	
Note: The site was being pumped.		
1946-04-02	108	
2003-11-17	172.8	
2002-11-04	169.2	
2001-11-05	164.6	
2000-10-23	162.0	
1999-10-25	158.8	
1998-11-09	158.5	

D11
ESE
1/2 - 1 Mile
Higher

FED USGS **USGS3124530**

Agency cd:	USGS	Site no:	335807117005601
Site name:	002S001W29M002S		
Latitude:	335805		
Longitude:	1170052	Dec lat:	33.96807115
Dec lon:	-117.01530584	Coor meth:	M
Coor accr:	R	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	El Casco	Map scale:	24000
Altitude:	2560		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Not Reported		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	1961
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	496	Hole depth:	496
Source of depth data:	driller		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1996-05-06	Ground water data end date:	2004-10-25
Ground water data count:	17		

Ground-water levels, Number of Measurements: 17

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2004-10-25	353.6		2004-04-20	350.6	
2003-11-17	349.2		2003-04-28	347.5	
2002-11-04	346.2				
2002-04-22	343.5				
Note: The site had been pumped recently.					
2001-11-05	341.9		2001-05-14	339.5	
2000-10-23	338.9		2000-04-24	336.4	
1999-10-25	335.7		1999-04-26	334.4	
1998-06-08	345.3		1997-10-21		2220
1997-05-13		2222	1996-11-11		2221
1996-05-06		2222			

12
WSW
1/2 - 1 Mile
Lower

FED USGS **USGS3124533**

Agency cd:	USGS	Site no:	335810117015201
Site name:	002S001W30E001S		
Latitude:	335810		
Longitude:	1170152	Dec lat:	33.96946008
Dec lon:	-117.0319734	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2350		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Not Reported		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19270101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	220	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1927-10-05	Ground water data end date:	1979-03-05
Ground water data count:	138		

Ground-water levels, Number of Measurements: 138

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1979-03-05		2268	1950-01-07		2247

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel
1949-10-01		2240
1949-04-05		2250
1948-07-06		2251
1947-10-07		2250
1947-04-08		2254
1946-10-05		2248
1946-04-12		2253
1945-10-11		2251
1945-04-04		2255
1944-10-03		2252
1944-04-08		2255
1943-10-05		2251
1943-04-03		2255
1942-10-02		2253
1942-04-07		2256
1941-10-04		2255
1941-06-24		2257
1941-02-16		2256
1940-10-02		2256
1940-07-03		2256
1940-04-02		2257
1939-10-05		2256
1939-06-21		2258
1939-03-09		2257
1938-11-18		2256
1938-08-12		2257
1938-05-12		2257
1938-01-10		2256
1937-07-15		2253
1937-01-08		2256
1936-07-07		2257
1936-01-06		2258
1935-07-17		2258
1935-01-18		2258
1933-12-07		2259
1933-10-12		2259
1933-07-07		2260
1933-05-12		2260
1933-03-12		2261
1933-01-06		2260
1932-11-11		2260
1932-08-08		2242
1932-06-06		2262
1932-04-09		2262
1932-02-11		2262
1931-12-07		2261
1931-10-08		2262
1931-08-05		2262
1931-06-08		2263
1931-04-07		2264
1931-02-09		2263
1930-12-04		2263
1930-10-01		2264
1930-08-05		2264
1930-06-04		2265
1949-07-07		2242
1948-10-05		2249
1948-04-15		2252
1947-07-03		2250
1947-01-07		2253
1946-07-11		2251
1946-01-07		2250
1945-07-08		2254
1945-01-03		2252
1944-07-05		2256
1944-01-08		2252
1943-07-05		2256
1943-01-05		2251
1942-07-12		2254
1942-01-06		2256
1941-07-08		2257
1941-04-09		2256
1941-01-04		2254
1940-09-19		2256
1940-06-13		2257
1940-01-05		2256
1939-07-03		2258
1939-04-05		2258
1939-01-03		2256
1938-10-03		2257
1938-07-02		2257
1938-04-03		2257
1937-10-06		2256
1937-04-06		2258
1936-10-08		2256
1936-04-02		2258
1935-10-15		2257
1935-04-13		2259
1934-10-11		2258
1933-11-07		2259
1933-09-08		2260
1933-06-08		2260
1933-04-11		2261
1933-02-08		2260
1932-12-06		2260
1932-10-11		2260
1932-07-07		2261
1932-05-10		2262
1932-03-07		2262
1932-01-05		2262
1931-11-09		2261
1931-09-07		2262
1931-07-07		2263
1931-05-07		2264
1931-03-05		2264
1931-01-06		2263
1930-11-04		2263
1930-09-03		2264
1930-07-08		2265
1930-05-05		2265

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1930-04-09		2265	1930-03-03		2265
1930-02-04		2265	1930-01-04		2264
1929-12-03		2265	1929-11-06		2265
1929-10-12		2265	1929-09-04		2265
1929-08-05		2265	1929-06-01		2266
1929-04-16		2267	1929-02-02		2267
1929-01-07		2267	1928-12-04		2267
1928-11-02		2268	1928-10-05		2268
1928-09-05		2269	1928-08-03		2270
1928-07-03		2270	1928-06-02		2271
1928-05-01		2272	1928-04-02		2272
1928-03-02		2273	1928-01-10		2272
1927-11-01		2272	1927-10-05		2271

E13
SW
1/2 - 1 Mile
Lower

CA WELLS **CADW20000006271**

Longitude:	117.0292
Latitude:	33.9664
Stwellno:	02S01W30L001S
Districtco:	3
Welluseco:	Z
Countycode:	33
Gwcode:	800208
Site id:	CADW20000006271

14
ESE
1/2 - 1 Mile
Higher

FED USGS **USGS3124520**

Agency cd:	USGS	Site no:	335802117004801
Site name:	002S001W29M001S		
Latitude:	335805		
Longitude:	1170048	Dec lat:	33.96807115
Dec lon:	-117.01419467	Coor meth:	R
Coor accr:	F	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	EL CASCO	Map scale:	24000
Altitude:	2590		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Not Reported		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	1923
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	359	Hole depth:	359
Source of depth data:	other reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00

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Peak flow data count: 0
Water quality data end date:0000-00-00
Ground water data begin date: 1926-10-07
Ground water data count: 130

Water quality data begin date: 0000-00-00
Water quality data count: 0
Ground water data end date: 1950-01-06

Ground-water levels, Number of Measurements: 130

Date	Feet below Surface	Feet to Sealevel
1950-01-06		2259
1949-04-05		2259
1948-10-05		2260
1948-04-08		2262
1947-07-03		2262
1947-01-07		2262
1946-07-11		2262
1946-01-07		2262
1945-07-08		2263
1945-01-03		2263
1944-07-05		2263
1944-01-08		2263
1943-07-05		2264
1943-01-05		2264
1942-07-12		2264
1942-01-06		2264
1940-09-19		2265
1940-06-13		2266
1940-03-27		2266
1939-10-05		2266
1939-06-21		2266
1939-04-05		2266
1939-01-03		2266
1938-08-12		2266
1938-04-03		2266
1937-11-13		2266
1937-08-15		2267
1937-01-08		2266
1936-08-11		2267
1935-10-15		2268
1935-04-13		2269
1934-10-11		2269
1934-04-04		2270
1933-11-07		2270
1933-05-12		2271
1933-02-08		2271
1932-10-11		2272
1932-07-07		2272
1932-05-10		2273
1932-03-07		2273
1932-01-05		2273
1931-10-08		2273
1931-08-05		2274
1931-06-08		2274
1931-02-09		2275
1930-11-04		2275
1930-07-08		2276
1930-05-05		2276
1930-03-03		2276
1930-01-04		2277
1949-07-02		2259
1949-01-03		2259
1948-07-06		2261
1947-10-07		2261
1947-04-08		2262
1946-10-05		2262
1946-04-12		2263
1945-10-11		2263
1945-04-04		2263
1944-10-03		2263
1944-04-08		2263
1943-10-05		2263
1943-04-03		2264
1942-10-02		2264
1942-04-07		2265
1940-10-02		2265
1940-07-03		2265
1940-04-02		2266
1940-01-05		2265
1939-07-03		2266
1939-05-12		2266
1939-03-09		2266
1938-11-18		2266
1938-07-02		2266
1938-01-10		2266
1937-10-06		2266
1937-04-06		2266
1936-10-08		2267
1936-04-02		2268
1935-07-17		2268
1935-01-18		2269
1934-07-12		2269
1933-12-07		2270
1933-06-08		2271
1933-04-11		2271
1932-12-06		2272
1932-09-10		2272
1932-06-06		2273
1932-04-09		2273
1932-02-11		2273
1931-12-07		2273
1931-09-07		2274
1931-07-07		2274
1931-05-07		2274
1931-01-06		2275
1930-10-01		2275
1930-06-04		2276
1930-04-09		2276
1930-02-04		2276
1929-12-03		2277

CVAR_10049

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1929-11-06		2277	1929-10-12		2277
1929-09-04		2278	1929-08-03		2278
1929-06-01		2278	1929-04-16		2279
1929-03-04		2279	1929-02-02		2279
1929-01-03		2279	1928-12-04		2280
1928-10-05		2281	1928-09-05		2281
1928-08-03		2281	1928-07-02		2282
1928-06-02		2282	1928-04-20		2282
1928-03-03		2283	1928-02-02		2283
1928-01-10		2282	1927-12-05		2283
1927-11-01		2283	1927-10-05		2283
1927-08-04		2284	1927-07-06		2284
1927-06-03		2285	1927-05-06		2285
1927-04-06		2285	1927-03-01		2284
1927-01-28		2285	1926-10-07		2285

15
SE
1/2 - 1 Mile
Higher

FED USGS **USGS3124518**

Agency cd:	USGS	Site no:	335801117005301
Site name:	002S001W29M008S		
Latitude:	335801		
Longitude:	1170053	Dec lat:	33.96694444
Dec lon:	-117.01472222	Coor meth:	M
Coor accr:	F	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2550		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Not Reported		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19840820
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	585	Hole depth:	585
Source of depth data:	driller		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
F16 **ESE** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS3124525**

Agency cd:	USGS	Site no:	335806117004601
Site name:	002S001W29M004S		
Latitude:	335807		
Longitude:	1170046	Dec lat:	33.96861111
Dec lon:	-117.01277778	Coor meth:	M
Coor accr:	R	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	El Casco	Map scale:	24000
Altitude:	2580		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Not Reported		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19680312
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	603	Hole depth:	603
Source of depth data:	driller		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1993-10-13	Ground water data end date:	1995-11-30
Ground water data count:	5		

Ground-water levels, Number of Measurements: 5

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1995-11-30		2224.14	1995-05-11		2224.94
1994-11-11		2223.74	1994-05-13		2231.24
1993-10-13		2229.34			

17 **West** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS3124537**

CVAR_10051

Agency cd:	USGS	Site no:	335815117020501
Site name:	002S002W25H002S		
Latitude:	335815		
Longitude:	1170206	Dec lat:	33.97083333
Dec lon:	-117.035	Coor meth:	R
Coor accr:	S	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2345		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Not Reported		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19771121
Date inventoried:	20040430	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	300	Hole depth:	315
Source of depth data:	driller		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

F18
ESE
1/2 - 1 Mile
Higher

FED USGS **USGS3124524**

Agency cd:	USGS	Site no:	335806117004301
Site name:	002S001W29M003S		
Latitude:	335806		
Longitude:	1170043	Dec lat:	33.96833333
Dec lon:	-117.01194444	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2595		
Altitude method:	Reported		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Not Reported		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

19
SW
1/2 - 1 Mile
Lower

FED USGS **USGS3124515**

Agency cd:	USGS	Site no:	335753117015501
Site name:	002S001W30M001S		
Latitude:	335753		
Longitude:	1170155	Dec lat:	33.96472222
Dec lon:	-117.03194444	Coor meth:	R
Coor accr:	S	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2410		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Not Reported		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	1917
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	201
Source of depth data:	other reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1921-06-25	Ground water data end date:	1950-01-07
Ground water data count:	54		

Ground-water levels, Number of Measurements: 54

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1950-01-07		2249	1949-10-01		2249
1949-07-02		2250	1949-04-05		2252
1949-01-03		2251	1948-10-05		2252
1948-07-06		2253	1948-04-14		2254
1947-10-07		2254	1947-07-03		2253
1947-04-08		2255	1947-01-07		2254
1946-10-05		2255	1946-07-11		2255
1946-04-12		2256	1946-01-07		2256
1945-10-11		2255	1945-07-08		2256
1945-04-04		2256	1945-01-03		2255
1944-10-03		2256	1944-07-05		2256
1944-04-08		2257	1944-01-08		2256
1943-10-05		2256	1943-07-05		2257
1943-04-03		2255	1943-01-05		2256
1942-10-02		2254	1942-08-12		2252
1942-04-07		2258	1942-01-06		2257
1941-10-04		2257	1941-07-08		2258
1941-04-09		2258	1941-01-04		2258
1940-10-02		2257	1940-07-03		2258
1940-04-02		2258	1940-03-31		2258
1940-03-25		2258	1930-10-01		2265
1929-12-17		2266	1928-05-25		2276
1927-12-13		2273	1926-08-13		2277
1925-12-16		2277	1925-09-10		2277
1924-09-08		2275	1923-07-06		2278
1922-09-15		2278	1922-07-07		2277
1921-10-21		2276	1921-06-25		2284

20
ESE
1/2 - 1 Mile
Higher

FED USGS **USGS3124523**

Agency cd:	USGS	Site no:	335806117004101
Site name:	002S001W29L001S		
Latitude:	335806		
Longitude:	1170041	Dec lat:	33.96833333
Dec lon:	-117.01138889	Coor meth:	R
Coor accr:	S	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2596		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Not Reported		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19610101
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	517	Hole depth:	517
Source of depth data:	driller		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported

Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

G21
WNW
1/2 - 1 Mile
Lower

FED USGS **USGS3124362**

Agency cd:	USGS	Site no:	335840117015801
Site name:	002S001W19N001S		
Latitude:	335839.98		
Longitude:	1170201.03	Dec lat:	33.97777222
Dec lon:	-117.03361944	Coor meth:	D
Coor accr:	H	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	EL CASCO	Map scale:	24000
Altitude:	2411.95		
Altitude method:	Differential Global Positioning System (GPS)		
Altitude accuracy:	5		
Altitude datum:	North American Vertical Datum of 1988		
Hydrologic:	Santa Ana. California. Area = 1680 sq.mi.		
Topographic:	Undulating		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	19980608	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1992-01-27	Ground water data end date:	2004-10-25
Ground water data count:	17		

Ground-water levels, Number of Measurements: 17

Date	Feet below Surface	Feet to Sealevel
2004-10-25	210.9	
2003-11-17	206.5	
2002-11-04	202.7	
2001-05-14	196.2	
2000-04-24	192.8	
1999-04-26	190.5	
1998-06-08	199.9	
1994-05-09	191.2	
1992-01-27	96	
2004-04-19	207.9	
2003-04-28	203.7	
2001-11-05	198.6	
2000-10-25	195.5	
1999-10-25	192.8	
1998-11-09	192.9	
1994-11-11	192.6	
1993-10-07	192.1	

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
22 **SE** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS3124514**

Agency cd:	USGS	Site no:	335752117004701
Site name:	002S001W29N001S		
Latitude:	335752		
Longitude:	1170047	Dec lat:	33.96446011
Dec lon:	-117.01391683	Coor meth:	R
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2535		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Not Reported		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19510821
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	240
Source of depth data:	driller		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1961-08-18	Ground water data end date:	1964-03-20
Ground water data count:	13		

Ground-water levels, Number of Measurements: 13

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1964-03-20		2211	1963-12-12		2211
1963-08-01		2211	1963-06-07		2211
1963-03-30		2209	1963-01-24		2210
1962-11-30		2212	1962-09-28		2213
1962-08-03		2214	1962-03-23		2215
1962-01-19		2215	1961-10-27		2215
1961-08-18		2216			

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23 **WNW** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS3124359**

CVAR_10056

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Agency cd:	USGS	Site no:	335836117020501
Site name:	002S002W24R002S		
Latitude:	335836		
Longitude:	1170205	Dec lat:	33.97666667
Dec lon:	-117.03472222	Coor meth:	G
Coor accr:	S	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	EL CASCO	Map scale:	Not Reported
Altitude:	2360		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	40		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Not Reported		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	300
Source of depth data:	driller		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1926-03-26	Ground water data end date:	1943-10-05
Ground water data count:	81		

Ground-water levels, Number of Measurements: 81

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1943-10-05		2235	1943-07-05		2236
1943-04-03		2237	1943-01-05		2235
1942-10-02		2235	1942-07-12		2233
1942-04-07		2238	1942-01-06		2237
1941-10-04		2237	1941-07-08		2238
1941-06-24		2239	1941-04-09		2236
1941-02-03		2237	1941-01-04		2236
1940-10-02		2236	1940-09-19		2236
1940-07-03		2238	1940-06-14		2238
1940-04-02		2238	1940-01-05		2236
1939-10-05		2236	1939-07-03		2236
1939-04-05		2237	1939-01-03		2234
1938-10-03		2234	1937-10-06		2230
1937-07-15		2231	1937-04-06		2229
1936-04-02		2227	1935-12-07		2226
1935-10-15		2224	1935-04-13		2228
1935-01-18		2226	1932-12-06		2227
1932-10-11		2227	1932-07-07		2230
1932-06-06		2230	1932-05-10		2230
1932-04-09		2230	1932-03-07		2230
1932-02-11		2229	1932-01-05		2228
1931-12-07		2228	1931-10-08		2227

Ground-water levels, continued.

Date	Feet below Surface	Feet to Sealevel
1931-09-07		2228
1931-06-08		2231
1931-02-09		2230
1930-11-04		2230
1930-05-05		2233
1930-03-03		2232
1930-01-04		2231
1929-11-06		2232
1929-05-09		2236
1929-01-03		2238
1928-10-02		2239
1928-08-02		2242
1928-04-25		2249
1928-02-03		2251
1927-12-05		2249
1927-10-03		2249
1927-05-12		2256
1927-04-06		2257
1926-03-26		2257
1931-08-05		2227
1931-05-06		2231
1931-01-06		2230
1930-07-08		2232
1930-04-08		2232
1930-02-04		2232
1929-12-03		2232
1929-09-04		2232
1929-04-06		2237
1928-12-04		2238
1928-09-03		2241
1928-05-17		2248
1928-03-05		2251
1927-12-15		2249
1927-11-02		2248
1927-08-16		2251
1927-05-06		2256
1927-02-01		2256

G24
WNW
1/2 - 1 Mile
Lower

CA WELLS **CADW20000006321**

Longitude:	117.0336
Latitude:	33.9778
Stwellno:	02S01W19N001S
Districtco:	3
Welluseco:	Z
Countycode:	33
Gwcode:	800208
Site id:	CADW20000006321

H25
West
1/2 - 1 Mile
Lower

CA WELLS **2428**

Water System Information:

Prime Station Code:	02S/02W-25B04 S	User ID:	WAT
FRDS Number:	3301534001	County:	Riverside
District Number:	14	Station Type:	WELL/AMBNT/MUN/INTAKE
Water Type:	Well/Groundwater	Well Status:	Active Untreated
Source Lat/Long:	335821.0 1170212.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	WELL 01 (MACHINE SHOP)		
System Number:	3301534		
System Name:	Rancho Calimesa Mobile Home Park		
Organization That Operates System:			
	10320 CALIMESA BLVD.		
	CALIMESA, CA 92320		
Pop Served:	300	Connections:	198
Area Served:	Not Reported		
Sample Collected:	12/07/2007 00:00:00	Findings:	.74 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		

CVAR_10058

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	12/07/2007 00:00:00	Findings:	21 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	09/12/2007 00:00:00	Findings:	21 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	09/12/2007 00:00:00	Findings:	.75 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	08/08/2007 00:00:00	Findings:	3.1 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	08/08/2007 00:00:00	Findings:	1.2 UG/L
Chemical:	DIBROMOCHLOROMETHANE (THM)		
Sample Collected:	06/08/2007 00:00:00	Findings:	.67 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	06/08/2007 00:00:00	Findings:	.675 PCI/L
Chemical:	RADIUM 228 COUNTING ERROR		
Sample Collected:	06/08/2007 00:00:00	Findings:	18 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/08/2007 00:00:00	Findings:	.6 PCI/L
Chemical:	RADIUM 228 MDA95		
Sample Collected:	03/22/2007 00:00:00	Findings:	.6 PCI/L
Chemical:	RADIUM 228 MDA95		
Sample Collected:	03/22/2007 00:00:00	Findings:	.618 PCI/L
Chemical:	RADIUM 228 COUNTING ERROR		
Sample Collected:	03/21/2007 00:00:00	Findings:	19 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03/21/2007 00:00:00	Findings:	.74 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	12/07/2006 00:00:00	Findings:	18 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	10/06/2006 00:00:00	Findings:	28 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	09/07/2006 00:00:00	Findings:	1.8 MG/L
Chemical:	POTASSIUM		
Sample Collected:	09/07/2006 00:00:00	Findings:	25 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	09/07/2006 00:00:00	Findings:	290 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	09/07/2006 00:00:00	Findings:	460 US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	09/07/2006 00:00:00	Findings:	7.8
Chemical:	PH, LABORATORY		
Sample Collected:	09/07/2006 00:00:00	Findings:	170 MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	09/07/2006 00:00:00	Findings:	210 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	09/07/2006 00:00:00	Findings:	180 MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	09/07/2006 00:00:00	Findings:	44 MG/L
Chemical:	CALCIUM		
Sample Collected:	09/07/2006 00:00:00	Findings:	17 MG/L
Chemical:	MAGNESIUM		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	09/07/2006 00:00:00	Findings:	29 MG/L
Chemical:	SODIUM		
Sample Collected:	09/07/2006 00:00:00	Findings:	20 MG/L
Chemical:	CHLORIDE		
Sample Collected:	09/07/2006 00:00:00	Findings:	.6 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	04/13/2006 00:00:00	Findings:	16 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03/07/2006 00:00:00	Findings:	.46 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	01/10/2006 00:00:00	Findings:	20 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	09/01/2005 00:00:00	Findings:	27 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05/23/2005 00:00:00	Findings:	430 US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	05/23/2005 00:00:00	Findings:	22 MG/L
Chemical:	SODIUM		
Sample Collected:	05/23/2005 00:00:00	Findings:	14 MG/L
Chemical:	CHLORIDE		
Sample Collected:	05/23/2005 00:00:00	Findings:	.6 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	05/23/2005 00:00:00	Findings:	81 UG/L
Chemical:	ZINC		
Sample Collected:	05/23/2005 00:00:00	Findings:	16 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07/14/2003 00:00:00	Findings:	7.8
Chemical:	PH, LABORATORY		
Sample Collected:	07/14/2003 00:00:00	Findings:	170 MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07/14/2003 00:00:00	Findings:	210 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	07/14/2003 00:00:00	Findings:	170 MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	07/14/2003 00:00:00	Findings:	12.3
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)		
Sample Collected:	07/14/2003 00:00:00	Findings:	15 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07/14/2003 00:00:00	Findings:	260 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07/14/2003 00:00:00	Findings:	17 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07/14/2003 00:00:00	Findings:	42 MG/L
Chemical:	CALCIUM		
Sample Collected:	06/20/2002 00:00:00	Findings:	1.1 UG/L
Chemical:	TOTAL TRIHALOMETHANES		
Sample Collected:	06/20/2002 00:00:00	Findings:	6.5 UG/L
Chemical:	CHROMIUM, HEXAVALENT		
Sample Collected:	06/20/2002 00:00:00	Findings:	5.6 UG/L
Chemical:	VANADIUM		

Sample Collected:	01/15/2002 00:00:00	Findings:	240 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	01/15/2002 00:00:00	Findings:	17 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	01/15/2002 00:00:00	Findings:	.18 NTU
Chemical:	TURBIDITY, LABORATORY		
Sample Collected:	01/15/2002 00:00:00	Findings:	4 UG/L
Chemical:	CHROMIUM (TOTAL CR-CRVI SCREEN)		
Sample Collected:	01/15/2002 00:00:00	Findings:	3.39 PCI/L
Chemical:	GROSS ALPHA		
Sample Collected:	01/15/2002 00:00:00	Findings:	1.51 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	01/15/2002 00:00:00	Findings:	440 US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	01/15/2002 00:00:00	Findings:	7.5
Chemical:	PH, LABORATORY		
Sample Collected:	01/15/2002 00:00:00	Findings:	170 MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	01/15/2002 00:00:00	Findings:	210 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	01/15/2002 00:00:00	Findings:	180 MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	01/15/2002 00:00:00	Findings:	44 MG/L
Chemical:	CALCIUM		
Sample Collected:	01/15/2002 00:00:00	Findings:	16 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	01/15/2002 00:00:00	Findings:	23 MG/L
Chemical:	SODIUM		
Sample Collected:	01/15/2002 00:00:00	Findings:	2 MG/L
Chemical:	POTASSIUM		
Sample Collected:	01/15/2002 00:00:00	Findings:	16 MG/L
Chemical:	CHLORIDE		
Sample Collected:	01/15/2002 00:00:00	Findings:	.6 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	01/15/2002 00:00:00	Findings:	4 UG/L
Chemical:	VANADIUM		
Sample Collected:	01/15/2002 00:00:00	Findings:	70 UG/L
Chemical:	ZINC		

H26
West
1/2 - 1 Mile
Lower

CA WELLS **2429**

Water System Information:

Prime Station Code:	02S/02W-25B05 S	User ID:	WAT
FRDS Number:	3301534002	County:	Riverside
District Number:	14	Station Type:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Water Type:	Well/Groundwater	Well Status:	Active Untreated
Source Lat/Long:	335821.0 1170212.0	Precision:	1,000 Feet (10 Seconds)
Source Name:	WELL 02 (PUMP HOUSE 02)		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

System Number: 3301534
System Name: Rancho Calimesa Mobile Home Park
Organization That Operates System:
10320 CALIMESA BLVD.
CALIMESA, CA 92320
Pop Served: 300 Connections: 198
Area Served: Not Reported

Sample Collected:	12/07/2007 00:00:00	Findings:	.74 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	12/07/2007 00:00:00	Findings:	34 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	09/12/2007 00:00:00	Findings:	32 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	09/12/2007 00:00:00	Findings:	.71 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	06/08/2007 00:00:00	Findings:	31 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	06/08/2007 00:00:00	Findings:	.538 PCI/L
Chemical:	RADIUM 228 COUNTING ERROR		
Sample Collected:	06/08/2007 00:00:00	Findings:	.66 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	06/08/2007 00:00:00	Findings:	.6 PCI/L
Chemical:	RADIUM 228 MDA95		
Sample Collected:	03/22/2007 00:00:00	Findings:	.55 PCI/L
Chemical:	RADIUM 228 MDA95		
Sample Collected:	03/22/2007 00:00:00	Findings:	.597 PCI/L
Chemical:	RADIUM 228 COUNTING ERROR		
Sample Collected:	03/21/2007 00:00:00	Findings:	32 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03/21/2007 00:00:00	Findings:	.79 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	02/08/2007 00:00:00	Findings:	.57 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	09/07/2006 00:00:00	Findings:	490 US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	09/07/2006 00:00:00	Findings:	7.8
Chemical:	PH, LABORATORY		
Sample Collected:	09/07/2006 00:00:00	Findings:	170 MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	09/07/2006 00:00:00	Findings:	210 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	09/07/2006 00:00:00	Findings:	180 MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	09/07/2006 00:00:00	Findings:	41 MG/L
Chemical:	CALCIUM		
Sample Collected:	09/07/2006 00:00:00	Findings:	17 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	09/07/2006 00:00:00	Findings:	36 MG/L
Chemical:	SODIUM		
Sample Collected:	09/07/2006 00:00:00	Findings:	1.7 MG/L
Chemical:	POTASSIUM		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected:	09/07/2006 00:00:00	Findings:	23 MG/L
Chemical:	CHLORIDE		
Sample Collected:	09/07/2006 00:00:00	Findings:	.7 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	09/07/2006 00:00:00	Findings:	310 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	09/07/2006 00:00:00	Findings:	34 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	03/07/2006 00:00:00	Findings:	.59 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	09/01/2005 00:00:00	Findings:	27 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	05/23/2005 00:00:00	Findings:	1.28 PCI/L
Chemical:	GROSS ALPHA COUNTING ERROR		
Sample Collected:	05/23/2005 00:00:00	Findings:	18 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07/14/2003 00:00:00	Findings:	450 US
Chemical:	SPECIFIC CONDUCTANCE		
Sample Collected:	07/14/2003 00:00:00	Findings:	7.7
Chemical:	PH, LABORATORY		
Sample Collected:	07/14/2003 00:00:00	Findings:	180 MG/L
Chemical:	ALKALINITY (TOTAL) AS CACO3		
Sample Collected:	07/14/2003 00:00:00	Findings:	210 MG/L
Chemical:	BICARBONATE ALKALINITY		
Sample Collected:	07/14/2003 00:00:00	Findings:	170 MG/L
Chemical:	HARDNESS (TOTAL) AS CACO3		
Sample Collected:	07/14/2003 00:00:00	Findings:	42 MG/L
Chemical:	CALCIUM		
Sample Collected:	07/14/2003 00:00:00	Findings:	15 MG/L
Chemical:	MAGNESIUM		
Sample Collected:	07/14/2003 00:00:00	Findings:	22 MG/L
Chemical:	SODIUM		
Sample Collected:	07/14/2003 00:00:00	Findings:	1.5 MG/L
Chemical:	POTASSIUM		
Sample Collected:	07/14/2003 00:00:00	Findings:	14 MG/L
Chemical:	CHLORIDE		
Sample Collected:	07/14/2003 00:00:00	Findings:	.6 MG/L
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)		
Sample Collected:	07/14/2003 00:00:00	Findings:	65 UG/L
Chemical:	ZINC		
Sample Collected:	07/14/2003 00:00:00	Findings:	280 MG/L
Chemical:	TOTAL DISSOLVED SOLIDS		
Sample Collected:	07/14/2003 00:00:00	Findings:	16 MG/L
Chemical:	NITRATE (AS NO3)		
Sample Collected:	07/14/2003 00:00:00	Findings:	12.2
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)		
Sample Collected:	07/14/2003 00:00:00	Findings:	9.7 UG/L
Chemical:	CHROMIUM (TOTAL CR-CRVI SCREEN)		
Sample Collected:	06/20/2002 00:00:00	Findings:	6.6 UG/L
Chemical:	CHROMIUM, HEXAVALENT		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample Collected: 06/20/2002 00:00:00 Findings: 7.2 UG/L
Chemical: VANADIUM

I27
ESE
1/2 - 1 Mile
Higher

CA WELLS **CADW20000006281**

Longitude:	117.0081
Latitude:	33.9689
Stwellno:	02S01W29G005S
Districtco:	3
Welluseco:	Z
Countycode:	33
Gwcode:	800208
Site id:	CADW20000006281

28
WSW
1/2 - 1 Mile
Lower

FED USGS **USGS3124516**

Agency cd:	USGS	Site no:	335758117021001
Site name:	002S002W25J001S		
Latitude:	335758		
Longitude:	1170210	Dec lat:	33.96611111
Dec lon:	-117.03611111	Coor meth:	R
Coor accr:	F	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2360		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Not Reported		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19770829
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	358	Hole depth:	358
Source of depth data:	driller		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

CVAR_10064

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database	EDR ID Number
FED USGS	**USGS3124532**

I29
ESE
1/2 - 1 Mile
Higher

Agency cd:	USGS	Site no:	335808117002601
Site name:	002S001W29G005S		
Latitude:	335808		
Longitude:	1170026	Dec lat:	33.96890444
Dec lon:	-117.00808325	Coor meth:	M
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	EL CASCO	Map scale:	24000
Altitude:	2628.8		
Altitude method:	Differential Global Positioning System (GPS)		
Altitude accuracy:	1		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Santa Ana. California. Area = 1680 sq.mi.		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	19980608	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	Not Reported	Hole depth:	Not Reported
Source of depth data:	Not Reported		
Project number:	470600222		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1998-06-08	Ground water data end date:	2004-10-29
Ground water data count:	13		

Ground-water levels, Number of Measurements: 13

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
2004-10-29	419.6		2003-11-19	414.2	
2003-04-28	411.65		2003-04-20	415.3	
2002-11-04	410.55				
2002-04-22	410.77				
Note: The site had been pumped recently.					
2001-11-05	416.67		2001-04-12	404.76	
2000-10-23	403.8				
1999-10-25	402.6				
Note: The site had been pumped recently.					
1999-04-26	400.0		1998-11-09	402.2	
1998-06-08	410.9				

CVAR_10065

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
J30 **South** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS3124506**

Agency cd:	USGS	Site no:	335732117011901
Site name:	002S001W31G001S		
Latitude:	335732		
Longitude:	1170119	Dec lat:	33.95888889
Dec lon:	-117.02194444	Coor meth:	R
Coor accr:	S	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	Not Reported	Map scale:	Not Reported
Altitude:	2480		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Not Reported		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	Not Reported
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	500	Hole depth:	Not Reported
Source of depth data:	other reported		
Project number:	Not Reported		
Real time data flag:	0	Daily flow data begin date:	0000-00-00
Daily flow data end date:	0000-00-00	Daily flow data count:	0
Peak flow data begin date:	0000-00-00	Peak flow data end date:	0000-00-00
Peak flow data count:	0	Water quality data begin date:	0000-00-00
Water quality data end date:	0000-00-00	Water quality data count:	0
Ground water data begin date:	1962-02-25	Ground water data end date:	1963-08-01
Ground water data count:	10		

Ground-water levels, Number of Measurements: 10

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1963-08-01		2234	1963-06-07		2234
1963-03-30		2235	1963-01-24		2235
1962-11-30		2235	1962-09-28		2235
1962-08-03		2236	1962-05-25		2237
1962-03-23		2237	1962-02-25		2236

31 **West** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS3124545**

CVAR_10066

Agency cd:	USGS	Site no:	335827117021901
Site name:	002S002W25B004S		
Latitude:	335827		
Longitude:	1170219	Dec lat:	33.97418224
Dec lon:	-117.03947385	Coor meth:	G
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	EL CASCO	Map scale:	240100
Altitude:	2276		
Altitude method:	Reported		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Not Reported		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19801111
Date inventoried:	Not Reported	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	300	Hole depth:	300
Source of depth data:	driller		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

J32
South
1/2 - 1 Mile
Higher

FED USGS **USGS3124500**

Agency cd:	USGS	Site no:	335729117011801
Site name:	002S001W31G002S		
Latitude:	335729		
Longitude:	1170118	Dec lat:	33.95805556
Dec lon:	-117.02166667	Coor meth:	M
Coor accr:	R	Latlong datum:	NAD83
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	EL CASCO	Map scale:	24000
Altitude:	2476		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Not Reported		
Topographic:	Flat surface		
Site type:	Ground-water other than Spring	Date construction:	19611207
Date inventoried:	Not Reported	Mean greenwich time offset:	PST

Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	550	Hole depth:	560
Source of depth data:	driller		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

33
NW
1/2 - 1 Mile
Higher

FED USGS **USGS3124371**

Agency cd:	USGS	Site no:	335853117020501
Site name:	002S002W24K001S		
Latitude:	335853		
Longitude:	1170205	Dec lat:	33.9814043
Dec lon:	-117.03558485	Coor meth:	G
Coor accr:	S	Latlong datum:	NAD27
Dec latlong datum:	NAD83	District:	06
State:	06	County:	065
Country:	US	Land net:	Not Reported
Location map:	EL CASCO	Map scale:	24000
Altitude:	2365		
Altitude method:	Interpolated from topographic map		
Altitude accuracy:	20		
Altitude datum:	National Geodetic Vertical Datum of 1929		
Hydrologic:	Not Reported		
Topographic:	Not Reported		
Site type:	Ground-water other than Spring	Date construction:	19560220
Date inventoried:	19670810	Mean greenwich time offset:	PST
Local standard time flag:	Y		
Type of ground water site:	Single well, other than collector or Ranney type		
Aquifer Type:	Not Reported		
Aquifer:	Not Reported		
Well depth:	200	Hole depth:	200
Source of depth data:	driller		
Project number:	Not Reported		
Real time data flag:	Not Reported	Daily flow data begin date:	Not Reported
Daily flow data end date:	Not Reported	Daily flow data count:	Not Reported
Peak flow data begin date:	Not Reported	Peak flow data end date:	Not Reported
Peak flow data count:	Not Reported	Water quality data begin date:	Not Reported
Water quality data end date:	Not Reported	Water quality data count:	Not Reported
Ground water data begin date:	Not Reported	Ground water data end date:	Not Reported
Ground water data count:	Not Reported		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for RIVERSIDE County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for RIVERSIDE COUNTY, CA

Number of sites tested: 12

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.117 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.450 pCi/L	100%	0%	0%
Basement	1.700 pCi/L	100%	0%	0%

CVAR_10069

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

CVAR_10070

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Health Services
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

CVAR_10071

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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TSP Property - Shopoff
North of Cherry Valley Blvd.
Cherry Valley, CA 92320

Inquiry Number: 2449248.3
March 23, 2009

Certified Sanborn® Map Report

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

3/23/09

Site Name:
TSP Property - Shopoff
North of Cherry Valley Blvd.
Cherry Valley, CA 92320

Client Name:
RM Environmental
37025 Oakview Road
Yucaipa, CA 92399

EDR Inquiry # 2449248.3

Contact: Travis Meier

EDR® Environmental Data Resources Inc

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Certified Sanborn Results:

Site Name: TSP Property - Shopoff
Address: North of Cherry Valley Blvd.
City, State, Zip: Cherry Valley, CA 92320
Cross Street:
P.O. # NA
Project: NA
Certification # 3E7F-44E6-B0DE

Sanborn® Library search results
Certification # 3E7F-44E6-B0DE

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

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- ✓ University Publications of America
- ✓ EDR Private Collection

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CVAR_10074

TSP Property - Shopoff
North of Cherry Valley Blvd.
Cherry Valley, CA 92320

Inquiry Number: 2449248.4
March 23, 2009

The EDR Aerial Photo Decade Package

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDRs professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

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Please contact EDR at 1-800-352-0050
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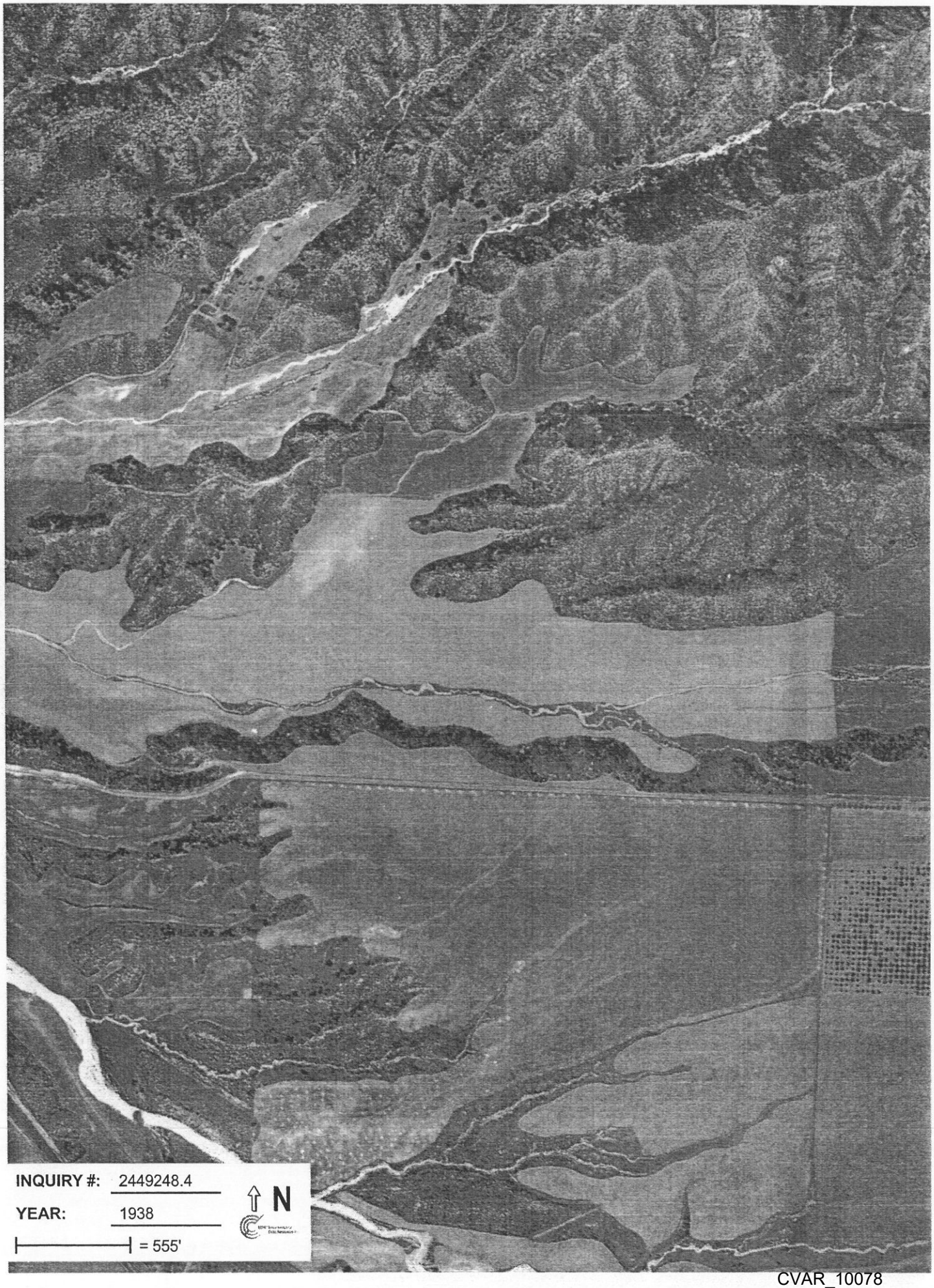
Date EDR Searched Historical Sources:
Aerial Photography March 23, 2009

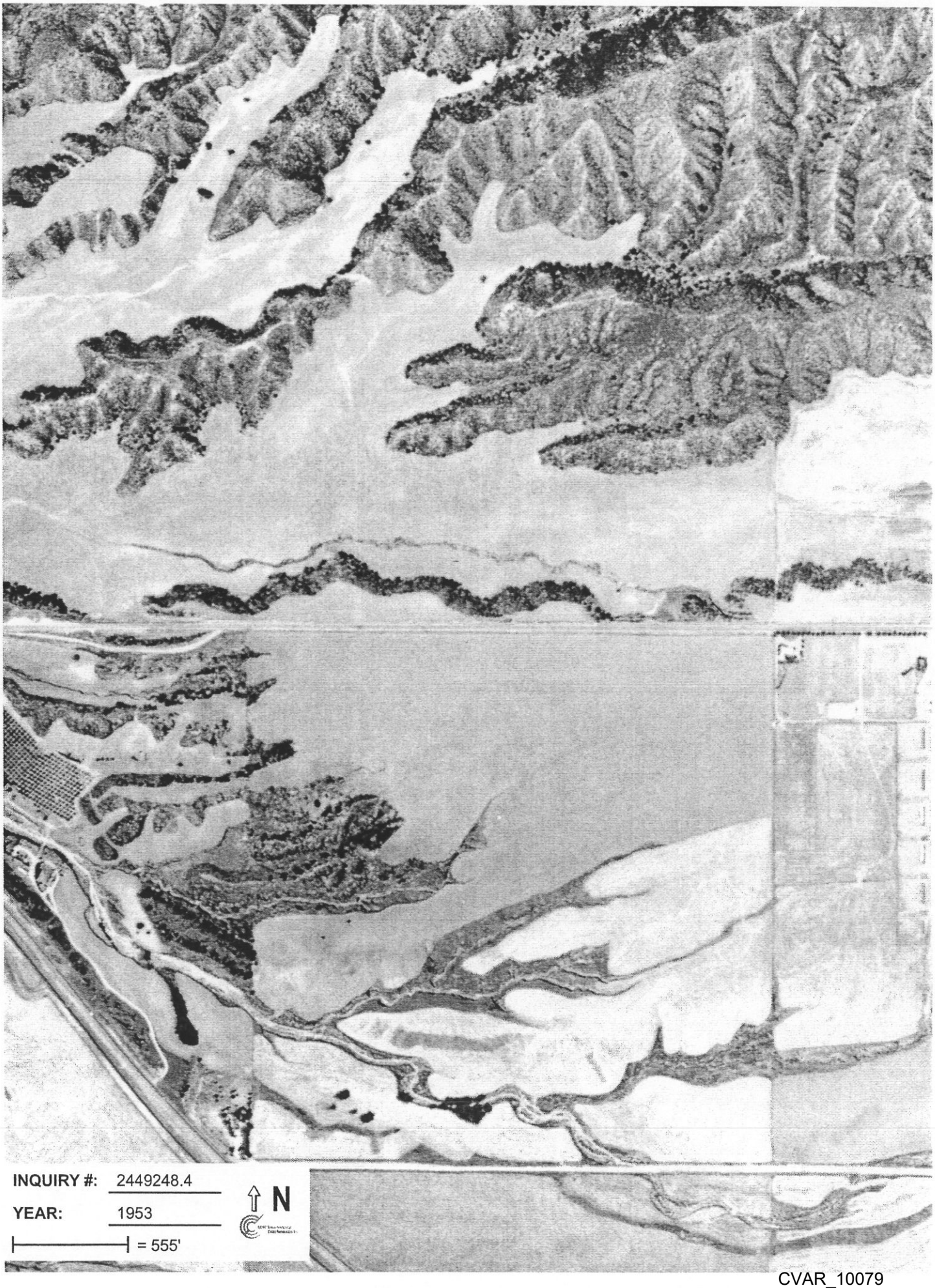
Target Property:
North of Cherry Valley Blvd.
Cherry Valley, CA 92320

Year	*Scale*	*Details*	*Source*
1938	Aerial Photograph. Scale: 1"=555'	Flight Year: 1938	Laval
1953	Aerial Photograph. Scale: 1"=555'	Flight Year: 1953	Pacific Air
1967	Aerial Photograph. Scale: 1"=555'	Flight Year: 1967	Western
1980	Aerial Photograph. Scale: 1"=600'	Flight Year: 1980	AMI
1990	Aerial Photograph. Scale: 1"=666'	Flight Year: 1990	USGS
1994	Aerial Photograph. Scale: 1"=666'	Flight Year: 1994	USGS
2002	Aerial Photograph. Scale: 1"=666'	Flight Year: 2002	USGS
2005	Aerial Photograph. Scale: 1"=484'	Flight Year: 2005	EDR

CVAR_10077



CVAR_10078



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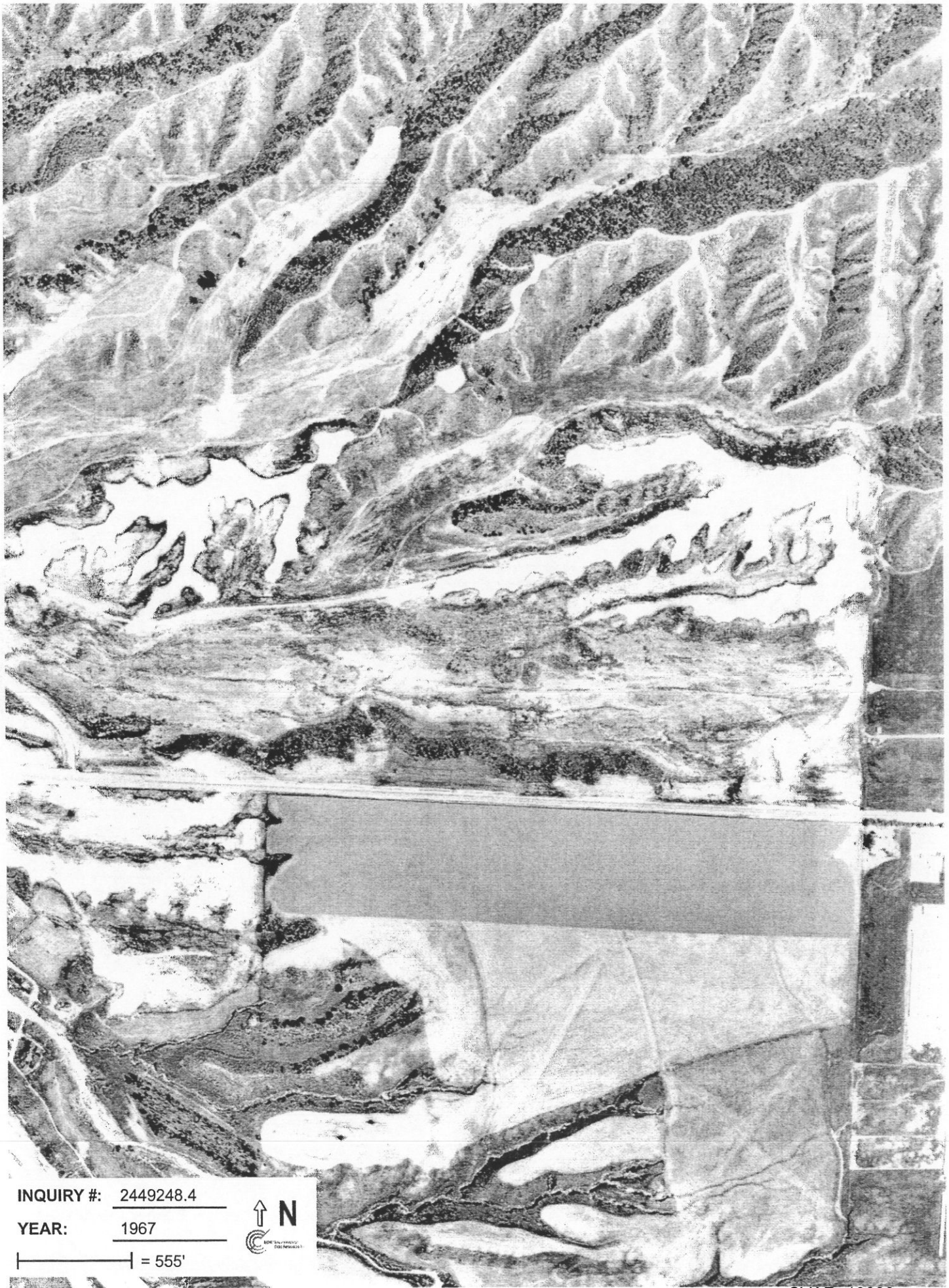
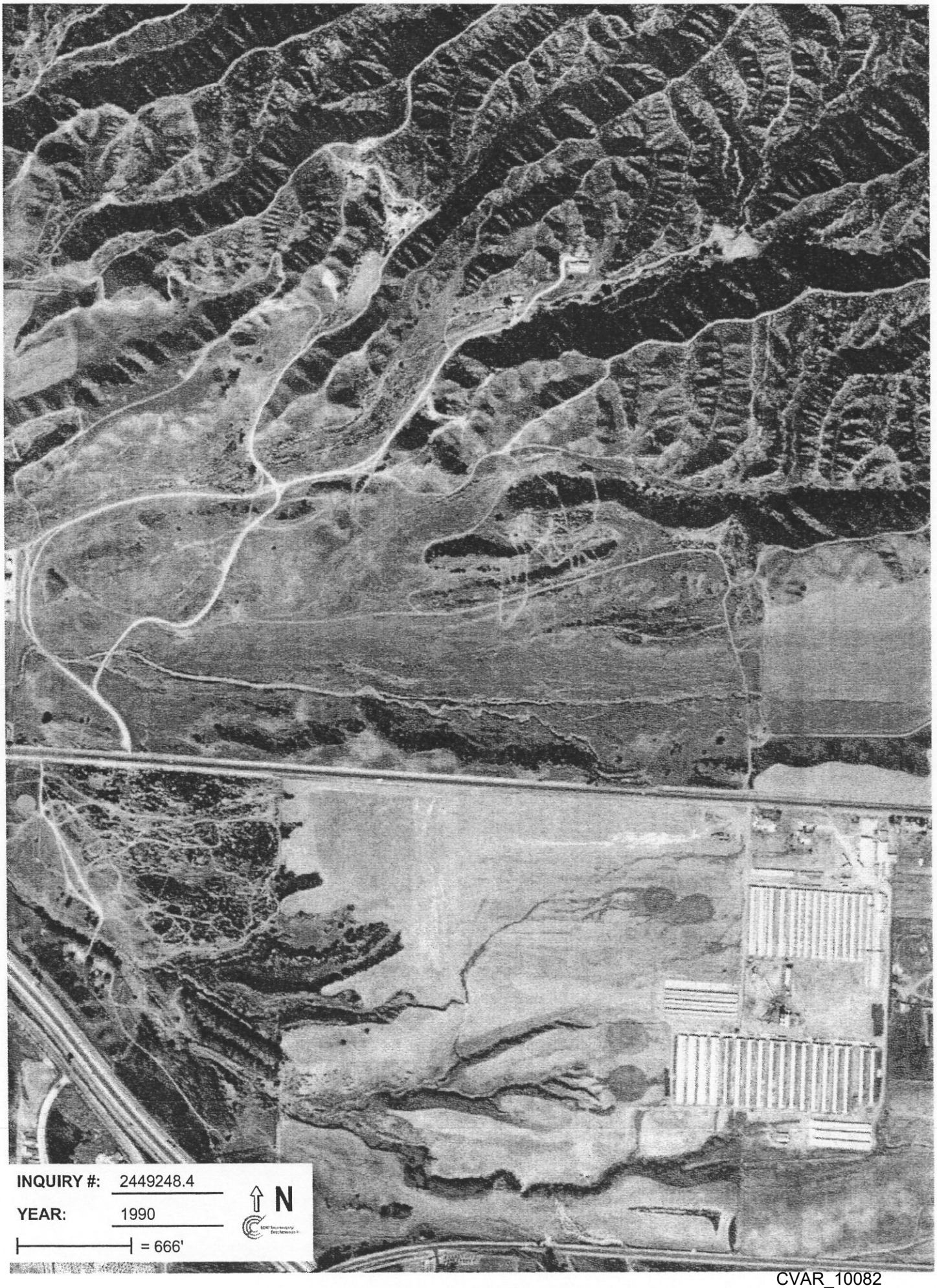


CVAR_10080



CVAR_10081



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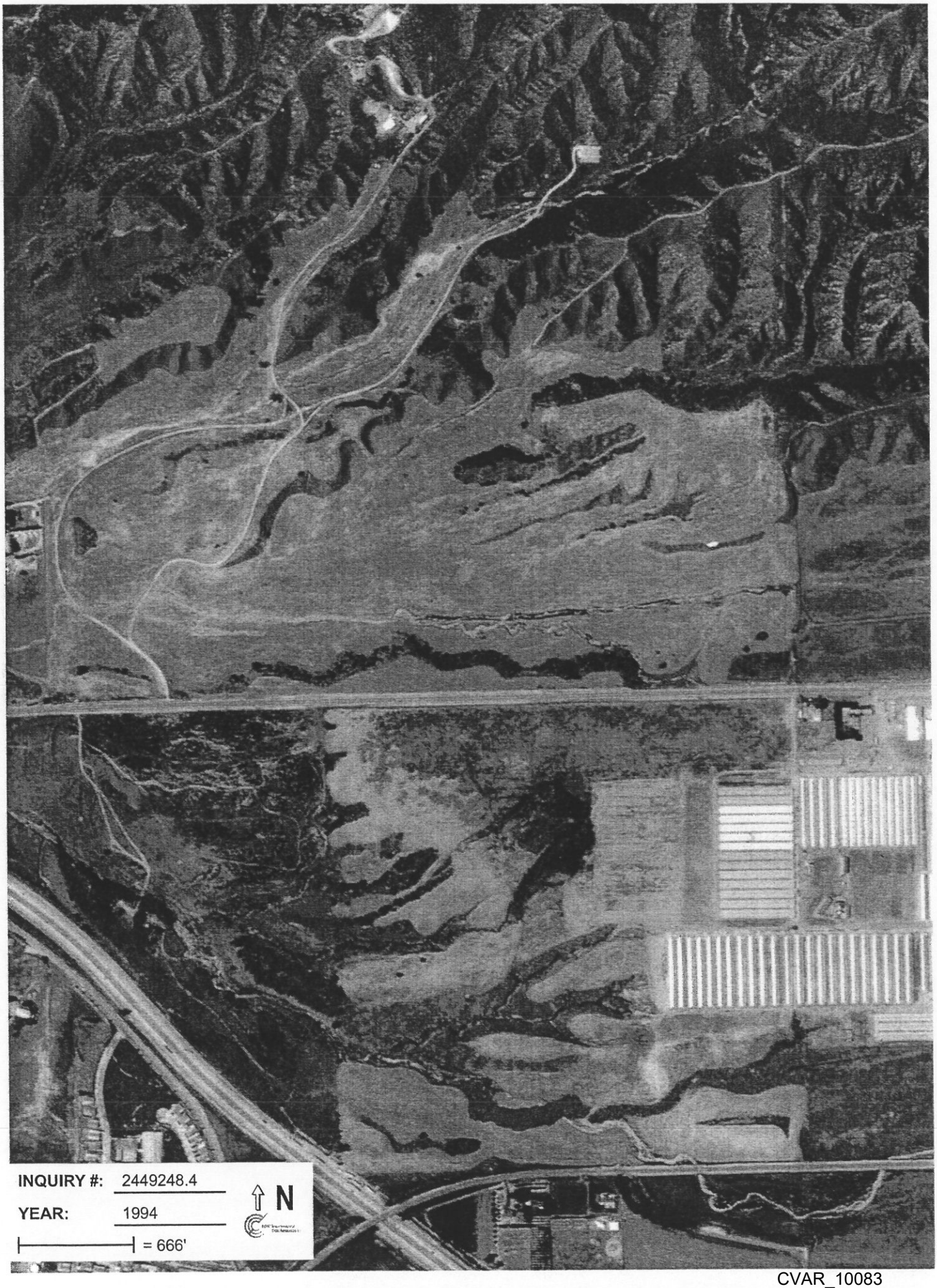
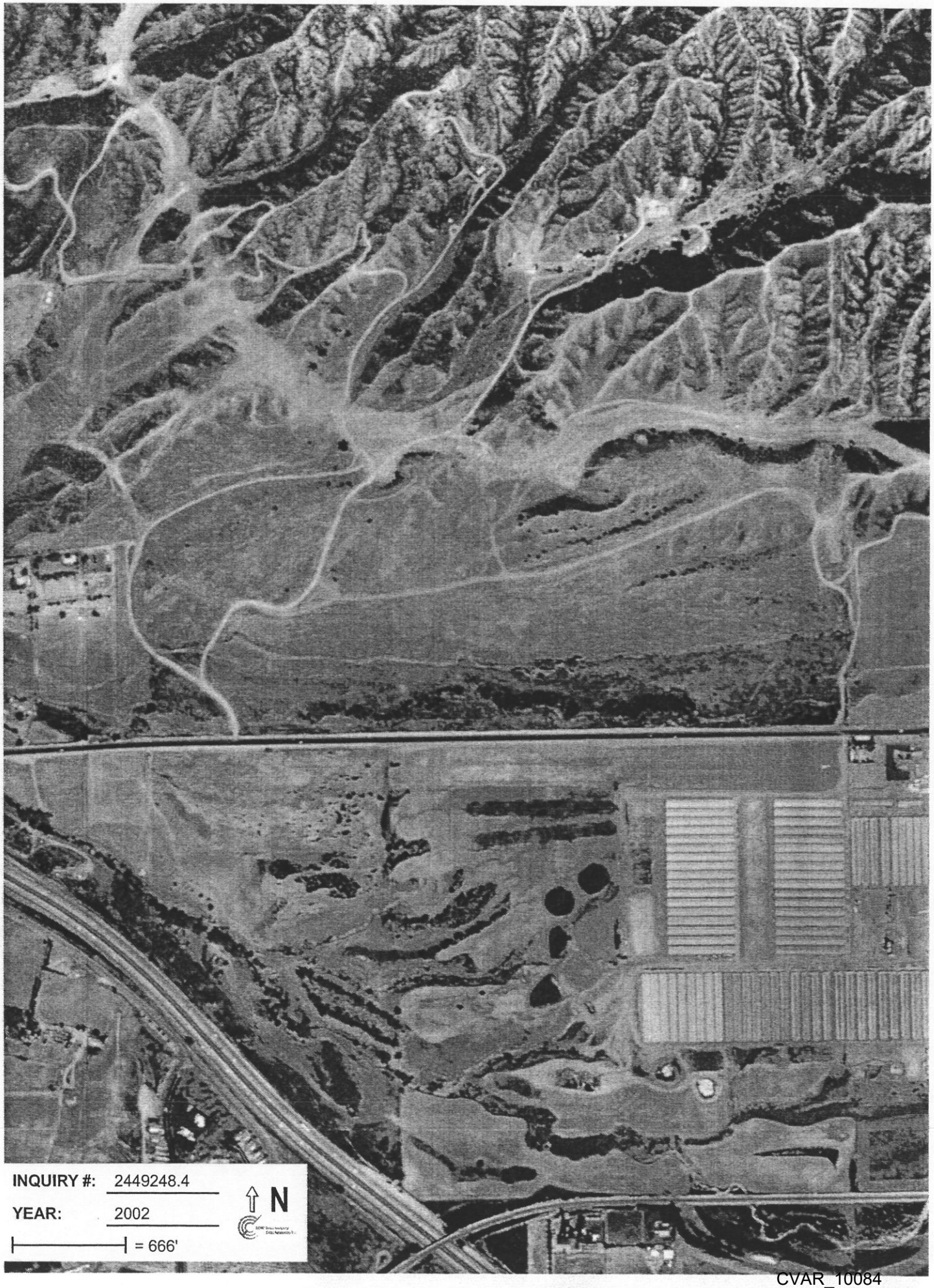


CVAR_10083



CVAR_10084

EDR Historical Topographic Map Report

TSG Property
N of Cherry Valley Blvd.
Cherry Valley, CA 92320

Inquiry Number: 1920039.4

May 07, 2007

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The Standard in Environmental Risk Information

440 Wheelers Farms Rd
Milford, Connecticut 06461

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

CVAR_10085

EDR Historical Topographic Map Report

Environmental Data Resources, Inc.s (EDR) Historical Topographic Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topographic Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the early 1900s.

Thank you for your business.
Please contact EDR at 1-800-352-0050
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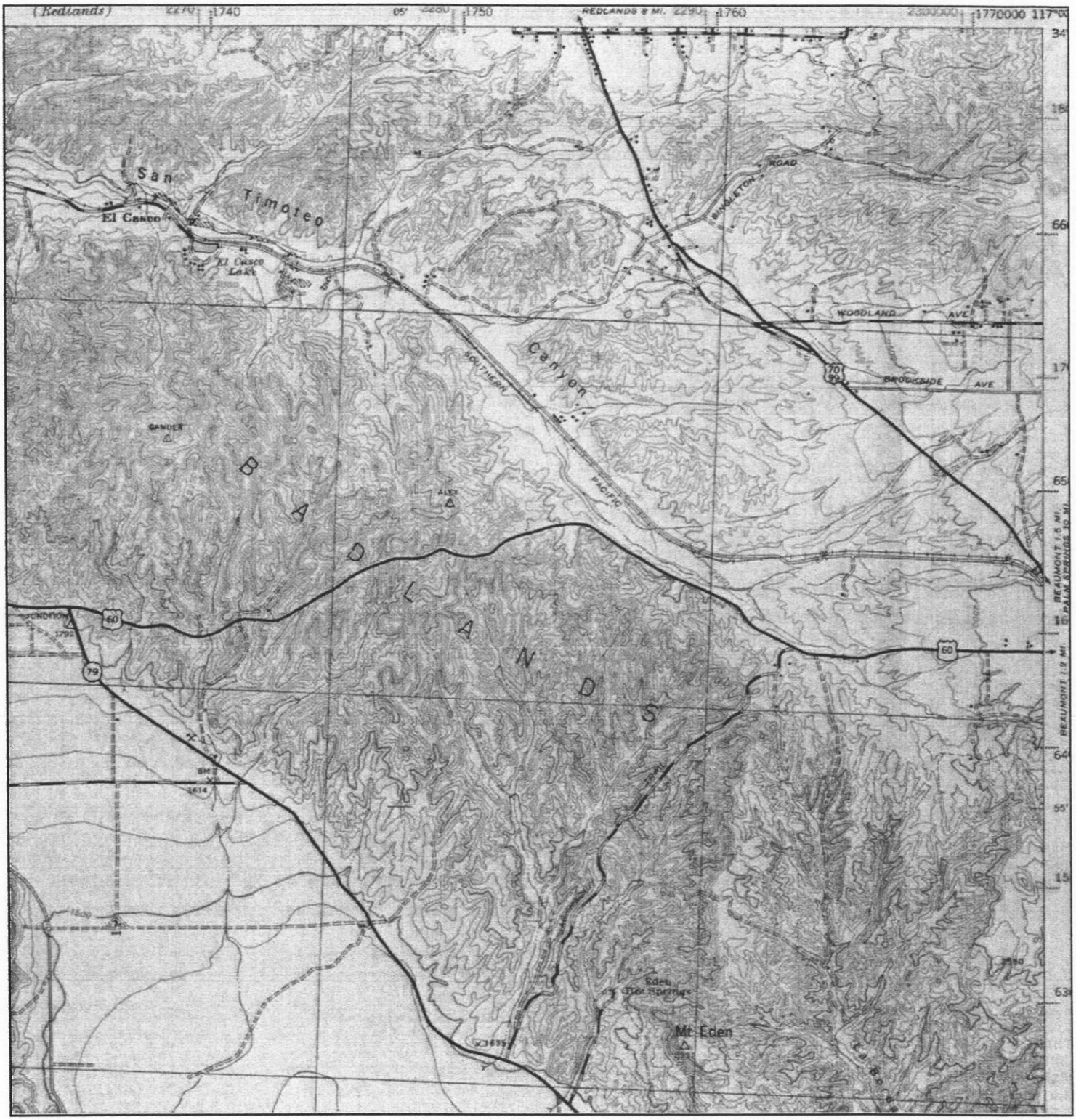
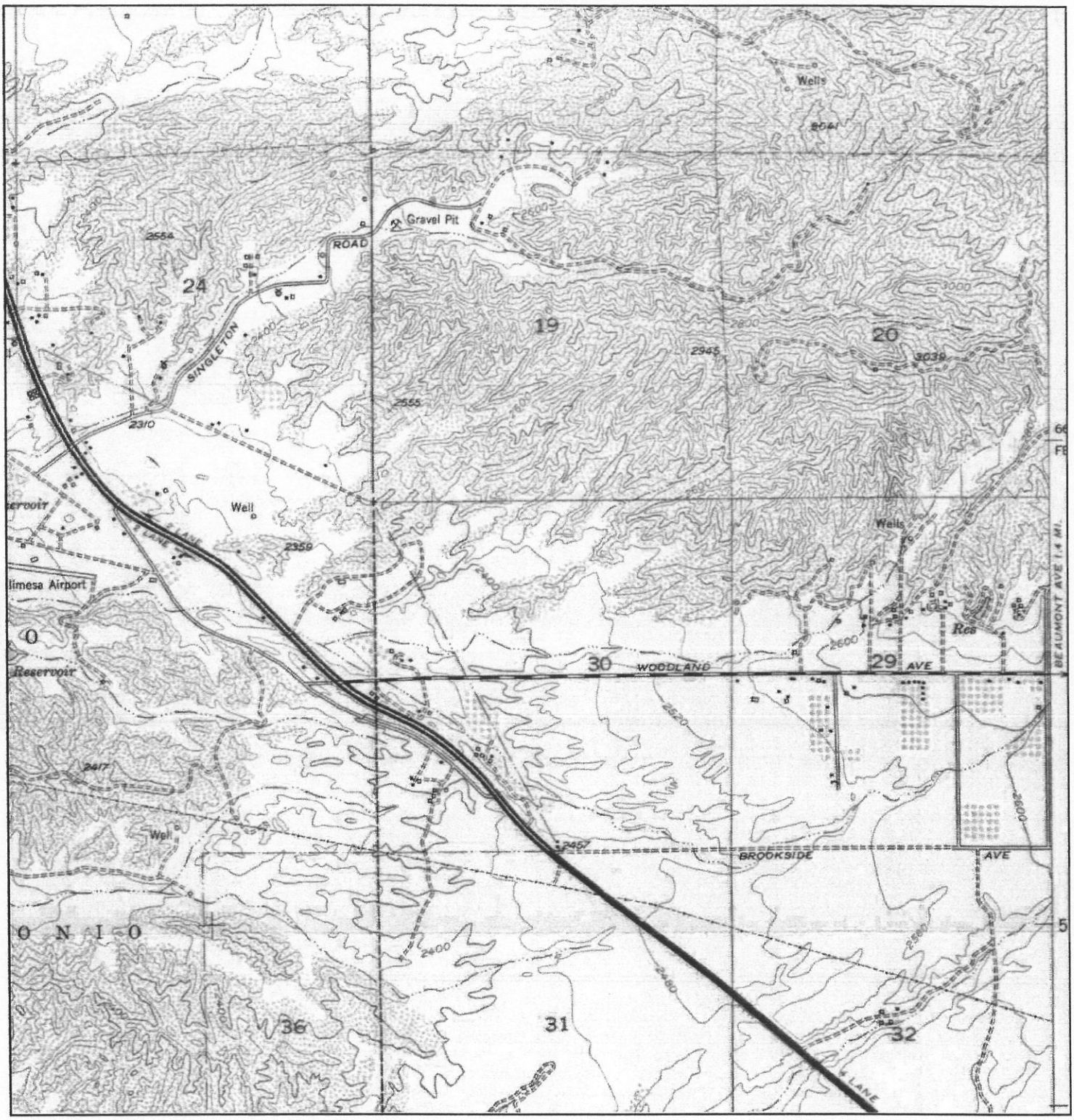
Historical Topographic Map



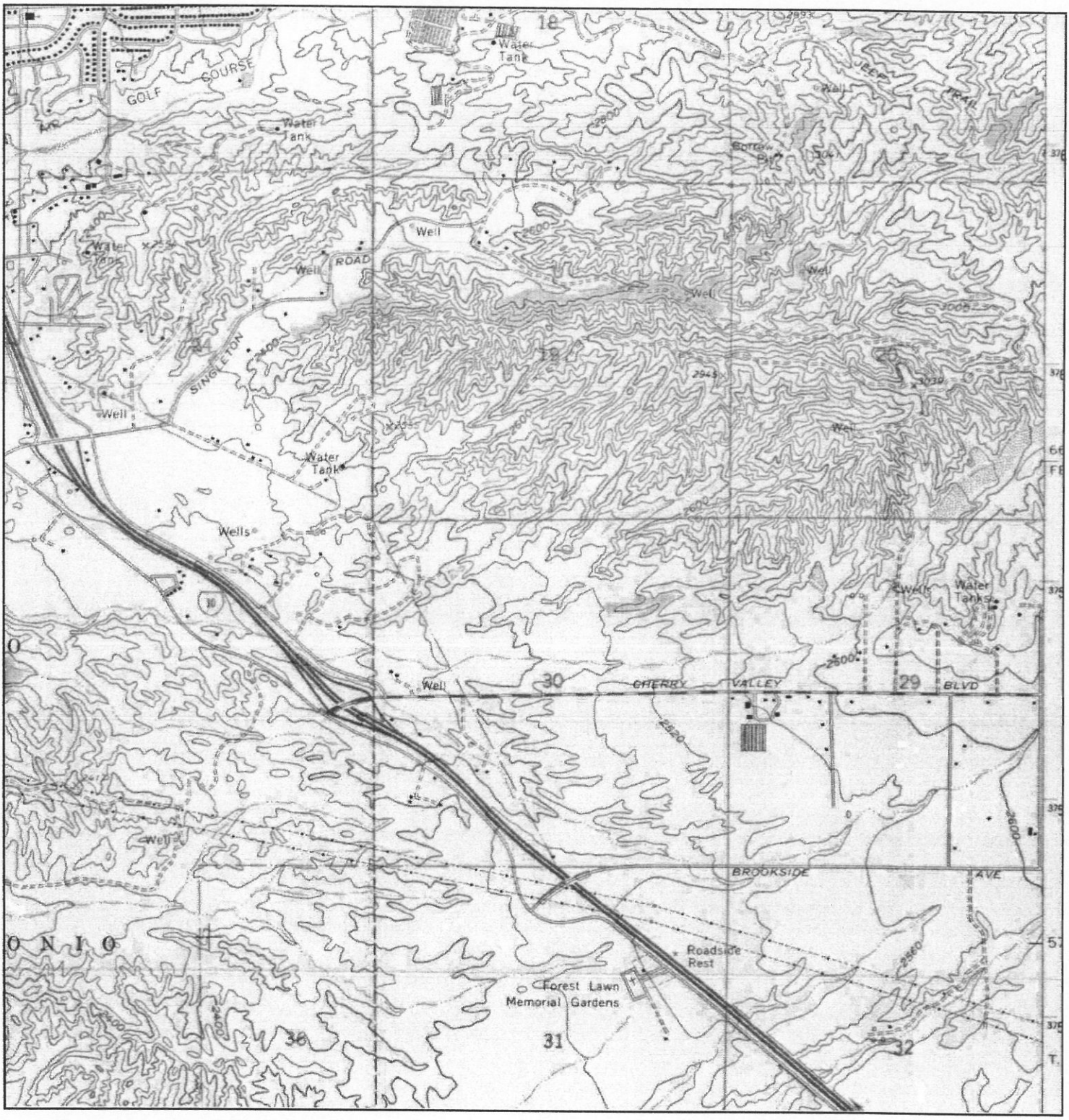
N	TARGET QUAD NAME: PERRIS MAP YEAR: 1943 SERIES: 15 SCALE: 1:62500	SITE NAME: TSG Property ADDRESS: N of Cherry Valley Blvd. Cherry Valley, CA 92320 LAT/LONG: 33.9735 / 117.0231	CLIENT: RM Environmental CONTACT: Travis Meier INQUIRY#: 1920039.4 RESEARCH DATE: 05/07/2007

Historical Topographic Map



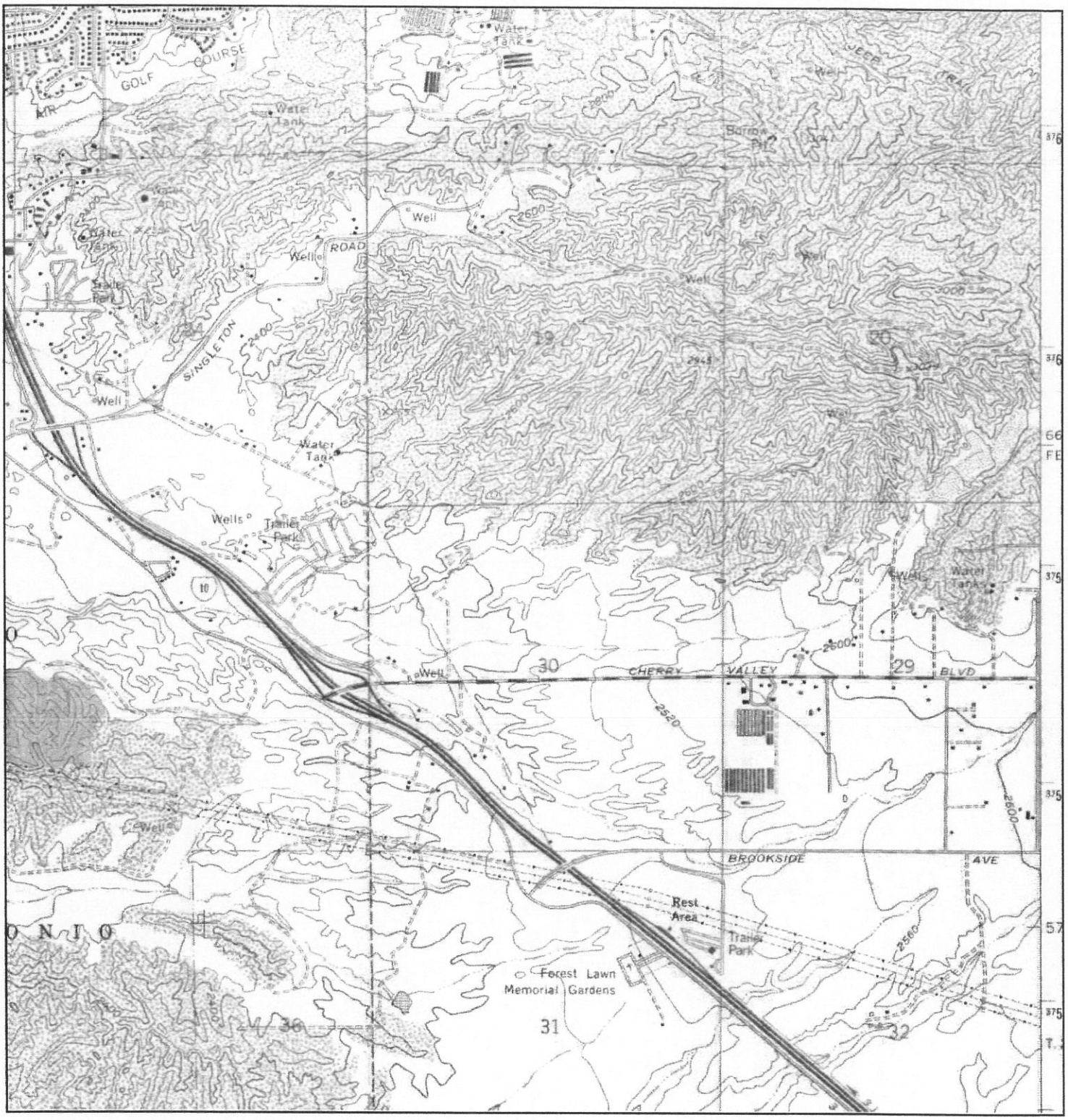
N	TARGET QUAD NAME: EL CASCO MAP YEAR: 1953 SERIES: 7.5 SCALE: 1:24000	SITE NAME: TSG Property ADDRESS: N of Cherry Valley Blvd. Cherry Valley, CA 92320 LAT/LONG: 33.9735 / 117.0231	CLIENT: RM Environmental CONTACT: Travis Meier INQUIRY#: 1920039.4 RESEARCH DATE: 05/07/2007

Historical Topographic Map



N	TARGET QUAD NAME: EL CASCO MAP YEAR: 1967 SERIES: 7.5 SCALE: 1:24000	SITE NAME: TSG Property ADDRESS: N of Cherry Valley Blvd. Cherry Valley, CA 92320 LAT/LONG: 33.9735 / 117.0231	CLIENT: RM Environmental CONTACT: Travis Meier INQUIRY#: 1920039.4 RESEARCH DATE: 05/07/2007

Historical Topographic Map



N	TARGET QUAD NAME: EL CASCO MAP YEAR: 1979 PHOTOREVISED FROM:1967 SERIES: 7.5 SCALE: 1:24000	SITE NAME: TSG Property ADDRESS: N of Cherry Valley Blvd. Cherry Valley, CA 92320 LAT/LONG: 33.9735 / 117.0231	CLIENT: RM Environmental CONTACT: Travis Meier INQUIRY#: 1920039.4 RESEARCH DATE: 05/07/2007

CVAR_10090

The EDR Environmental LienSearch™ Report

TSG PROPERTY
RIVERSIDE COUNTY
CHERRY VALLEY, CA 92320

Project Number 01920039.7

May 22, 2007

EDR® Environmental Data Resources Inc

NCO℠

The Standard in Environmental Risk Information

440 Wheelers Farm Road
Milford, Connecticut 06461

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

EDR Environmental LienSearch™ Report

The EDR Environmental LienSearch Report includes results from a search of available current land title records for environmental cleanup liens and other activity and use limitations, such as engineering controls and institutional controls.

A network of professional, trained researchers follows established procedures to:

- search for parcel information, legal description, and ownership based on client supplied address information;
- research indexes and title repositories;
- obtain a copy of the deed;
- search for environmental encumbering instrument(s) associated with the deed;
- provide a copy of any environmental encumbrance(s) based upon a review of key words in the instrument (title, parties involved, and description); and
- provide a copy of the deed.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EDR Environmental LienSearch™ Report

TARGET PROPERTY INFORMATION

ADDRESS

TSG PROPERTY
NORTH OF CHERRY VALLEY ROAD
CHERRY VALLEY, CA 92320

RESEARCH SOURCE

Sources: Riverside County

DEED INFORMATION

Type of Deed: WD ☐ QCD ☐ Other ☒ DEED

Title is vested in: TSG Cherry Valley, L.P., a California Limited Liability Company

Title received from: Halanna Equities II, a California Limited Partnership

Deed Dated: August 27, 2004
Deed Recorded: September 7, 2004
Document No: 2004-0707705

LEGAL DESCRIPTION

Description: Legal attached as Exhibit "A"

Note: TSG Cherry Valley, L.B. sold 7.73% interest to Levinkel, LLC, recorded December 27, 2004 Document Number 2004-1022735 who later sold back their 7.73% interest to TSG Cherry Valley, L.P. recorded January 4, 2005 Document Number 2005-0005541 and is included as Exhibit B

Assessor's Parcel Number: 407-220-009

ENVIRONMENTAL LIEN

Environmental Lien: Found ☐ Not Found ☒

If yes:

1st Party:

2nd Party:

Dated:
Recorded:
Book:
Page:
Comments:

OTHER ACTIVITY AND USE LIMITATIONS (AULs)

Other AUL's: Found ☐ Not Found ☒

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Recording Requested By
First American Title NHS

DOC # 2004-0707705
09/07/2004 08:00A Fee:29.00
Page 1 of 5 Doc T Tax Paid
Recorded in Official Records
County of Riverside
Gary L. Orso
Assessor, County Clerk & Recorder

RECORDING REQUESTED BY:
First American Title Insurance Company

AND WHEN RECORDED RETURN TO:
Gromet & Associates
114 Pacifica, Suite 250
Irvine, California 92618

MAIL TAX STATEMENTS TO:
TSG CHERRY VALLEY, L.P.
114 Pacifica, Suite 245
Irvine, California 92618
Attn: William A. Shopoff

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TRA 056-035

GRANT DEED

29

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KW

FOR VALUE RECEIVED, the undersigned, **HALANNA EQUITIES II**, a California limited partnership (collectively, ***"Grantor"***), hereby grant to **TSG CHERRY VALLEY, L.P.**, a California Limited Partnership (***"Grantee"***), all that certain real property described on **Exhibit "1"** attached hereto and incorporated herein by reference, together with any and all improvements, easements, privileges and rights appurtenant thereto.

[SIGNATURE TO FOLLOW ON NEXT PAGE]

Description: Riverside,CA Document-Year.DocID 2004.707705 Page: 1 of 5
Order: 14909 Comment:

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IN WITNESS WHEREOF, this Grant Deed has been executed as of Aug 27, 2004.

HALANNA EQUITIES II, a California limited partnership

By: Halanna Management Corporation, general partner

By: _____
George Sycip, President

STATE OF CALIFORNIA)
) ss.
COUNTY OF San Francisco)

On August 27, 2004, before me, ALEXANDRA E. LIOANAG, a Notary Public in and for said State, personally appeared GEORGE SYCIP, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he/~~she~~ executed the same in his/~~her~~ authorized capacity, and that by his/~~her~~ signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

ALEXANDRA E. LIOANAG
Commission # 1438454
Notary Public - California
San Francisco County
My Comm. Expires Sep 9, 2007

_____
Notary Public

Description: Riverside,CA Document-Year.DocID 2004.707705 Page: 2 of 5
Order: 14909 Comment:

CVAR_10095

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EXHIBIT "1"

SEE ATTACHED

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LEGAL DESCRIPTION

Real property in the unincorporated area of the County of Riverside, State of , described as follows:

PARCEL 1: (APNS: 407-220-008 AND 009)

THE NORTH HALF OF THE NORTHEAST QUARTER, AND THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF FRACTIONAL SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF:

EXCEPT THAT PORTION DESCRIBED IN PARCEL 3 HEREIN.

PARCEL 2: (APNS: 407-220-014, 016 AND 017)

THE SOUTH HALF OF THE NORTHEAST QUARTER AND THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF FRACTIONAL SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF:

EXCEPT THE SOUTHERLY RECTANGULAR 50.00 FEET OF SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF SAID FRACTIONAL SECTION 30, AS GRANTED TO THE COUNTY OF RIVERSIDE, BY DEED RECORDED NOVEMBER 22, 1949 IN BOOK 1125 PAGE 431 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;

ALSO EXCEPT THAT PORTION DESCRIBED IN PARCEL 3 HEREIN;

ALSO EXCEPT THAT PORTION DESCRIBED IN THE DEED TO THE COUNTY OF RIVERSIDE RECORDED JUNE 21, 1978 AS INSTRUMENT NO. 126809 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

PARCEL 3: (APNS: 413-270-012 AND 013; 407-220-004 AND 007)

LOTS 72, 73 AND K TOGETHER WITH PORTIONS OF LOTS 67, 68, 69, 70, 71, 76 AND M IN BLOCK 4 OF KADOTA CITY FIG GROVES, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 13 PAGE 53 OF MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA, AND A PORTION OF THE NORTHWEST QUARTER OF SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF, DESCRIBED AS A WHOLE AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF LOT 74 IN BLOCK 4 OF SAID KADOTA CITY FIG GROVES;
THENCE NORTH 00° 22' 25" EAST, 1, 144.28 FEET ON THE WEST LINES OF SAID LOTS M AND K;
THENCE SOUTH 82° 42' 00" WEST, 835.98 FEET, TO A POINT ON THE SOUTHEASTERLY LINE OF THE LAND DESCRIBED IN DEED TO JOHN F. DAVIS AND LUCILLE O. DAVIS, HUSBAND AND WIFE, RECORDED AUGUST 31, 1944 IN BOOK 636 PAGE 585 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;
THENCE NORTH 54° 51' 50" EAST, 1, 386.34 FEET ON SAID SOUTHEASTERLY LINE TO A POINT

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ON THE EAST LINE OF SAID LOT 67, SAID POINT BEING ALSO ON THE WEST LINE OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 30;
THENCE NORTH 89° 47' 20" EAST, 650.00 FEET;
THENCE SOUTHEASTERLY 335.16 FEET ON A CURVE CONCAVE TO THE SOUTHWEST HAVING A RADIUS OF 300.00 FEET THROUGH AN ANGLE OF 64° 00' 40";
THENCE SOUTH 26° 12' 00" EAST, 700.00 FEET;
THENCE SOUTHERLY 287.98 FEET ON A CURVE CONCAVE TO THE WEST HAVING A RADIUS OF 360.00 FEET, THROUGH AN ANGLE OF 45° 50' 00", TO A POINT OF COMPOUND CURVATURE;
THENCE SOUTHWESTERLY 242.78 FEET ON A CURVE CONCAVE TO THE NORTHWEST HAVING A RADIUS OF 300.00 FEET, THROUGH AN ANGLE OF 46° 22' 00" (THE INITIAL RADIAL LINE BEARS SOUTH 70° 22' 00" EAST);
THENCE SOUTH 66° 00' 00" WEST, 370.00 FEET;
THENCE WESTERLY 124.56 FEET ON A CURVE CONCAVE TO THE NORTH, HAVING A RADIUS OF 300.00 FEET THROUGH AN ANGLE OF 23° 47' 20";
THENCE SOUTH 89° 47' 20" WEST, 175.25 FEET;
THENCE SOUTH 00° 22' 25" WEST, 377.23 FEET TO THE NORTHEAST CORNER OF THE LAND DESCRIBED IN DEED TO THE COUNTY OF RIVERSIDE, FOR CHERRY VALLEY BOULEVARD, RECORDED MAY 18, 1973 AS INSTRUMENT NO. 64964 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;
THENCE SOUTH 89° 47' 20" WEST, 321. 63 FEET ON THE NORTH LINE OF LAST SAID LAND TO THE BEGINNING OF A TANGENT CURVE THEREIN, CONCAVE SOUTHERLY OF 12,555.00 FEET RADIUS;
THENCE WESTERLY 437.95 FEET ON SAID CURVE THROUGH A CENTRAL ANGLE OF 01° 59' 55" TO THE WEST LINE OF SAID LOT M;
THENCE SOUTH 00° 22' 25" WEST, 24.76 FEET ON SAID WEST LINE TO THE POINT OF BEGINNING.

Description: Riverside,CA Document-Year.DocID 2004.707705 Page: 5 of 5
Order: 14909 Comment:

CVAR_10099

EXHIBIT B

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Recording Requested By
First American Title NHS

DOC # 2004-1022735
12/27/2004 08:00A Fee:48.00
Page 1 of 5 Doc T Tax Paid
Recorded in Official Records
County of Riverside
Gary L. Orso
Assessor, County Clerk & Recorder

RECORDING REQUESTED BY:
First American Title Insurance Company

WHEN RECORDED RETURN TO:
Gromet & Associates
114 Pacifica, Suite 250
Irvine, California 92618

MAIL TAX STATEMENTS TO:

LEVINKEL, LLC

Accom #27-122704

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TRA NO. 056-035

GRANT DEED SEE SEPARATE STATEMENT (49)

T
SF

FOR VALUE RECEIVED, the undersigned, **TSG CHERRY VALLEY, L.P.**, a California limited partnership, (***"Grantor"***), hereby grants to **LEVINKEL, LLC**, a California limited liability company (***"Grantee"***), an undivided 7.73% interest in all that certain real property described on **Exhibit "1"** attached hereto and incorporated herein by reference, together with any and all improvements, easements, privileges and rights appurtenant thereto.

IN WITNESS WHEREOF, this Grant Deed has been executed as of December 21, 2004.

APN NOS.:
467-220-008, 467-220-009
467-220-014, 467-220-016
467-220-017, 413-270-012
413-270-013, 467-220-004
467-220-007

TSG CHERRY VALLEY, L.P., a California limited partnership

By: TSG GP, LLC, a Delaware limited liability company

By: _____
William A. Shopoff, Manager

X:\WP DOCS\S E I\0403\GRANT DEED1.doc
December 8, 2004
Page 1 of 3

Description: Riverside,CA Document-Year.DocID 2004.1022735 Page: 1 of 5
Order: 14909 Comment:

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STATE OF CALIFORNIA)
) ss.
COUNTY OF ORANGE)

On December 21, 2004, before me, Anne Cassingham, a Notary Public in and for said State, personally appeared **WILLIAM A. SHOPOFF**, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

Anne B. Cassingham
Notary Public

ANNE B. CASSINGHAM
Commission # 1499464
Notary Public - California
Orange County
My Comm. Expires Jul 18, 2008

Description: Riverside,CA Document-Year.DocID 2004.1022735 Page: 2 of 5
Order: 14909 Comment:

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GOVERNMENT CODE 27361.7

I CERTIFY UNDER PENALTY THAT THE NOTARY SEAL ON THE DOCUMENT TO WHICH THIS STATEMENT IS ATTACHED READS AS FOLLOWS:

NAME OF NOTARY:	ANNE B.CASSINGHAM
DATE COMMISSION EXPIRES:	JULY 15, 2008
COUNTY WHERE BOND IS FILED:	ORANGE COUNTY
COMMISSION NUMBER:	1499464
VENDOR NO:	NNA1
PLACE OF EXECUTION:	RIVERSIDE, CALIFORNIA
DATE:	December 23, 2004

SIGNATURE: _____

FIRST AMERICAN TITLE INSURANCE COMPANY

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LEGAL DESCRIPTION

Real property in the unincorporated area of the County of Riverside, State of California, described as follows:

PARCEL 1: (APNS: 407-220-008 AND 009)

THE NORTH HALF OF THE NORTHEAST QUARTER, AND THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF FRACTIONAL SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF:

EXCEPT THAT PORTION DESCRIBED IN PARCEL 3 HEREIN.

PARCEL 2: (APNS: 407-220-014, 016 AND 017)

THE SOUTH HALF OF THE NORTHEAST QUARTER AND THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF FRACTIONAL SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF:

EXCEPT THE SOUTHERLY RECTANGULAR 50.00 FEET OF SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF SAID FRACTIONAL SECTION 30, AS GRANTED TO THE COUNTY OF RIVERSIDE, BY DEED RECORDED NOVEMBER 22, 1949 IN BOOK 1125 PAGE 431 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;

ALSO EXCEPT THAT PORTION DESCRIBED IN PARCEL 3 HEREIN;

ALSO EXCEPT THAT PORTION DESCRIBED IN THE DEED TO THE COUNTY OF RIVERSIDE RECORDED JUNE 21, 1978 AS INSTRUMENT NO. 126809 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

PARCEL 3: (APNS: 413-270-012 AND 013; 407-220-004 AND 007)

LOTS 72, 73 AND K TOGETHER WITH PORTIONS OF LOTS 67, 68, 69, 70, 71, 76 AND M IN BLOCK 4 OF KADOTA CITY FIG GROVES, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 13 PAGE 53 OF MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA, AND A PORTION OF THE NORTHWEST QUARTER OF SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF, DESCRIBED AS A WHOLE AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF LOT 74 IN BLOCK 4 OF SAID KADOTA CITY FIG GROVES;
THENCE NORTH 00° 22' 25" EAST, 1, 144.28 FEET ON THE WEST LINES OF SAID LOTS M AND K;
THENCE SOUTH 82° 42' 00" WEST, 835.98 FEET, TO A POINT ON THE SOUTHEASTERLY LINE OF THE LAND DESCRIBED IN DEED TO JOHN F. DAVIS AND LUCILLE O. DAVIS, HUSBAND AND WIFE, RECORDED AUGUST 31, 1944 IN BOOK 636 PAGE 585 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;
THENCE NORTH 54° 51' 50" EAST, 1, 386.34 FEET ON SAID SOUTHEASTERLY LINE TO A POINT

Description: Riverside,CA Document-Year.DocID 2004.1022735 Page: 4 of 5
Order: 14909 Comment:

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ON THE EAST LINE OF SAID LOT 67, SAID POINT BEING ALSO ON THE WEST LINE OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SAID SECTION 30;
THENCE NORTH 89° 47' 20" EAST, 650.00 FEET;
THENCE SOUTHEASTERLY 335.16 FEET ON A CURVE CONCAVE TO THE SOUTHWEST HAVING A RADIUS OF 300.00 FEET THROUGH AN ANGLE OF 64° 00' 40";
THENCE SOUTH 26° 12' 00" EAST, 700.00 FEET;
THENCE SOUTHERLY 287.98 FEET ON A CURVE CONCAVE TO THE WEST HAVING A RADIUS OF 360.00 FEET, THROUGH AN ANGLE OF 45° 50' 00", TO A POINT OF COMPOUND CURVATURE;
THENCE SOUTHWESTERLY 242.78 FEET ON A CURVE CONCAVE TO THE NORTHWEST HAVING A RADIUS OF 300.00 FEET, THROUGH AN ANGLE OF 46° 22' 00" (THE INITIAL RADIAL LINE BEARS SOUTH 70° 22' 00" EAST);
THENCE SOUTH 66° 00' 00" WEST, 370.00 FEET;
THENCE WESTERLY 124.56 FEET ON A CURVE CONCAVE TO THE NORTH, HAVING A RADIUS OF 300.00 FEET THROUGH AN ANGLE OF 23° 47' 20";
THENCE SOUTH 89° 47' 20" WEST, 175.25 FEET;
THENCE SOUTH 00° 22' 25" WEST, 377.23 FEET TO THE NORTHEAST CORNER OF THE LAND DESCRIBED IN DEED TO THE COUNTY OF RIVERSIDE, FOR CHERRY VALLEY BOULEVARD, RECORDED MAY 18, 1973 AS INSTRUMENT NO. 64964 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;
THENCE SOUTH 89° 47' 20" WEST, 321. 63 FEET ON THE NORTH LINE OF LAST SAID LAND TO THE BEGINNING OF A TANGENT CURVE THEREIN, CONCAVE SOUTHERLY OF 12,555.00 FEET RADIUS;
THENCE WESTERLY 437.95 FEET ON SAID CURVE THROUGH A CENTRAL ANGLE OF 01° 59' 55" TO THE WEST LINE OF SAID LOT M;
THENCE SOUTH 00° 22' 25" WEST, 24.76 FEET ON SAID WEST LINE TO THE POINT OF BEGINNING.

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Recording Requested By
First American Title NHS

DOC # 2005-0005541
01/04/2005 08:00A Fee:32.00
Page 1 of 6 Doc T Tax Paid
Recorded in Official Records
County of Riverside

Assessor, County Clerk & Recorder

RECORDING REQUESTED BY:
First American Title Insurance Company

WHEN RECORDED RETURN TO:
Gromet & Associates
114 Pacifica, Suite 250
Irvine, California 92618

MAIL TAX STATEMENTS TO:
TSG Cherry Valley L.P.
114 Pacifica, Suite 245
Irvine, California 92618
Attn: William A. Shopoff

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(32)

TRA NO. 056-035
ACCOM 27-10405

GRANT DEED - SEE SEPARATE STATEMENT

T
SF

FOR VALUE RECEIVED, the undersigned, **LEVINKEL, LLC**, a California limited liability company, (***"Grantor"***), hereby grants to **TSG CHERRY VALLEY L.P.**, a California limited partnership, (***"Grantee"***), an undivided 7.73% interest in all that certain real property described on **Exhibit "1"** attached hereto and incorporated herein by reference, together with any and all improvements, easements, privileges and rights appurtenant thereto.

IN WITNESS WHEREOF, this Grant Deed has been executed as of ~~December~~ JANUARY 03, ~~2004~~. 2005

LEVINKEL, LLC, a California limited liability company

By: _____
Mike Levine, Manager

By: _____
Carl Meiswinkel, Manager

APN NOS.:
407-220-008, 407-220-009,
407-220-014, 407-220-016,
407-220-017, 413-270-012,
407-220-004, 407-220-007
413-270-013

Description: Riverside,CA Document-Year.DocID 2005.5541 Page: 1 of 6
Order: 14909 Comment:

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STATE OF CALIFORNIA)
) ss.
COUNTY OF Orange)

On Dec. 20., 2004, before me, Teri Hovdestad, a Notary Public in and for said State, personally appeared **MIKE LEVINE**, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

Notary Public

TERI HOVDESTAD
Commission # 1362693
Notary Public - California
Orange County
My Comm. Expires Jun 28, 2006

Description: Riverside,CA Document-Year.DocID 2005.5541 Page: 2 of 6
Order: 14909 Comment:

CVAR_10107

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STATE OF CALIFORNIA)
) ss.
COUNTY OF Orange)

On Dec. 20, 2004, before me, Terri Hovdestad, a Notary Public in and for said State, personally appeared **CARL MEISWINKEL**, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

Notary Public

TERRI ... VDESTAD
Commission # 1352683
Notary Public - California
Orange County
My Comm... pires Jun 28, 2006

Description: Riverside,CA Document-Year.DocID 2005.5541 Page: 3 of 6
Order: 14909 Comment:

CVAR_10108

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Title Order Number:
File Number: NHRV-1276397

Exhibit "A"

Real property in the unincorporated area of the County of Riverside, State of California, described as follows:

PARCEL 1: (APNS: 407-220-008 AND 009)

THE NORTH HALF OF THE NORTHEAST QUARTER, AND THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF FRACTIONAL SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF:

EXCEPT THAT PORTION DESCRIBED IN PARCEL 3 HEREIN.

PARCEL 2: (APNS: 407-220-014, 016 AND 017)

THE SOUTH HALF OF THE NORTHEAST QUARTER AND THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF FRACTIONAL SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF:

EXCEPT THE SOUTHERLY RECTANGULAR 50.00 FEET OF SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF SAID FRACTIONAL SECTION 30, AS GRANTED TO THE COUNTY OF RIVERSIDE, BY DEED RECORDED NOVEMBER 22, 1949 IN BOOK 1125 PAGE 431 OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA;

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BEGINNING AT THE SOUTHEAST CORNER OF LOT 74 IN BLOCK 4 OF SAID KADOTA CITY FIG GROVES; THENCE NORTH 00° 22' 25" EAST, 1, 144.28 FEET ON THE WEST LINES OF SAID LOTS M AND K;

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GOVERNMENT CODE 27361.7

I CERTIFY UNDER PENALTY THAT THE NOTARY SEAL ON THE DOCUMENT TO WHICH THIS STATEMENT IS ATTACHED READS AS FOLLOWS:

NAME OF NOTARY:	TERRI HOVDESTAD
DATE COMMISSION EXPIRES:	JUNE 28, 2006
COUNTY WHERE BOND IS FILED:	ORANGE COUNTY
COMMISSION NUMBER:	1362693
VENDOR NO:	NNA1
PLACE OF EXECUTION:	RIVERSIDE, CALIFORNIA
DATE:	January 3, 2005

SIGNATURE: _____

FIRST AMERICAN TITLE INSURANCE COMPANY

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Appendix G:
Hydrology and Water Quality

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G.1 - Project Specific Water Quality Management Plan

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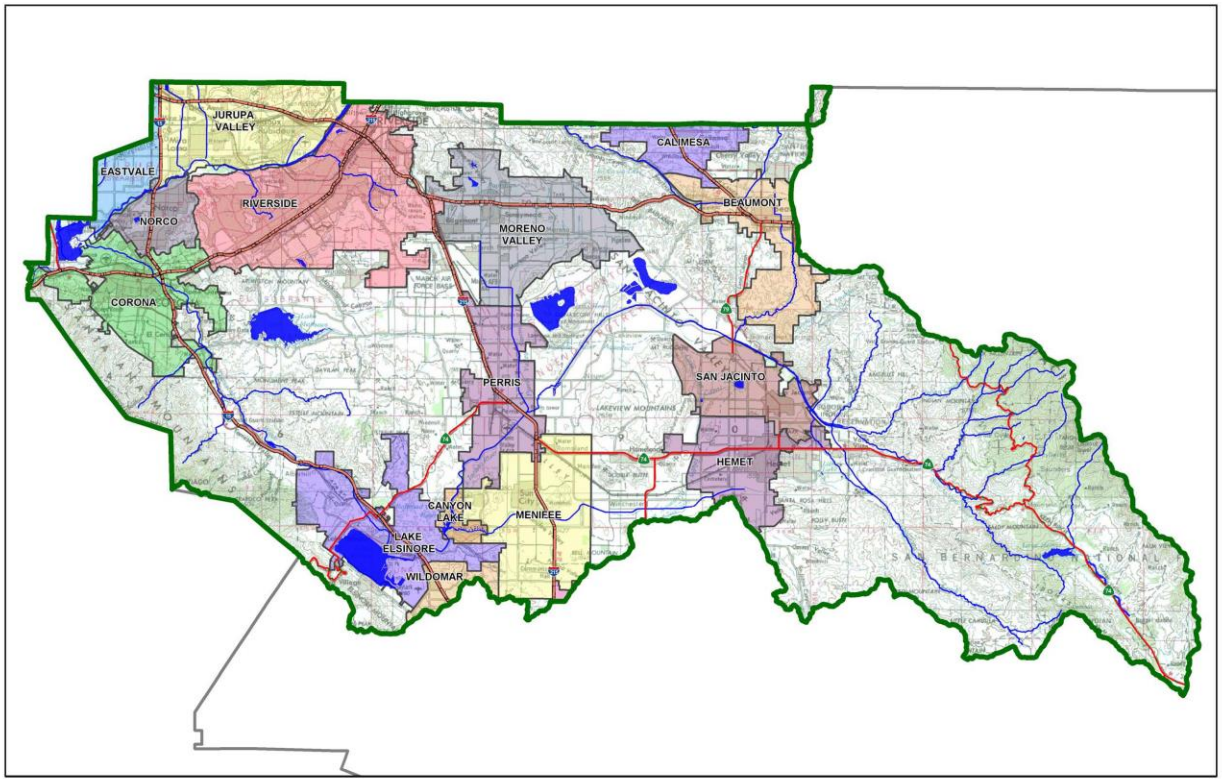
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Shopoff Realty Investments – San Gorgonio Crossings

Development No: PP No. 25337/TPM No. 36564

Design Review/Case No:



Contact Information:

Prepared for:
TSG Cherry Valley, L.P.
C/O The Shopoff Group
8951 Research Drive
Irvine, CA 92618

Prepared by:
Albert A. Webb Associates
3788 McCray St
Riverside, CA 92506

☒ **Preliminary**
☐ **Final**

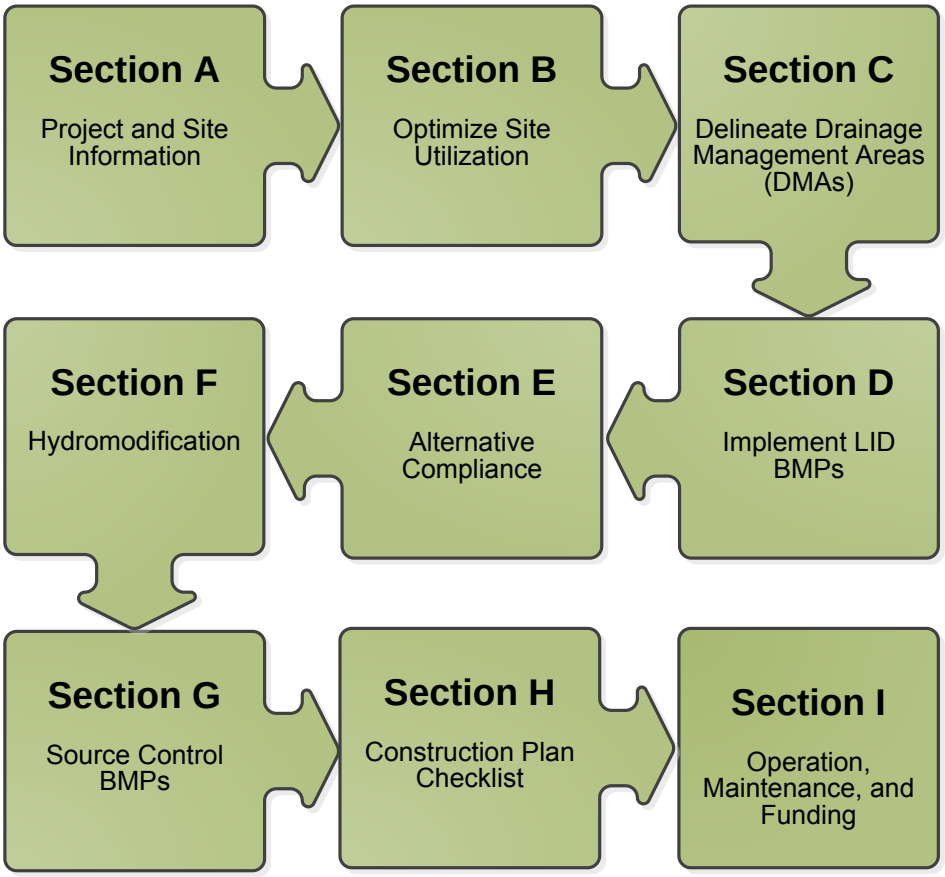
Original Date Prepared: October 22, 2014

Revision Date(s):

Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**

A Brief Introduction

This Project-Specific WQMP Template for the **Santa Ana Region** has been prepared to help guide you in documenting compliance for your project. Because this document has been designed to specifically document compliance, you will need to utilize the WQMP Guidance Document as your "how-to" manual to help guide you through this process. Both the Template and Guidance Document go hand-in-hand, and will help facilitate a well prepared Project-Specific WQMP. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for ***TSG Cherry Valley, L.P. C/O The Shopoff Group*** by ***Albert A. Webb Associates*** for the ***Shopoff Realty Investments – San Gorgonio Crossings*** project.

This WQMP is intended to comply with the requirements of ***the County of Riverside*** for ***County of Riverside Ordinance No. 745*** which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under ***County of Riverside Water Quality Ordinance*** (Municipal Code ***Chapter 13.12 – Stormwater Drainage System Protection Regulations***).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature	Date
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Preparer's Signature	Date
Preparer's Printed Name	Preparer's Title/Position

Preparer's Licensure:



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Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Commercial/Industrial
Planning Area:	
Community Name:	
Development Name:	Shopoff Realty Investments – San Gorgonio Crossings
PROJECT LOCATION	
Latitude & Longitude (DMS): 33°58'17.59"N 117° 1'23.05"W	
Project Watershed and Sub-Watershed: Santa Ana	
Sub-Watershed: San Timoteo Canyon	
APN(s): 407-220-004 407-220-007 407-220-008 407-220-009 407-220-014 407-220-016 407-220-017 413-270-013	
Map Book and Page No.: Thomas Bros Maps Page 690 Grid: B4, B5, C4, C5, D4, D5	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Commercial/Industrial
Proposed or Potential SIC Code(s)	4227
Area of Impervious Project Footprint (SF)	3,452,112
Total Area of proposed Impervious Surfaces within the Project Limits (SF)/or Replacement	3,452,112
Does the project consist of offsite road improvements?	☐ Y ☒ N
Does the project propose to construct unpaved roads?	☐ Y ☒ N
Is the project part of a larger common plan of development (phased project)?	☐ Y ☒ N
EXISTING SITE CHARACTERISTICS	
Total area of existing Impervious Surfaces within the project limits (SF)	0
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	N/A
Are there any natural hydrologic features on the project site?	☐ Y ☒ N
Is a Geotechnical Report attached?	☒ Y ☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	B, D
What is the Water Quality Design Storm Depth for the project?	0.79”

The Shopoff – San Gorgonio Crossings project proposes to develop approximately 150 acres of vacant land. The project is located northeast of the intersection of I-10 and Cherry Valley Boulevard. The project proposes to build 2 warehouse/distribution facilities totaling approximately 1,819,000 SF with associated parking, loading docks, drive aisles, and landscaped areas.

The site is presently vacant with little vegetation. Elevations on the site vary from 2580 feet above mean sea level (MSL) to 2390 feet. The existing site drains to a natural channel which conveys the runoff to the west to a basin west of Roberts Street which conveys the water to San Timoteo Creek. The proposed site will replace the natural channel with an improved channel which will continue to convey off-site flows and treated on-site flows to the west toward the basin west of Roberts Street. The northerly off-site flows will be conveyed to the west by a channel and will not enter the site. All flows will continue to reach San Timoteo Creek.

The Design Capture Volume will be treated by 2 Extended Detention Basins. In general, each building with associated parking, loading docks, drive aisles, and landscaped areas drain to its respective Extended Detention Basin. Both basins are located in fill and treat very large areas so infiltration and

bio-retention were not feasible treatment options for this project. The project is required to mitigate the Hydrological Conditions of Concern. The Extended Detention Basins will also mitigate these increased flows.

A.1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the local vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a **minimum**, your WQMP Site Plan should include the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Co-Permittee plan reviewer must be able to easily analyze your project utilizing this template and its associated site plans and maps.

A.2 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
San Timoteo Creek Reach 3 (HUC 801.62)	N/A	GWR, MUN, REC1, REC2, WARM, WILD	N/A
San Timoteo Creek Reach 2 (HUC 801.61)	N/A	GWR, MUN, REC1, REC2, WARM, WILD	N/A
San Timoteo Creek Reach 1B (HUC 801.52)	N/A	MUN, AGR, GWR, REC1, REC2, WARM, WILD	N/A
San Timoteo Creek Reach 1A (HUC 801.52)	N/A	AGR, MUN, REC1, REC2, WARM, WILD	N/A
Santa Ana Reach 5 (HUC 801.52)	N/A	AGR, GWR, MUN, RARE, REC1, REC2, WARM, WILD	17 miles
Santa Ana Reach 4 (HUC 801.44)	Salinity, TDS, Chlorides, Pathogens	WARM, WILD, GWR, MUN, RARE, REC1, REC2, SPWN	18 miles
Santa Ana Reach 3 (HUC 801.21)	Copper, Lead, Pathogens	AGR, GWR, MUN, RARE, REC1, REC2, SPWN, WARM, WILD	25 miles
Prado Basin Management Zone	Nutrient, Pathogens	MUN, REC1, REC2, WARM, WILD, RARE	40 miles

A.3 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	☐ Y	☒ N
US Army Corps of Engineers, CWA Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)*	☐ Y	☒ N

If yes is answered to any of the questions above, the Co-Permittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Section B: Optimize Site Utilization (LID Principles)

Review of the information collected in Section 'A' will aid in identifying the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. For example, **constraints** might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. **Opportunities** might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your LID design and explain your design decisions to others.

The 2010 Santa Ana MS4 Permit further requires that LID Retention BMPs (Infiltration Only or Harvest and Use) be used unless it can be shown that those BMPs are infeasible. Therefore, it is important that your narrative identify and justify if there are any constraints that would prevent the use of those categories of LID BMPs. Similarly, you should also note opportunities that exist which will be utilized during project design. Upon completion of identifying Constraints and Opportunities, include these on your WQMP Site plan in Appendix 1.

Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document. Review of the WQMP Guidance Document will help you determine how best to optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

Did you identify and preserve existing drainage patterns? If so, how? If not, why?

The existing drainage patterns have been identified and it has been determined that the overall drainage patterns will be preserved with a few on-site modifications. The existing site drains to a natural channel which conveys the runoff to the west to a basin west of Roberts Street which conveys the water to San Timoteo Creek. The proposed site will replace the natural channel with an improved channel which will continue to convey off-site flows and treated on-site flows to the west toward the basin west of Roberts Street. The northerly off-site flows will be conveyed to the west by a channel and will not enter the site. All flows will continue to reach San Timoteo Creek.

Did you identify and protect existing vegetation? If so, how? If not, why?

The existing vegetation was identified and it was determined infeasible to protect. The site is currently vacant with little or no vegetation. Approximately 41% of the developed site will be landscaped.

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

It is not feasible to preserve the natural infiltration capacity due to much of the proposed site being located on fill. Landscaped areas on the north and south will be self-treating pervious areas which will allow for infiltration to the extent the underlying on-site soil can accommodate.

Did you identify and minimize impervious area? If so, how? If not, why?

Yes, impervious area was minimized given the proposed site usage and required materials. The minimum landscaping pervious cover was achieved, per code.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

Runoff will be dispersed to the Extended Detention Basins. Also, landscaped areas on the north and south will be self-treating pervious areas which will convey the flows generated by the respective areas directly off-site.

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C.1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s)[1]	Area (Sq. Ft.)	DMA Type
DMA A	Roofs, Ornamental Landscaping, Concrete or Asphalt	1,886,088	D
DMA B	Roofs, Ornamental Landscaping, Concrete or Asphalt	2,643,975	D

[1] *Reference Table 2-1 in the WQMP Guidance Document to populate this column*

Table C.2 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
DMA A	209,945		
DMA B	1,142,153		

Table C.3 Type 'B', Self-Retaining Areas

Self-Retaining Area				**Type 'C' DMAs that are draining to the Self-Retaining Area**		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C.4 = [C]	Required Retention Depth (inches) [D]

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet)	Post-project surface type	Runoff factor	Product		Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]	DMA name /ID	[D]	[C]/[D]

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
DMA A	Extended Detention Basin A
DMA B	Extended Detention Basin B

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? ☐ Y ☒ N

If yes has been checked, Infiltration BMPs shall not be used for the site. If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Co-Permittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the WQMP Guidance Document. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☐ Y ☒ N

Infiltration Feasibility

Table D.1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.4.5. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D.1 Infiltration Feasibility

Does the project site…	YES	NO
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		X
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		X
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		X
If Yes, list affected DMAs:		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?	X	
If Yes, list affected DMAs:	B	
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?	X	
If Yes, list affected DMAs:	A,B	
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?		X
Describe here:		

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

D.2 Harvest and Use Assessment

Please check what applies*:*

☐ Reclaimed water will be used for the non-potable water demands for the project.

☐Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).

☐The Design Capture Volume will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the Design Capture Volume will be infiltrated or evapotranspired.

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If neither of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape: 55.8

Type of Landscaping (Conservation Design or Active Turf): Conservation Design

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: 79.2 Acres

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor: 1.85

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area: 146

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
146	55.8

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users: 1,000

Project Type: Commercial/Industrial

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: 79.2

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-1 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor: 219

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.

Minimum number of toilet users: 17,345

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	Projected number of toilet users (Step 1)
17,345	1,000

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

N/A

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand: N/A

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: N/A

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-3 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-3: N/A

Step 4: Multiply the unit value obtained from Step 4 by the total of impervious areas from Step 3 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: N/A

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required non-potable use (Step 4)	**Projected average daily use (Step 1)**
N/A	N/A

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment, unless a site-specific analysis has been completed that demonstrates technical infeasibility as noted in D.3 below.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

☒ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.

D.4 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D.2 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA A	☐	☐	☐	☒	☐
DMA B	☐	☐	☐	☒	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

For those DMAs where LID BMPs are not feasible, provide a brief narrative below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section E below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

N/A

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First**,** calculate the Design Capture Volume for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second**,** design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Enter BMP Name / Identifier Here*		
	[A]		[B]	[C]	[A] x [C]			
A	*811,000*	*Roofs*	*1*	*0.89*	*723,412*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
A	*317,290*	*Ornamental Landscaping*	*0.1*	*0.11*	*35,047*			
A	*757,798*	*Concrete or Asphalt*	*1*	*0.89*	*675,956*			
	1,886,088 (43.3 Ac)				1,434,415	0.79	94,432	96,790 (3.4' Basin Depth)

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Enter BMP Name / Identifier Here*		
	[A]		[B]	[C]	[A] x [C]			
B	*1,0127,760*	*Roofs*	*1*	*0.89*	*903,382*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
B	*760,661*	*Ornamental Landscaping*	*0.1*	*0.11*	*84,021*			
B	*870,554*	*Concrete or Asphalt*	*1*	*0.89*	*776,534*			
	2,643,975 (60.7 Ac)				1,763,937	0.79	116,126	123,820 (1.9' Basin Depth)

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

☐ LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- *Or* -

☐ The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Co-Permittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

All Drainage Management areas are addressed by LID BMPs, thus Section E is not completed.

E.1 Identify Pollutants of Concern

Utilizing Table A.1 from Section A above which noted your project's receiving waters and their associated EPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table E.1 below. If the identified General Pollutant Categories are the same as those listed for your receiving waters, then these will be your Pollutants of Concern and the appropriate box or boxes will be checked on the last row. The purpose of this is to document compliance and to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs.

Table E.1 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)	General Pollutant Categories							
	Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease
☐ Detached Residential Development	P	N	P	P	N	P	P	P
☐ Attached Residential Development	P	N	P	P	N	P	P	P[(2)]
☐ Commercial/Industrial Development	P[(3)]	P	P[(1)]	P[(1)]	P[(5)]	P[(1)]	P	P
☐ Automotive Repair Shops	N	P	N	N	P[(4, 5)]	N	P	P
☐ Restaurants (>5,000 ft^2)	P	N	N	N	N	N	P	P
☐ Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P
☐ Parking Lots (>5,000 ft^2)	P[(6)]	P	P[(1)]	P[(1)]	P[(4)]	P[(1)]	P	P
☐ Retail Gasoline Outlets	N	P	N	N	P	N	P	P
Project Priority Pollutant(s) of Concern	☐	☐	☐	☐	☐	☐	☐	☐

P = Potential

N = Not Potential

(1) A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected

(2) A potential Pollutant if the project includes uncovered parking areas; otherwise not expected

(3) A potential Pollutant is land use involving animal waste

(4) Specifically petroleum hydrocarbons

(5) Specifically solvents

(6) Bacterial indicators are routinely detected in pavement runoff

E.2 Stormwater Credits

Projects that cannot implement LID BMPs but nevertheless implement smart growth principles are potentially eligible for Stormwater Credits. Utilize Table 3-8 within the WQMP Guidance Document to identify your Project Category and its associated Water Quality Credit. If not applicable, write N/A.

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage[2]
Total Credit Percentage[1]	

[1] *Cannot Exceed 50%*
[2] *Obtain corresponding data from Table 3-8 in the WQMP Guidance Document*

E.3 Sizing Criteria

After you appropriately considered Stormwater Credits for your project, utilize Table E.3 below to appropriately size them to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.2 of the WQMP Guidance Document for further information.

Table E.3 Treatment Control BMP Sizing

DMA Type/ID	**DMA Area (square feet)**	**Post-Project Surface Type**	**Effective Impervious Fraction, I_f**	**DMA Runoff Factor**	**DMA Area x Runoff Factor**		***Enter BMP Name / Identifier Here***		
	[A]		[B]	[C]	[A] x [C]				
						Design Storm Depth (in)	*Minimum Design Capture Volume or Design Flow Rate (cubic feet or cfs)*	*Total Storm Water Credit % Reduction*	*Proposed Volume or Flow on Plans (cubic feet or cfs)*
	A_T = Σ[A]				Σ= [D]	[E]	$[F] = \frac{[D]x[E]}{[G]}$	[F] X (1-[H])	[I]

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document
[E] is obtained from Exhibit A in the WQMP Guidance Document
[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12
[H] is from the Total Credit Percentage as Calculated from Table E.2 above
[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.4 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- **High**: equal to or greater than 80% removal efficiency
- **Medium**: between 40% and 80% removal efficiency

Such removal efficiency documentation (e.g., studies, reports, etc.) as further discussed in Chapter 3.5.2 of the WQMP Guidance Document, must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]

[1] *Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.*
[2] *Cross Reference Table E.1 above to populate this column.*
[3] *As documented in a Co-Permittee Approved Study and provided in Appendix 6.*

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermittee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration	N/A	N/A	N/A
Volume (Cubic Feet)	N/A	N/A	N/A

[1] Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Sensitivity Maps.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

N/A

F.2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:

a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

Be sure to include all pertinent documentation used in your analysis of the items a, b or c in Appendix 7.

Section G: Source Control BMPs

Source control BMPs include permanent, structural features that may be required in your project plans — such as roofs over and berms around trash and recycling areas — and Operational BMPs, such as regular sweeping and "housekeeping", that must be implemented by the site's occupant or user. The MEP standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective permanent BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8, review the following procedure to specify Source Control BMPs for your site:

1. ***Identify Pollutant Sources*:** Review Column 1 in the Pollutant Sources/Source Control Checklist. Check off the potential sources of Pollutants that apply to your site.

2. ***Note Locations on Project-Specific WQMP Exhibit*:** Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist. Show the location of each Pollutant source and each permanent Source Control BMP in your Project-Specific WQMP Exhibit located in Appendix 1.

3. ***Prepare a Table and Narrative*:** Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist. In the left column of Table G.1 below, list each potential source of runoff Pollutants on your site (from those that you checked in the Pollutant Sources/Source Control Checklist). In the middle column, list the corresponding permanent, Structural Source Control BMPs (from Columns 2 and 3 of the Pollutant Sources/Source Control Checklist) used to prevent Pollutants from entering runoff. **Add additional narrative** in this column that explains any special features, materials or methods of construction that will be used to implement these permanent, Structural Source Control BMPs.

4. ***Identify Operational Source Control BMPs:*** To complete your table, refer once again to the Pollutant Sources/Source Control Checklist. List in the right column of your table the Operational BMPs that should be implemented as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
A. *On-site storm drain catch basins and grated inlets.*	*On-site storm drain signage will utilize language, "No Dumping Drains to River", or equally approved text that is consistent with the County of Riverside's requirements. Landscape area drains surrounded by vegetation will not be signed. Catch Basin Markers may be available from the Riverside County Flood Control and Water District Conservation District, call 951-955-1200 to verify.*	*Maintain and periodically repaint or replace inlet markings.* *Provide stormwater pollution prevention information to new site owners, lessees, or operators.* *See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in Appendix 10 (CASQA Stormwater Quality Handbook at www.cabmphandbooks.com*

		Include the following in lessee agreements: "Tenants shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains" *Maintenance should include removal of trash, debris, & sediment and the repair of any deficiencies or damage that may impact water quality.*
B. Interior floor drains and elevator shaft sump	*The interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer*	*Inspect and maintain drains to prevent blockages and overflow.*
C. Landscape/Outdoor Pesticide Use	*The final landscape shall be designed to accomplish all of the following:* *Preserve existing native trees, shrubs and ground cover to the maximum extent possible.* *Design landscape to minimize irrigation and runoff, to promote surface infiltration where appropriate and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.* *Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.* *Consider using pest-resistant plants, especially adjacent to hardscape.* *To ensure successful establishments, select plants appropriate to site, soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency and plant interactions.* *Pesticide usage should be at a necessary minimum and be consistent with the instructions contained on product labels and with the regulations administered by the State Department of Pesticide Regulation.* *Pesticides should be used at an*	*Maintain landscaping using minimum or no pesticides* *See applicable operational BMPs in "What you should know for…. Landscape and Gardening" at http://rcflood.org/stormwater and Appendix 10.* *Provide IPM information to new owners, lessees and operators.* *Landscape maintenance should include mowing, weeding, trimming, removal of trash & debris, repair of erosion, re-vegetation, and removal of cut & dead vegetation.* *Irrigation maintenance should include the repair of leaky or broken sprinkler heads, the maintaining of timing apparatus accuracy, and the maintaining of shut off valves in good working order.*

	absolute minimum or not at all in the retention/infiltration basin. If used, it should not be applied in close proximity to the rainy season.	
D. Refuse Trash Storage areas	*Trash container storage areas shall be paved with an impervious surface, designed not to allow run-on from adjoining areas, designed to divert drainage from adjoining roofs and pavements from the surrounding area, and screened or walled to prevent off-site transport of trash.* *Trash dumpsters (containers) shall be leak proof and have attached covers or lids.* *Trash enclosures shall be roofed per City standards.* *Trash compactors shall be roofed and set on a concrete pad per City standards. The pad shall be a minimum of one foot larger all around than the trash compactor and sloped to drain to a sanitary sewer line. Connection of trash area drains to the MS4 is prohibited.* *See CASQA SD-32 BMP Fact Sheets in Appendix 10 for additional information.* *Signs shall be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.*	*Adequate number of receptacles shall be provided. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, in Appendix 10, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbook at www.cabmphandbooks.com*
E. Loading Docks	*Loading docks will not be covered and are 4 feet above finished pavement surface.*	*Move loaded and unloaded items indoors as soon as possible.* *Inspect for accumulated trash and debris. Implement good housekeeping procedures on a regular basis. Sweep areas clean instead of using wash water. Loading docks will be kept in a clean and orderly condition, through a regular program of sweeping and litter control, and immediate clean up of any spills or broken containers. Property owner will ensure that loading docks will be swept as needed. Cleanup procedures will not include the use of wash-down water. Property owner will be responsible for implementation of loading dock*

		housekeeping procedures *See the Fact Sheet SC-30, in Appendix 10, "Outdoor Loading and Unloading" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com*
F. Fire Sprinkler Test Water	*Provide a means to drain fire sprinkler test water to the sanitary sewer.*	*See the note in the Fact Sheet SC-41, in Appendix 10, "Building and Grounds Maintenance", in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com*
G. Miscellaneous Drain or Wash Water or Other Sources *Boiler drain lines* *Condensate drain lines* *Rooftop equipment* *Drainage sumps* *Roofing, gutters and trim* *Other sources*	*Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system* *Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur.* *Condensate drain lines may not discharge to the storm drain system.* *Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment.* *Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.* *Avoid roofing, gutters and trim made of copper of other unprotected metals that may leach into runoff.* *Include controls for other sources as specified by local reviewer.*	
H. Plazas, sidewalks, and parking lots		*Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.*

Section H: Construction Plan Checklist

Populate Table H.1 below to assist the plan checker in an expeditious review of your project. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. Co-Permittee staff can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

Section I: Operation, Maintenance and Funding

The Copermittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a Stormwater BMP Operation and Maintenance Plan are in Chapter 5 of the WQMP Guidance Document.

Maintenance Mechanism: ***The project owner will maintain all stormwater BMPs. See Appendix 9.***

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

☐ Y ☒ N

Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

To be completed at time of the Final WQMP Submittal.

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

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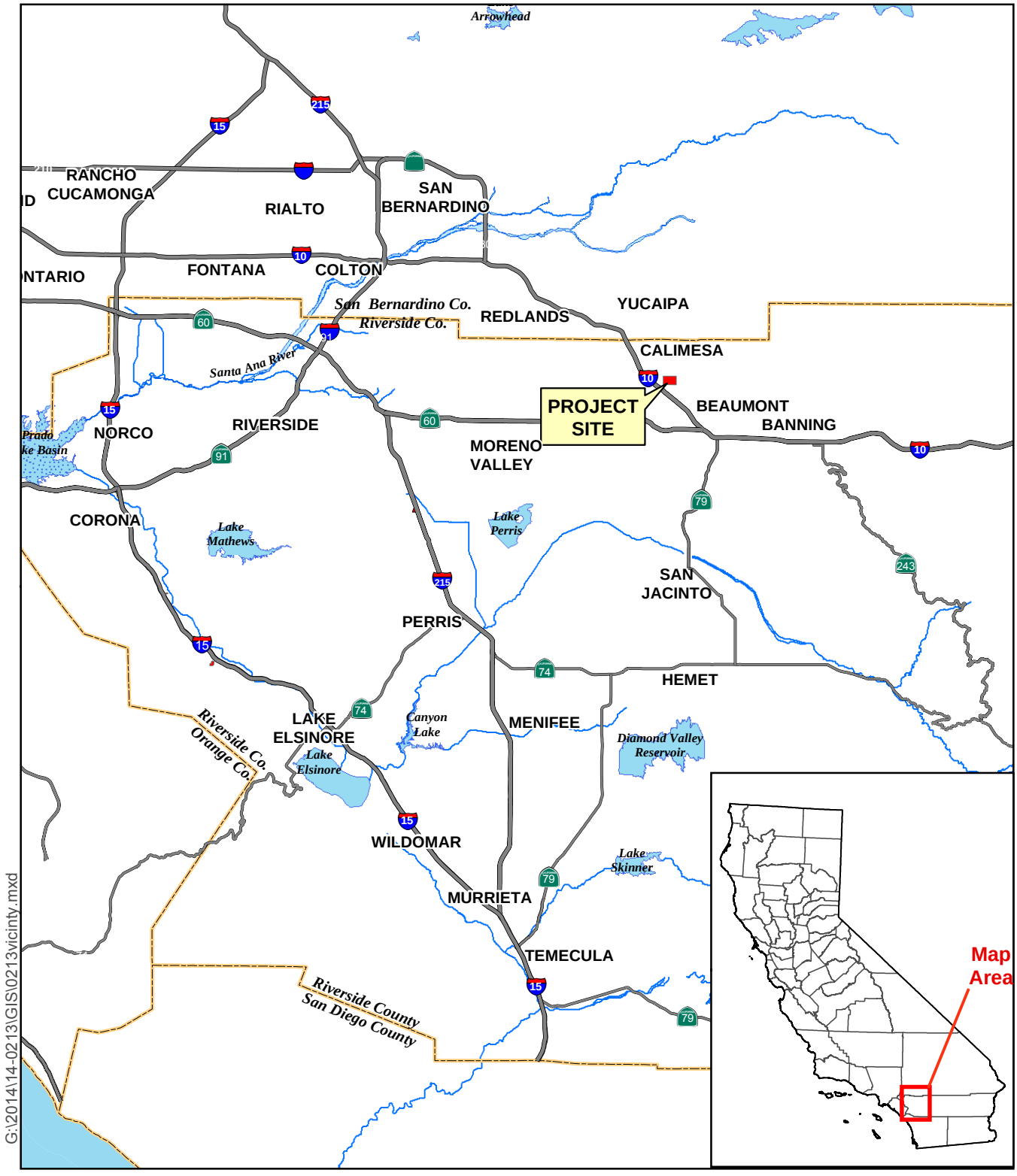

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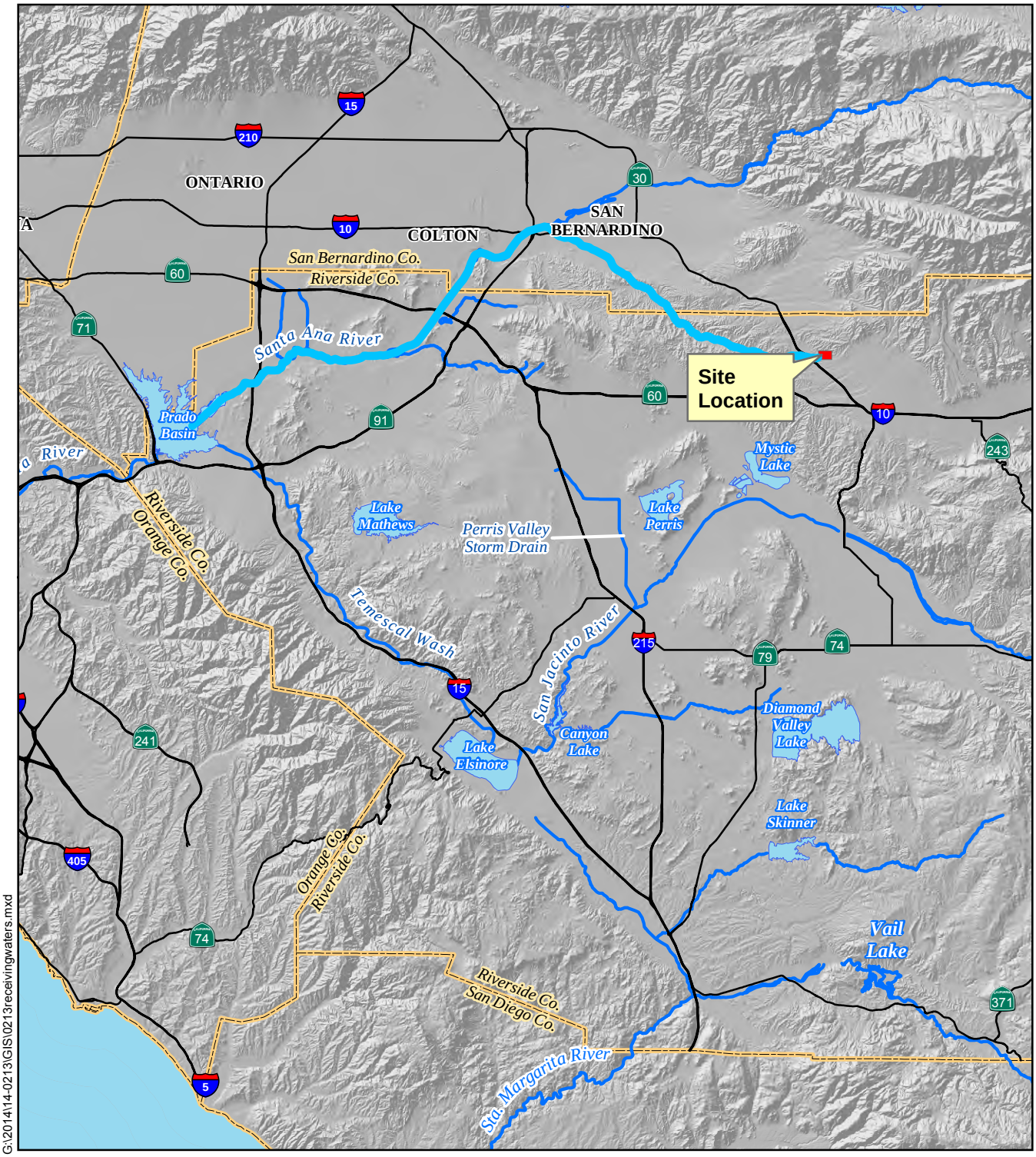
Vicinity Map

ALBERT A. WEBB ASSOCIATES

Shopoff Realty Investments - San Gorgonio Crossings

CVAR_10147



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LEGEND

Receiving Waters

N
W E
S

0 3 6 9
Miles

ALBERT A. WEBB ASSOCIATES

Receiving Waters Map

Shopoff Realty Investments - San Gorgonio Crossings

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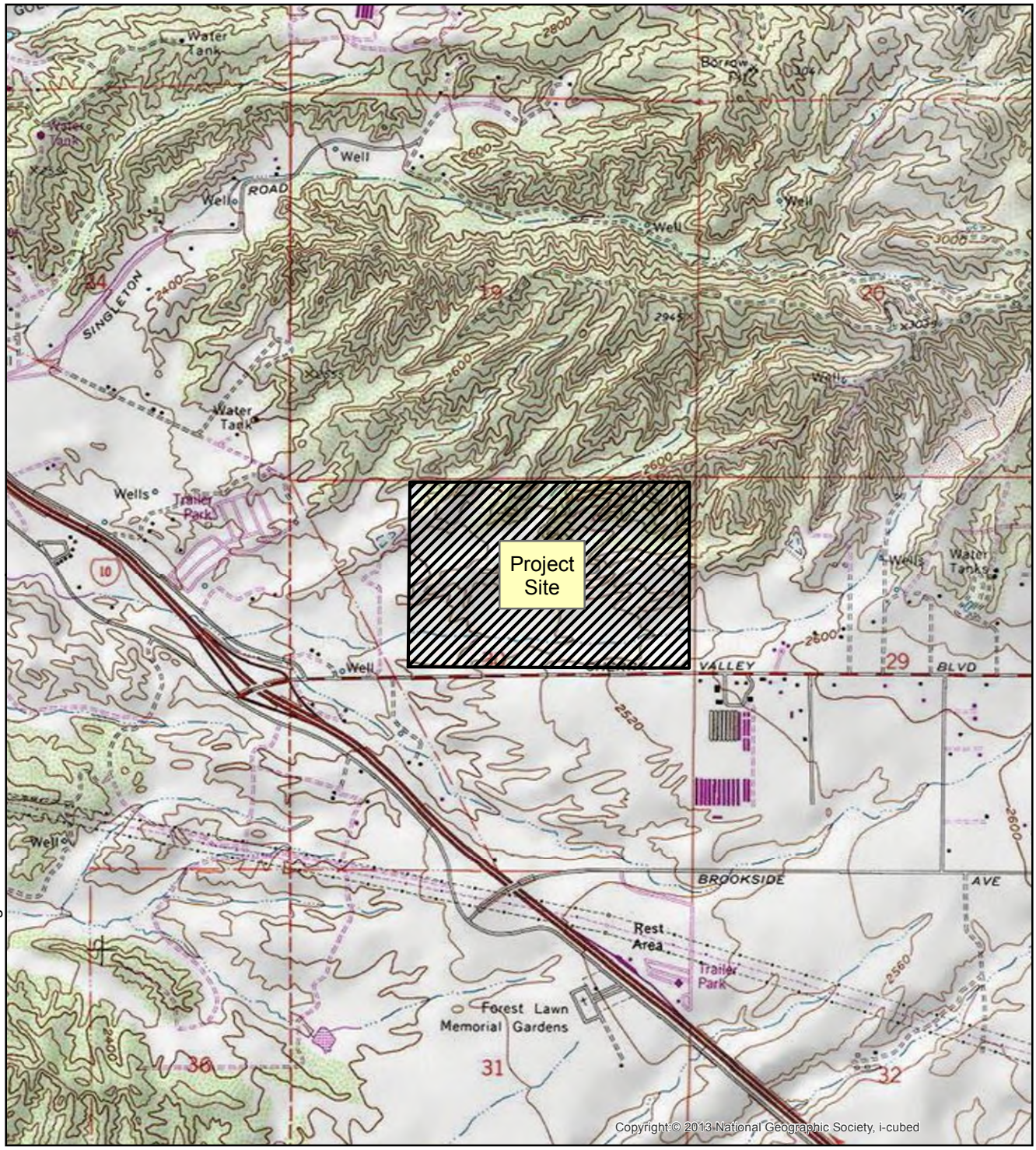

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Source: USGS 7.5 min Quadrangle
El Casco

Legend

Project Boundary

N
W E
S

0 750 1,500 2,250
Feet

USGS Topographic Map

ALBERT A. WEBB ASSOCIATES

Shopoff Realty Investments - San Gorgonio Crossings

CVAR_10149



Sources: Eagle Aerial, April 2012

Legend

Project Location

N
W
E
S

0 750 1,500 2,250 Feet

Aerial Map

ALBERT A. WEBB ASSOCIATES

Shopoff Realty Investments - San Gorgonio Crosings

CVAR_10150

EXTENDED DETENTION BASIN A
VBMP VOLUME PROVIDED: 96,790 CF
AT 3.4 FT DEPTH

OUTLET STRUCTURE

FOREBAY

LOW FLOW INFILTRATION
TRENCH

OUTLET PIPE

PROPERTY BOUNDARY

DMA A
TOTAL AREA: 48.1 ACRES
-SELF TREATED AREA: 209,945 SF
-TREATED BY BASIN
-ROOFS: 811,000 SF
-LANDSCAPING: 317,290 SF
-CONCRETE OR ASPHALT: 757,798 SF
VBMP: 94,432 CF

"A" STREET

CHERRY VALLEY AVENUE

LEGEND

- DMA BOUNDARY
- STORM DRAIN INLETS/CATCH BASINS
- LANDSCAPING
- SELF TREATING AREA
- ROOF
- CONCRETE
- LID BMP
- FLOW DIRECTION
- TRASH ENCLOSURE (LOCATION TBD)
- ROOF DRAIN

N
W WEBB E
S

100' 0 100'

COUNTY OF RIVERSIDE
SHOPOFF REALTY - SAN GORGONIO CROSSINGS

POST CONSTRUCTION WATER QUALITY
PRELIMINARY WQMP
EXHIBIT
DMA A

SCALE: N/A	ALBERT A. WEBB ASSOCIATES	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	W.O. WO
DATE: DATE			SHEET DMA A
DESIGNED: DESIGNER			OF # SHEETS
CHECKED: CHECKER			
PLN CK REF: REF			DWG. NO.
F.B. F.B.			

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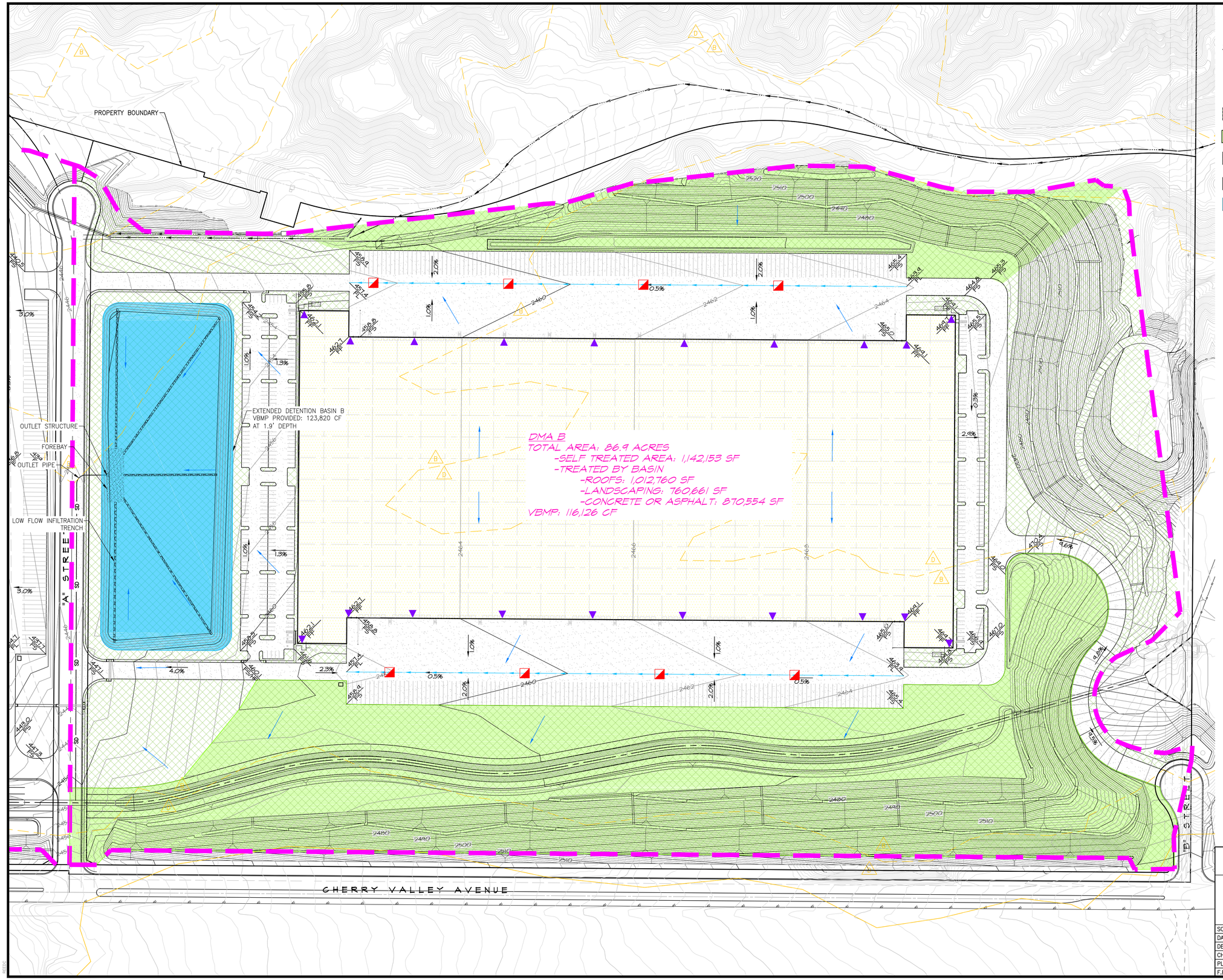

LEGEND

- DMA BOUNDARY
- STORM DRAIN INLETS/CATCH BASINS
- LANDSCAPING
- SELF TREATING AREA
- ROOF
- CONCRETE
- LID BMP
- FLOW DIRECTION
- TRASH ENCLOSURE (LOCATION TBD)
- ROOF DRAIN

N W E S WEBB

100' 0 100'

COUNTY OF RIVERSIDE
SHOPOFF REALTY - SAN GORGONIO CROSSINGS

POST CONSTRUCTION WATER QUALITY
PRELIMINARY WQMP
EXHIBIT
DMA B

SCALE: N/A	ALBERT A. WEBB ASSOCIATES	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	W.O. WO
DATE: DATE			SHEET DMA B
DESIGNED: DESIGNER			OF # SHEETS
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F.B. F.B.			

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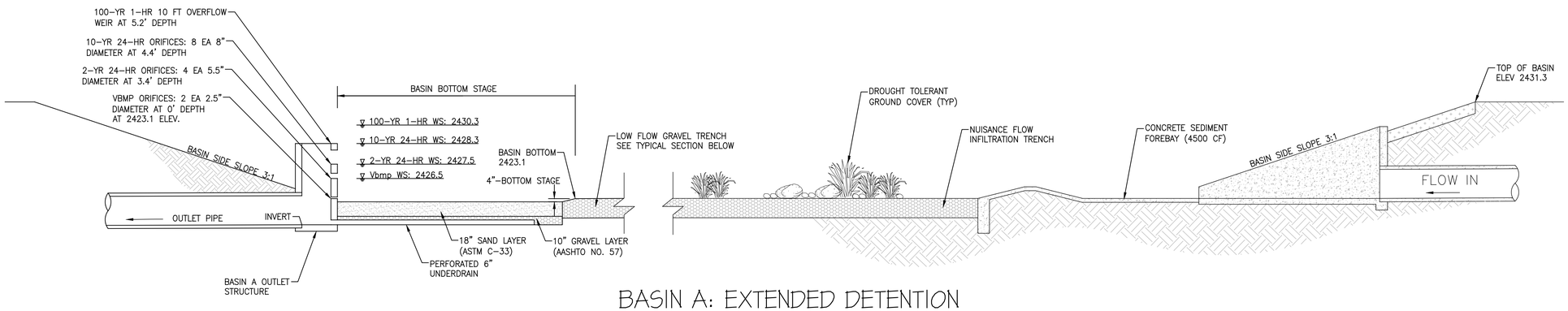
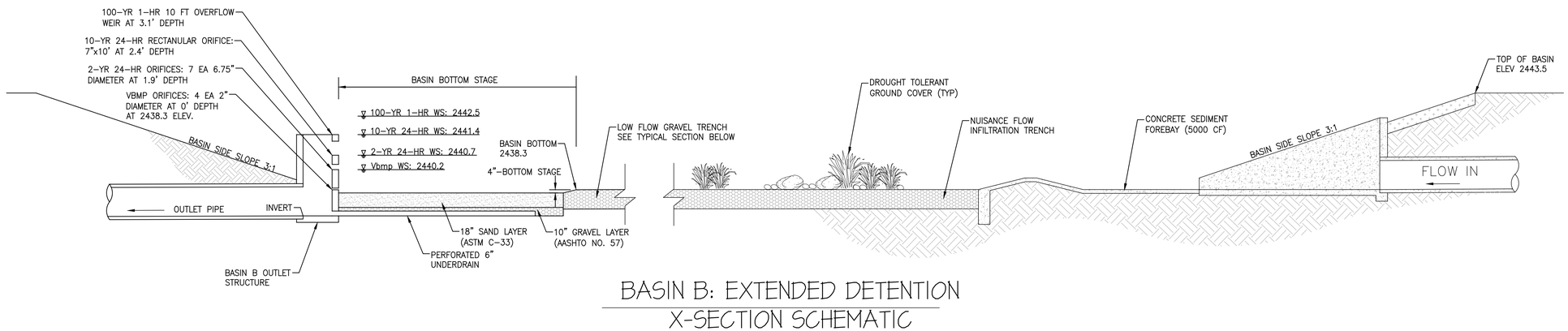


BASIN A: EXTENDED DETENTION
X-SECTION SCHEMATIC
N.T.S.



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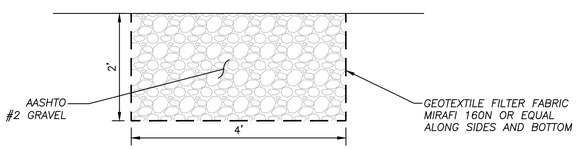
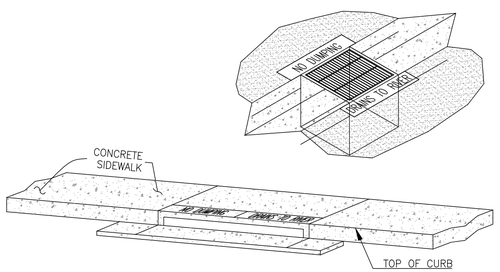
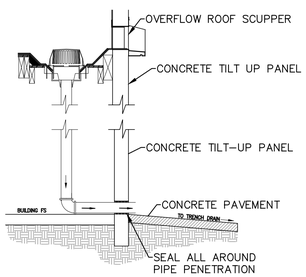


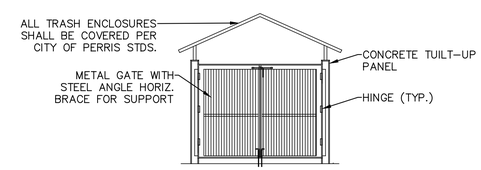
NUISANCE FLOW INFILTRATION TRENCH FOR EXTENDED DETENTION BASIN
N.T.S.



CATCH BASIN STENCILING DETAIL
N.T.S.



ROOF DRAIN DETAIL
N.T.S.



TRASH ENCLOSURE-DETAIL
N.T.S.

COUNTY OF RIVERSIDE
SAN GORGONIO CROSSINGS

POST CONSTRUCTION WATER QUALITY
PRELIMINARY WQMP
DETAILS

SCALE: ########	ALBERT A. WEBB ASSOCIATES	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	W.O. WO
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Appendix 2: Construction Plans

Grading and Drainage Plans

CONSTRUCTION PLANS
WILL BE PROVIDED AT THE TIME OF
THE FINAL WQMP SUBMITTAL

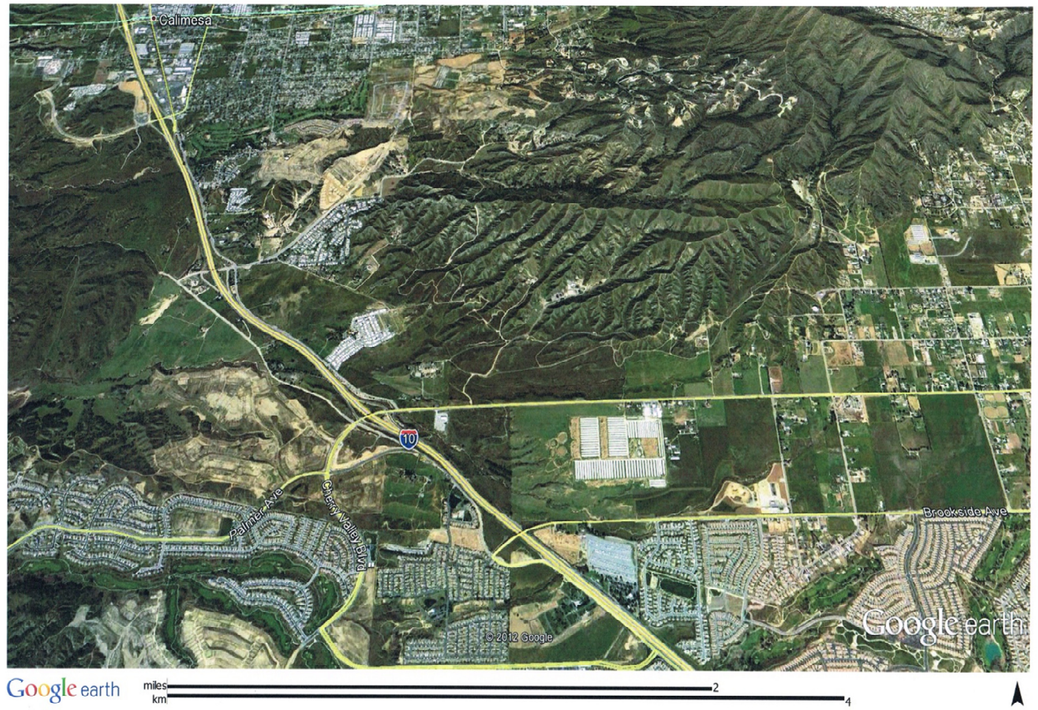
Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

Infiltration Rate Evaluation

for the I-10 Gateway Center, Parcel Map No. 36093

Cherry Valley Area, County of Riverside, California



Prepared for: TSG Cherry Valley, L.P.

2 Park Plaza, Suite 700

Irvine, CA 92614

Prepared by: Ginter & Associates, Inc.

27631 Durazno

Mission Viejo, CA 92692

Project # 105-02 **October 23, 2012**

CVAR_10156

Infiltration Rate Evaluation
For the I-10 Gateway Center, Parcel Map No. 36093
Cherry Valley Area, County of Riverside, California

Prepared for: TSG Cherry Valley, L.P.

2 Park Plaza, Suite 700

Irvine, California, 92614

Prepared by: Ginter & Associates, Inc.

27631 Durazno

Mission Viejo, California 92692

Project # 105-02 **October 23, 2012**

Executive Summary

- Based on our review of previous subsurface investigations, the geologic and geotechnical engineering data and analyses indicate the potential for infiltration within the site is feasible.

- The results of our field infiltration study performed using the double ring infiltrometer and well permeameter methods indicate the infiltration rate of the site soils at the tested locations ranges from 1.2 in./hr. to 3.0 in./hr.

- As a reasonably conservative approach, the minimum measured field infiltration rate of 1.2 in./hr. may be considered in the initial feasibility screening stage. A factor of safety not less than 2.0 should be used to compute the design infiltration rate.

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Figure 6	Geotechnical Map
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Appendix II	Logs of Infiltrate Site Excavations

1.0 Introduction

1.1 Site Description

The site has an irregular rectangular shape consisting of 395 acres and is located in the San Timoteo Badlands near the western portion of the San Gorgonio Pass and the southern flank of the San Bernardino Mountains (Figure 1). It is located just east of Interstate 10 on the north side of Cherry Valley Boulevard. The site is accessible via unpaved, graded roads (Figure 2).

The northern half of the site is characterized by badlands topography with narrow ridgelines, steep flanks and narrow valleys trending northeast-southwest.

The southern half is relatively flat with subdued ridgelines in the north trending west-southwest merging into a flat alluvial plain trending east-west.

Vegetation consists predominately of native grasses with sage scrub and occasion scrub oak in the north. The southern portion of the site appears to have been cultivated for agriculture in the past. An intermittent stream meanders along the southern perimeter, which drains to the west.

A water line and fiber optic cable traverse the northern portion of the site in an east-west trend with several utility vaults. Some cuts, fills and roadways are associated with this easement.

1.2 Purpose and Scope of Investigation

The purpose of this report is to summarize technical opportunities and constraints and limitations for infiltration type best management practices within the proposed I-10 Gateway Job Center development plan. Infiltration is the highest priority for water quality treatment (2011 Model WQMP; Technical Guidance Document), based on the most recent water quality requirements for storm water management.

The water quality regulation assume 100% infiltration of the water quality design storm event (85th percentile 24-hour storm event) is feasible on-site within the development footprint, unless site specific analysis indicates full infiltration or partial infiltration is not feasible. Sub-surface conditions such as depth of compacted fill, soil types, infiltration rates, depth to groundwater, constructability and maintenance all

factor into the ability to safely infiltrate storm water into the ground within the proposed development areas.

1.3 Summary of Previous Investigations

The majority of previous investigations by other were primarily directed towards determining the location and recommended setback zones for the north and south branches of the Cherry Valley Fault Zone.

CHJ, Inc. performed a site specific subsurface investigation of faulting with a report dated August 3, 2005. They utilized aerial photo lineament analyses, geologic field mapping, excavation of 5 trenches totaling 2,215 lineal feet from 15 to 21 feet deep and 4 slope cuts totaling 2,600 lineal feet.

Concurrent with their fault investigation, CHJ, Inc. performed an engineering geologic investigation with a report dated August 15, 2005. They excavated 35 hollow stem borings and placed 33 cone penetrometer tests (CPT) on the site.

Neblett & Associates, Inc. performed a thorough fault investigation on the site with a report dated September 22, 2008. It should be noted that the undersigned was employed at Neblett & Associates, Inc. as Chief Geologist and directly supervised the fault investigation by them. They utilized aerial photo lineament analyses, reconnaissance mapping, the excavation of six fault trenches varying in length from 120 feet to 970 feet and 12 to 15 feet deep, and structure contouring.

Neblett & Associates, Inc. also provided a grading plan review report on the site for Parcel Map No. 36093, dated April 3, 2009. They excavated 4 hollowstem borings from 58 to 71 feet in depth.

2.0 Geomorphic Setting

The subject site is located at the western end of a relatively broad east-west trending trough known as the San Gorgonio Pass between the San Jacinto Mountains on the south and the San Bernardino Mountains to the north. This pronounced morphologic feature is predominately due to the tectonics of the area consisting of complex faulting, folding and uplift. The erosional and depositional processes have played a minor role in the geomorphology of the area when compared to the tectonic processes.

The San Gorgonio Pass is the lowest topographic break in southern California through the mountains to the inland deserts, separating Mt. San Gorgonio (elevation 11,502 ft.) and Mt. San Jacinto (elevation 10, 786 ft.), the two highest mountains in southern California. The crest of the pass is the headwaters of three major drainage basins: the interior-draining Whitewater River-Salton Trough to the east; the generally interior-draining San Jacinto basin to the south; and the Santa Ana basin to the west.

The flanks and the floor of the trough contain dissected old alluvial fan deposits, old alluvial gravel and sand sediments, and recent alluvial gravel and sand of stream channels that have formed relatively flat pediments sloping gently to the trough's axis.

The subject site is located at the western end of this trough on the north flank. The site and its vicinity are within the San Timoteo Badlands characterized by northeast to southwest trending narrow ridges and valleys that provides the source for the older alluvial fan deposits and younger alluvial sands and gravels to the south.

Within the subject site, the typical northeast-southwest trending ridges and valley drainages changes direction at the Cherry Valley Fault Zone (north and south branch) to east-northeast to west-southwest trending ridges and valley drainages. The modern drainage of the recent alluvial plain in the south again changes direction from eat-northeast to west-southwest immediately south of the Cherry Valley Fault Zone to east-west in the southern portion of the site.

These changes in drainage flow direction suggest that they are predominately controlled by fault movements and uplift.

3.0 Geologic Setting

3.1 Regional Geologic Setting

The site is located near the boundary of the northeastern Peninsular Ranges and the southeastern Transverse Ranges consisting of the San Jacinto Mountains and the San Bernardino Mountains respectively. The northeastern Peninsular Ranges are part of the Southern California Batholith, which is comprised of Paleozoic to Mesozoic age igneous, metasedimentary and metavolcanic rock types overlain unconformably by non-marine clastic sediments of late tertiary and Quaternary age.

The northwesterly trend of elongate ranges and valley of this portion of the province are terminated abruptly by the general east-west grain of the Transverse Ranges.

The southeastern portion of the Transverse Range contains the San Bernardino Mountains, which have been uplifted along the San Andreas and Banning Faults on the south and along several steeply dipping reverse faults on the north.

The subject site is situated at the juncture of the Transverse Range and the Peninsular Range in the western end of the San Gorgonio Pass area. In this area, the Mojave Desert segment and the Coachella Valley segment of the San Andreas Fault Zone step left from each other and this fault zone becomes a complex combination of strike-slip faults and thrust and tear faults that include the Banning Fault and the San Gorgonio Valley Fault Zone. The Cherry Valley Fault Zone of the subject area is considered a western extension of the San Gorgonio Pass Fault Zone (Matti and Morton, 1993).

The site is also located in the "Badlands" area of relatively low hills southeast of Calimesa characterized by narrow ridge line and steep-walled flanks comprised predominately of the San Timoteo Formation within the Peninsular Ranges province (Figure 3). This Plio-Pleistocene age sedimentary unit consists of fluviatile sandstones and gravels with minor lacustrine siltstones. The floor and edges of the San Gorgonio Pass trough consist of dissected old alluvial terrace deposits and younger alluvial sand and gravels. These units are present in the southern portion of the subject site.

The tectonic setting of southern California is dominated by the northwest-trending San Andreas Fault and its sister faults, which have a right-lateral movement pattern between the North American Plate and the Pacific Plate. Local compression and/or extension as a result of the translational motion along this plate boundary has formed left-lateral, reverse, normal and blind thrust faults.

The main strand of the San Andreas Fault in southern California has been divided into two segments – the Mojave Desert segment separating the San Bernardino Mountains from the San Gabriel Mountains, and the Coachella Valley segment separating the Peninsular Ranges from the San Bernardino Mountains (Matti and Morton, 1993). The main strand deflects west in the San Gorgonio Pass area where the fault zone becomes more complex and does not have a clean, currently active, through-going fault break, but is a combination of older strike-slip faults and newer thrust and tear faults (Treiman, 1994). The Banning and San Gorgonio Pass faults, including the Cherry Valley Fault Zone, are part of this complex fault system in the San Gorgonio Pass area.

The Coachella Valley segment splits into two principal strands as it approaches the San Bernardino Mountains. The most northern has been designated as the North Branch of the San Andreas Fault by Dibblee (1975), the Mission Creek Fault by Allen (1957) and the Coachella Valley Segment of the San Andreas Fault by Matti, et al. (1992). This strand merges to the northwest into the Mill Creek and Mission Creek faults.

The San Gorgonio Pass Fault Zone is characterized by discontinuous reverse and thrust faults and associated tear faults (Treiman, 1994) generally located at the base of the San Bernardino Mounts. The San Gorgonio Pass Fault Zone includes, from the west to east, the Cherry Valley Fault Zone, a fault along the toe of the Banning Bench, and a northeast-trending segment crossing the lower part of the Millard Canyon fan.

The Cherry Valley Fault Zone in the subject site's vicinity has been mapped by Matti and Morton (1974-1991) as two traces. This fault zone has been mapped by various workers (Figure 3), predominately as two sub-parallel faults which merge to the east to form one trace near the eastern property boundary and then veers northeast, displacing remnants of a mid-to-late-Pleistocene fan (Treiman, 1994).

East of the subject site, the Cherry Valley fault becomes the San Gorgonio Pass Fault Zone and is characterized as a sinuous trace forming several discontinuous scarps on the older fan mid-Pleistocene fan surfaces (Matti and Morton, 1993). Farther east, the fault steps southward from the range, forming the Highland Springs scarp and the toe of the Banning Bench. Matti, et al. (1993), infer northwest-trending, right-lateral tear faults in this area. This fault zone continues northeast as a thrust fault where it eventually merges with the Banning Fault near Gorgonio Canyon.

The Banning Fault is considered an ancestral trace of the San Andreas Fault (Allen, 1957; Matti, et al., 1992) which has been inferred from the Indio Hills to the San Jacinto Fault. During late Cenozoic time the Banning Fault was principally a right-lateral fault, but it has since responded mainly to compressional tectonics in Gorgonio Pass and continuing as a strike-slip fault only to the east (Matti and Morton, 1993).

This fault is located approximately ¼ mile north of the subject site where it consists of a prominent high-angle trace, which separates Pleistocene San Timoteo Formation on the south from granitic rock to the north (Figure 3). Displacement in this area is indicated as a strike-slip by Matti, et al. (1992).

The San Jacinto Fault is located approximately 6 miles southwest of the site and consists of a system of northwest-trending, right-lateral, strike-slip faults. This fault reverses rocks of Peninsular Ranges type and the alleviated San Bernardino Valley before entering the southeastern San Gabriel Mountains. There the fault splays into several sub-parallel strands that traverse rocks of Peninsular Ranges type and San Gabriel Mountains type (Matti and Morton, 1993).

The San Jacinto Fault is the closest known active fault to the site and is considered the most influential with respect to ground shaping and rupture. More large historic earthquakes have occurred on the San Jacinto Fault than any other fault in southern California (Working Group on California Earthquake Probabilities, 1988).

3.2 Site Geologic Conditions

The main geologic units within the site include the Plio-Pleistocene San Timoteo formation in the northeast, and in the southwest old alluvium of an old dissected alluvial fan, with young alluvium along the valley floors. Structurally, the site is dominated by two splays of the Cherry Valley Fault, the North Branch and the South Branch, which transect the site in a northwest to southeast trend (Figure 6). The South Branch generally places the San Timoteo Formation in fault contact with the older alluvium, except in the southeast, where it juxtaposes older alluvial units against one another.

Colluvium is the loose heterogeneous and incoherent mass of soil material and rock fragments deposited by sheetwash or slow continuous downslope creep collecting at the base of gentle slopes and hillslides. Colluvium mantles the slope of the site, but is generally less than 2 feet in thickness.

Undocumented artificial fill is present as backfill for the fault trenches of former investigations, as well as this investigation. Artificial fill is also present with and in the vicinity of the San Gorgonio Pass Water Agency Pipeline easement that transgresses the northern portion of the site. Some of the fault trenches indicate that past agricultural activities and trenching have spilled fill along the edges of the flat-topped ridges in the southern half of the site.

The geologic units mapped at the site are discussed below, in order from youngest to oldest:

Undocumented Fill (afu):

Where observed, this unit consists of a heterogeneous mixture of pebbly sand, silty sand, sandy silt and coarse sand with cobbles and an occasional boulder. In addition to the minor undocumented fills within the fault trenches, spill fills associated with the former investigator's slope cuts are evident downslope. Historic aerial photo analyses and trenching have revealed that an east-west trending ridge located near the eastern property boundary has been cut and "flat-topped" for agricultural purposes.

Younger Alluvium (Qya):

Younger alluvial units outcrop in the active drainages, which generally trend southerly to southwesterly onsite. These younger alluvial materials consisted of silty sands and lesser gravelly sands. Local outcrops within active drainages reveal a highly variable lithology for this unit, which is consistent with the deposition of finer materials during relatively quiescent periods and very coarse materials during periodic storm events.

Older Alluvium (Qoa):

Older alluvial units onsite consist of reddish brown clayey sands and yellowish brown silty sands. Both units have frequent gravel and gravelly sand lenses. The reddish brown clayey sands are highly oxidized and re-mineralized, suggesting a significant difference in age. These units are usually massive to poorly-bedded with localized well-bedded gravels. Where bedded, the units displayed horizontal or near horizontal bedding, except where proximal to faulting, where dips of up to 45 degrees were observed.

San Timoteo Formation (Qtst):

The San Timoteo Formation is located primarily northeast of the South Branch of the Cherry Valley Fault and consists predominately of cobble-boulder conglomerate with minor inter-bedded fine to medium sandstones. The conglomerate matrix is generally moderately to well-cemented and the inter-bedded sandstones are relatively thin compared to the thick massive conglomerates. Clasts are moderately weathered to decomposed and consist of granodiorite, greenstone, quartzite and monzogranite from the adjacent Transverse Ranges. The unit is generally matrix supported with localized clast supported lenses and is massive to poorly-bedded.

Structurally, beds dip at shallow angles to the southwest except near the North Branch of the Cherry Valley Fault and other faults in the northeast portion of the site, where beds dip nearly vertical.

These fluviatile sediments were deposited during the Pliocene and Pleistocene time when the depositional basin was subsiding, uplift of the San Bernardino and San Jacinto Mountains was occurring and movements within the San Andreas and San Jacinto fault systems were taking place (Morton & Matti, 1993).

Two main faults, the north and south branches of the Cherry Valley Fault Zone (CVFZ) have been mapped onsite. Though these two main breaks help define the zone, lineaments and geomorphic evidence suggest a zone of faulting and deformation associated with the CVFZ that may be as wide as 500-700 feet.

North Branch CVFZ:

The north branch is characterized by steeply dipping (near vertical) faulting that is located roughly 200-300 feet north-northeast of and roughly parallel to, the South Branch. The fault generally juxtaposes massive conglomeratic sandstone units within the San Timoteo Formation making relative offset difficult to determine. This fault was not previously trenched due to its location, over 200 feet north of the conceptual development footprint.

South Branch CVFZ:

This fault has been exposed in CHJ trenches and road cuts and in Neblett trenches and in a road cut. It is characterized by a northwest to east-west trending, north-dipping reverse fault. Dips are low to moderate angle (10-45 degrees). Drag folding along the main rupture observed and logged b both CHJ and N&A indicate reverse/thrust kinematics. Relative offsets were not measurable in exposures and trenches, but are significant as the fault juxtaposes older San Timoteo (Plio-Pleistocene) over relatively younger alluvial units. Significant changes in stratigraphy, topography, geomorphology and streamflow direction are present along the entire mapped trace of this fault. This fault was the central focus of N&A's report, due to its potential effect on the conceptual development footprint.

This firm concurs with N&A results of their September 22, 2008 report and their structural setback zone located 50 feet south of, and 100 feet to the north of, the South Branch.

4.0 Proposed Infiltration Basin Facilities

The basins proposed for infiltration are located along the site's southern perimeter subjacent to Cherry Valley Boulevard as shown on Figure 6. There are three basins, one in the southeast corner of the site and two inter-connected by storm drain pipes along the southern boundary, which flow westerly. The two basins subjacent to Cherry Valley Blvd. consist of water quality swales and low flow mitigation areas inter-connected by storm drain pipes.

5.0 Investigative Techniques

5.1 Hollowstem Borings

Numerous hollowstem borings were excavated by previous consultants to determine the properties of the underlying soils. Depths ranged from 25 ft. to 60 ft. and samples were collected at select depths for laboratory analyses. Pertinent borings have been plotted on Figure 6 in the vicinity of the infiltration basins.

5.2 Cone Penetrometer Tests (CPT's)

Additionally, several cone penetration soundings (CPT) were performed by others within the site to supplement the borings, as well as to confirm the data obtained from the borings. Pertinent CPT's have been plotted on Figure 6 in the vicinity of the infiltration basins.

5.3 Double Ring Infiltrometer Tests

Four double ring infiltrometer tests were performed at the locations shown on Figure 6 designated as IP-1 through IP-4. The tests were performed in accordance with the 2011 Model WQMP Technical Guidance Document and ASTM D3385 .

Since the tests are required to be performed 2 feet below the proposed elevation of the floor of the basin (infiltration system) and the floor of the basins generally are 25 ft.± below existing grade, excavations were required.

A Hitachi 555 excavator was utilized to excavate the test site. The slopes were benched mid-height for safety purposed. The logs of the test site are presented in Appendix II.

The double ring infiltrometer consists of a 12-inch inner ring and a 24-inch outer ring. Utilizing the constant head method, water is consistently added to both the outer and inner rings to maintain a constant level throughout the testing. The volume of water needed to maintain the fixed level of the inner ring is measured. A graduated Mariotte tube with flow control system was used to measure the volume of water infiltrated during each time interval. Several trials were performed until the steady state infiltration is observed (i.e., percent change in measured infiltration rate between two successive trials is less than 10 percent). After each trial, the water level was readjusted to the initial level.

The volume of liquid used during each measured time interval is converted into an incremental infiltration velocity (infiltration rate) using the following equation:

$I_t = V/(A*t)$ *where:*

I_t = tested infiltration rate, in./hr.

V = volume of water used during time interval to maintain constant head in the inner ring, $in.^3$

A = area of inner ring, $in.^2$

t = time interval, hr.

5.4 Well Permeameter Test

We excavated an 8-inch diameter boring to a depth of 46 ft. at the location shown on Figure 6 within the proposed infiltration basin. The depth was in accordance with the test being performed 2 ft. below the bottom of the basin floor (elevation 2464).

In order to prevent potential disturbance due to caving during the testing, a 2" diameter PVC was inserted into the hole with the bottom 20 ft. screened with 0.20" screen surrounded by #3 gravel/sand mixture to facilitate the water move quickly towards the boundaries of the drilled hole. The top 30 ft. was solid 2" PVC pipe.

Initially the hole was filled with water approximately about 20 feet above the bottom (to the full height of screened pipe) and waited until the entire water in the hole percolated. Then several trials were made at initial water height at 10 feet above the bottom of the hole to correspond to the design water level of the infiltration basin at approximately 10 feet above the basin bottom elevation. Our observation indicated that two consecutive measurements show that more than 6 inches of water seeps away in less than 25 minutes. Therefore, measurements were taken every 10 minutes. Several trials were performed until a slower and steady state of percolation is observed. After each trial, water level in the hole was readjusted to an elevation 10 feet above the bottom of the hole. A water meter with a sensor was utilized to measure the water depth during the test.

The test performed is in general conformance with The Well Permeameter Method of the United States Bureau of Reclamation (USBR 7300-89). This test measures the rate at which water flows into the soil under constant-head flow conditions and is used to determine field-saturated hydraulic conductivity. The rate determined is a "percolation rate and uses special equations to establish an infiltration rate from the data produced. The measured percolation rate was converted into infiltrated rate using "Porchet Method, aka Inverse Borehole Method" as shown below:

$I_t = \Delta H (60r)/ \Delta t(r + 2 H_{ave})$ *where:*

I_t – Converted Infiltration Rate (in/hr)

ΔH- Change in water height over the time interval (inches)

r – Test hole radius (inches)

Δt – Time interval (minutes)

H_{ave} – Average water head (water height) over the time interval (inches)

6.0 Results of Investigation

The results of double ring infiltrometer test performed in locations IF-1 through IF-4 are summarized in the following table:

Test Location	No of Trials Performed Until Steady State	Time Interval	Volume of Water Needed in Inner Ring in Each Trial at Steady State	Infiltration Rate (in./hr)
IF-1	18	5 mins (0.0833 hr)	14 $in.^3$	1.5 in./hr
IF-2	16	5 mins (0.0833 hr)	28 $in.^3$	3.0 in./hr
IF-3	16	5 mins (0.0833 hr)	23 $in.^3$	2.4 in./hr
IF-4	20	5 mins (0.0833 hr)	11.5 $in.^3$	1.2 in./hr

The results of the well permeameter test results at the steady state (number of total trials performed until steady state percolations is 16) are as follows:

Hole diameter = 8 inches

Total hole depth = 46 feet (552 inches)

Initial water depth at steady state = 36 feet (432 inches)

Final Water depth at steady state = 37.55 feet (450.6 inches)

Time interval Δt = 10 minutes

In order to calculate the infiltration rate as described in Section 5.4, the above data should be reduced as below:

r = 4 inches

H_{ave} = [(552-432) + (552-450.6)]/2 = 110.7 inches

ΔH = 450.6-432 = 18.6 inches

Calculated Infiltration Rate $I_t = \Delta H (60r)/ \Delta t(r + 2 H_{ave})$

$I_t = (18.6 \text{ in}) (60 \text{ min/hr}) (4 \text{ in})/ (10 \text{ min}) ((4 \text{ in}) + 2 (110.7 \text{ in}))$

$I_t = 2.0 \text{ in./hr}$

7.0 Recommendations

Based on our field infiltration study performed using double ring infiltrometer and well permeameter methods, the infiltration rate of the site soils at the tested locations ranges from 1.2 in./hr to 3.0 in./hr. As a reasonably conservative approach, the minimum measured field infiltration rate of 1.2 in/hr. may be considered in the initial feasibility screening stage. A factor of safety not less than 2.0 should be used to compute the design infiltration rate.

8.0 Limitations

This report has been prepared for the exclusive use of TSG Cherry Valley, L.P. relative to the design and construction of the proposed plan. This report is not intended for other parties, and it may not contain sufficient information for other purposes. The recommendations presented herein are of a general/conceptual nature and will be refined and detailed in forthcoming reports specific to various aspects of development. As such, the current recommendations may be subject to revision as additional detail of the project is made and additional data is developed, as well as in response to jurisdictional review requirements. This report is based on the plan as described and the information obtained as described herein.

The Owner or Owner Representative should make sure that the information and preliminary recommendations presented in this report are brought to the attention of the Project Architect and Project Engineer and incorporated into the project plans.

The findings contained in this report are based upon our evaluation and interpretation of the information obtained from the infiltration test pits and boring, as well as the geotechnical engineering analyses. The opinions and recommendations provided were based on the assumption that the geotechnical conditions, which exist across the site, are similar to those observed in the test excavations. The condition and characteristics of the sub-surface materials at locations and depths other than those excavated and observed my be different and no representations are made as to their quality and engineering properties. Should any conditions encountered during constuction differ from those

described herein, this office should be contacted immediately for evaluation of the actual conditions and for appropriate recommendations prior to continuation of work.

The finding and recommendations presented herein were obtained in accordance with currently accepted professional engineering principles and practice in the field of geologic and geotechnical engineering and reflect our best professional judgment. We make no other warranty, either expressed or implied.

This report is subject to review by the controlling authorities. If you have any questions or require additional information, please contact the undersigned.

We appreciate the opportunity to be of service and look forward to working with you and the other project consultants.

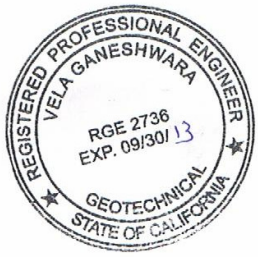
{Signatures on following page}

Respectfully submitted,
GINTER & ASSOCIATES, INC.

By:_____
Dave Ginter R.G., C.E.G.
Principal Engineering Geologist/President



By:_____
Vela "Ganesh" Ganeshwara, P.E., G.E.
Consulting Geotechnical Engineer



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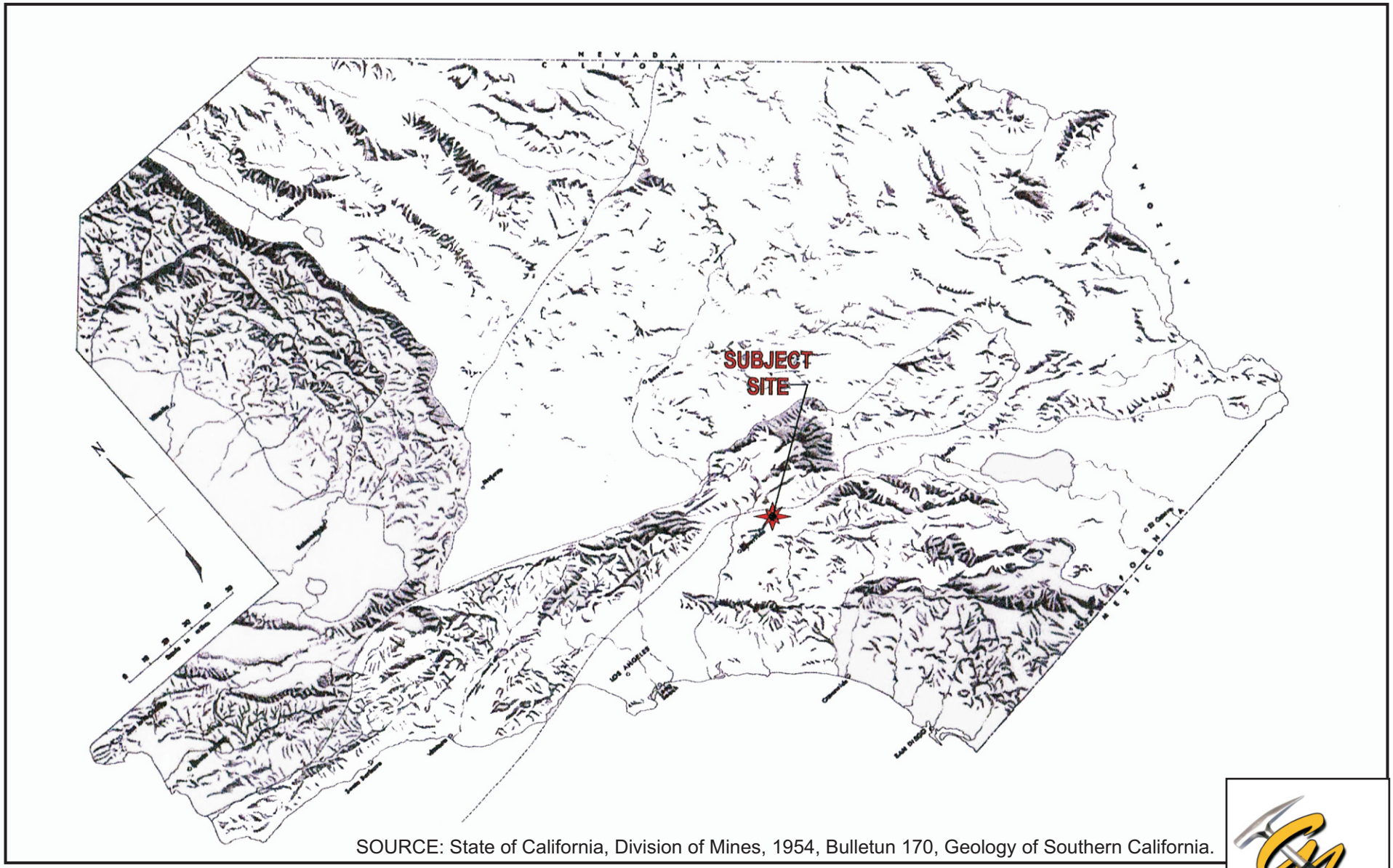


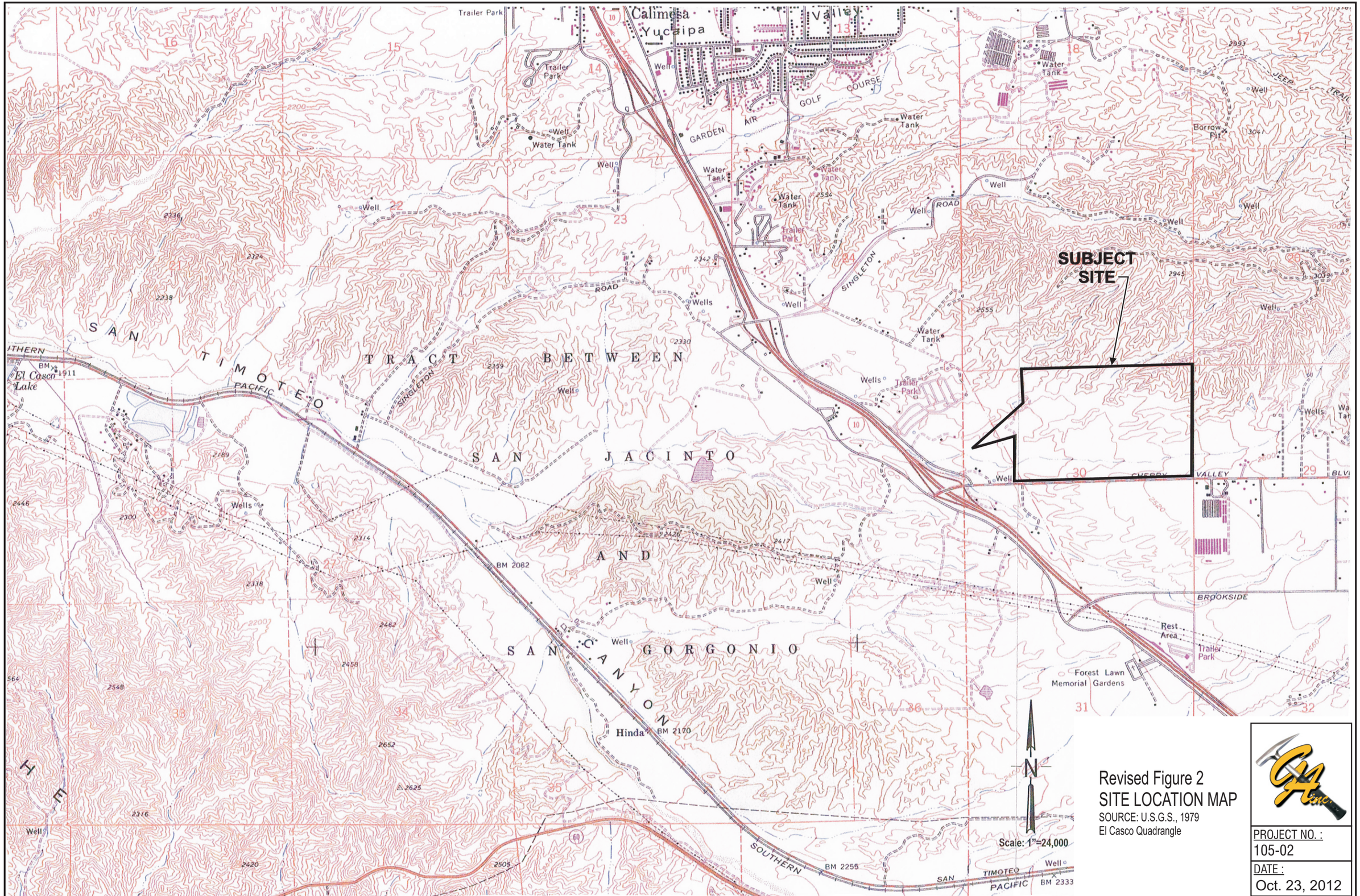
SOURCE: State of California, Division of Mines, 1954, Bulletun 170, Geology of Southern California.

Revised Figure 1
SUBJECT SITE'S LOCATION NEAR THE BOUNDARY OF THE TRANSVERSE RANGES AND PENINSULAR RANGES NATURAL PROVINCES.

PROJECT NO. :
105-02

DATE :
Oct. 23, 2012

CVAR_10176

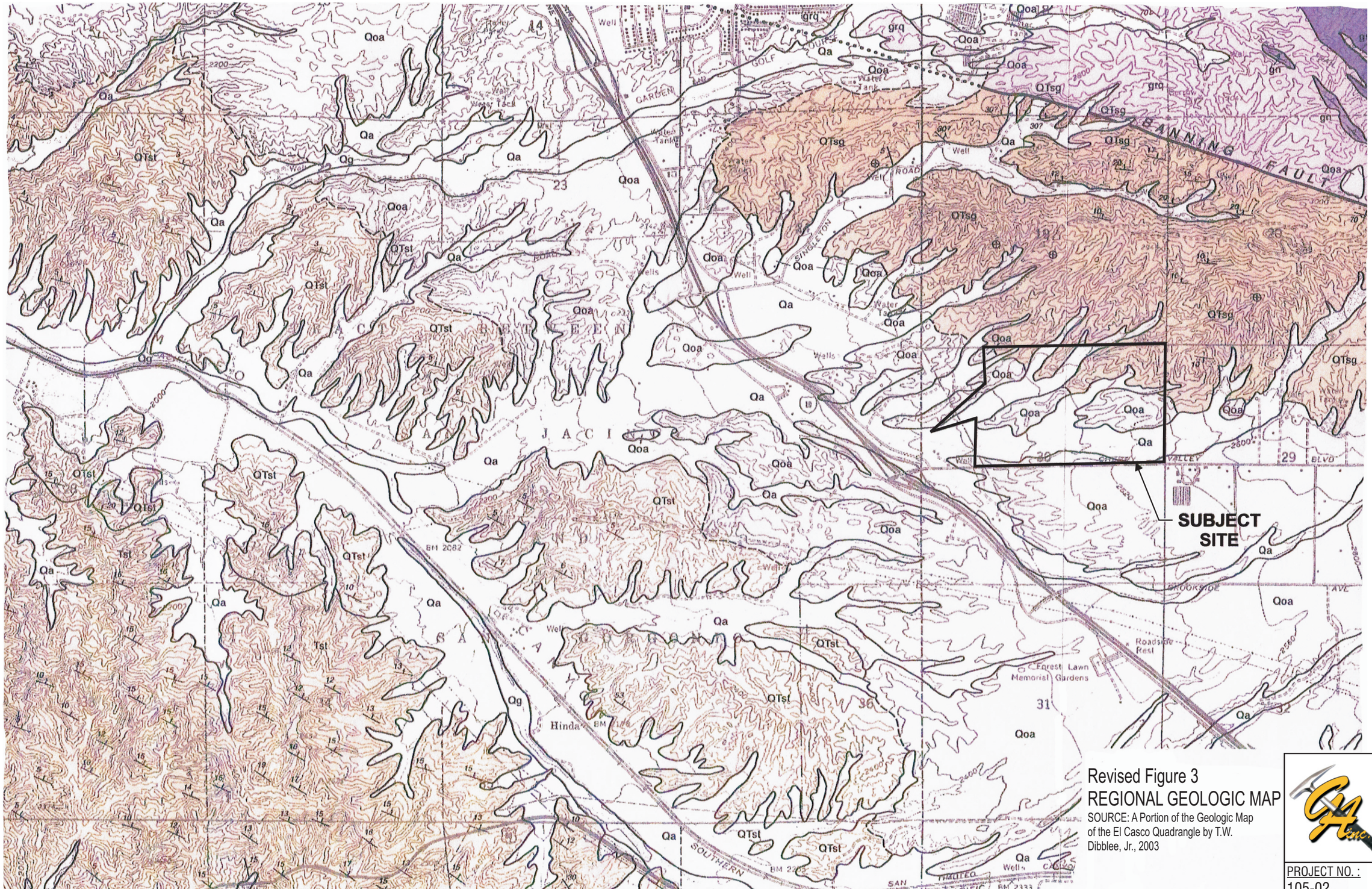


Revised Figure 2
SITE LOCATION MAP
SOURCE: U.S.G.S., 1979
El Casco Quadrangle

PROJECT NO. :
105-02

DATE :
Oct. 23, 2012

CVAR_10177


Qoa
Qa
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BANNING FAULT
SUBJECT SITE
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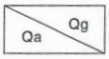
EL CASCO MAP (DF-113)

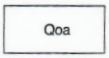
LEGEND



SURFICIAL SEDIMENTS
Unindurated, undissected

Qg *Alluvial gravel and sand of stream channels*
Qa *Alluvial sand, gravel and clay of level areas, covered by residual soil*

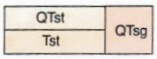
— *UNCONFORMITY* —



OLDER SURFICIAL SEDIMENTS
Weakly indurated alluvial fan deposits derived from local terrains

Qoa *Alluvial gravel and sand, light reddish brown and of granitic and gneissic detritus of San Bernardino Mountains in north areas, brownish gray in south area; top surface slopes slightly from source terrains*

— *UNCONFORMITY* —



SAN TIMOTEO FORMATION
(San Timoteo Beds of Frick, 1921) Stream laid alluvial sediments of detritus derived from plutonic and metamorphic rocks of San Bernadino Mountains NE of Banning Fault and deposited on plutonic and meta-sedimentary rocks of Peninsular Ranges NE of San Jacinto Fault zone; weakly indurated; upper part yielded verterbrate fauna diagnostic of Blancan Stage, Plio-Pleistocene (Frick, 1921, Savage et. al. 1954) or Irvingtonian Stage, earliest Pleistocene, (Repenningа 1987) lower or main part inferred to be of Pliocene age (Morton and Matti, 2001)

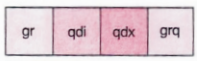
QTst *Upper part, sandstone, light gray to tan, fine to coarse grained arkosic and minor conglomerate of mostly granitic detritus, some gneissic and quartzitic detritus; includes thin layers of soft greenish to light reddish silty claystone, overlain by older alluvium*
QTsg *Conglomerate/fanglomerate, brownish gray, crudely bedded, of poorly sorted subrounded clasts of granitic and gneissic detritus in sandy matrix, base unexposed, overlain by older alluvium; probably proximal facies of upper part (**Qtst**); exposed adjacent to Banning fault*
Tst *Main part (middle part of Morton and Matti, 2001) sandstone, minor conglomerate and claystone, similar to those of upper part; comformably overlain by upper part (**QTst**), conformably underlain by Mount Eden Formation (Tme), but thins and buttresses eastward onto basement rocks as shown.*



MOUNT EDEN FORMATION
(of Frazier, 1931), present only near and SE of Mount Eden, stream laid sediments, clasts derived from basement rocks of Peninsular Ranges, moderately lithified, conformable below San Timateo Formation, overlies basement rocks; mostly sandstone,lithified divided into 4 members by Morton and Matti 2001; one member contains vertebrate fauna diagnostic of late Hemphillian Stage, middle Miocene, dated about 5.3 MA (Morton and Matti 2001)

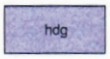
Tme *Sandstone, medium grained, arkosic, includes interbeds of micaceous silty shale, strata light gray to light reddish maroon, locally contains concretions*
Tmg *Granitic conglomerate, composed of subrounded to subangular boulders and cobbles of light gray massive biotite-hornblende quartz diorite (tonalite), unsorted; form lenses within and at top of unit Tme, derived from quartz diorite to NE (Morton and Mattei, 2001)*

— *UNCONFORMITY* —



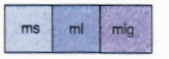
PLUTONIC ROCKS
medium grained holocrystalline granitic rocks; age, Cretaceous

gr *Granitic rock of Mount Eden, granite to monzo-granite (Morton and Matti, 2001) composed of quartz, potassic feldspar and sodic plagioclase feldspar in nearly equal amounts but with somewhat more potassic feldspar, scattered flakes of white mica and almost no mafic minerals, nearly white, massive; intrusive into meta-sedimentary rocks; exposed only near and SE of Mount Eden*
qdi *Granodiorite of east area; composed of quartz, potassic feldspar and sodic plagioclase feldspar in nearly equal amounts but with somewhat more sodic plagioclase feldspar, minor biotite, light gray, massive to very faintly gneissoid*
qdx *Quartz diorite (Bonzal Tonalite of Larsen, 1948) composed of about 1/3 quartz, 2/3 sodic plagioclase feldspar, minor potassic feldspar and 5-10% biotite and hornblende, light gray gneissoid, with abundant dark gray discoid inclusions (xenoliths) parallel to gneissoid foliation; exposed only at SW corner of quadrangle*
grq *Granitic rock exposed NE of Banning fault at NE corner, of quartz monzonite composition, of quartz, potassic feldspar and sodic plagioclasefeldspar in nearly equal amounts and about 5-10% biotite as evenly scattered flakes, light gray, massive, somewhat incoherent*



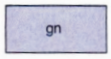
HORNBLENDE DIORITE GABBRO

hdg *Mafic rock exposed at NE corner of quadrangle NE of Banning fault; gray-black, medium grained, massive, composed of about 75% hornblende, 0-30% plagioclase feldspar, locally contains green epidote as secondary veinlets; age Mesozoic (Cretaceous)*



METASEDIMENTARY ROCKS
Remnants of metasedimentary petrolith of San Jacinto Mountains, exposed only near and SE of Mount Eden in this quadrangle; age inferred to be Paleozoic (Morton and Matti; 2001)

ms *Mica schist-phyllite, composed of biotite mica, feldspar and quartz, ranges to fine grained gneiss, locally includes calcsilicate skarn, dark gray, foliated along relict bedding planes*
ml *Marble, of calcite and dolomite, pale gray to white, medium to coarse grained, indistinctly bedded, locally contains skarn of diopside, wollastonite, fosterite, garnet and graphite (Morton and Matti 2001) occurs as layers and lenses in unit **ms***
mig *Mixture of metasedimentary rocks (schist–gneiss–**ms**) with quartz diorite (**qdx**); complexly migmatized, at southwest corner*



GNEISS

gn *Gray quartz-feldspar-biotite gneiss, thin bedded, hard but brittle: age, Precambrian (?), occurs as small pendant remnants engulfed in unit **grq** NE of Banning fault*

Holocene
Pleistocene
Pliocene
Miocene
QUATERNARY
TERTIARY
CENOZOIC
CRETACEOUS
MESOZOIC
PALEOZOIC (?)
PRECAMBRIAN (?) TO MESOZOIC

DF-113 GEOLOGY EL CASCO QUADRANGLE

Revised Figure 4
LEGEND FOR Revised Figure 3-
REGIONAL GEOLOGIC MAP

SOURCE: A Portion of the Geologic Map of the El Casco Quadrangle by T.W. Dibblee, Jr., 2003

PROJECT NO. :
105-02

DATE :
Oct. 23, 2012

CVAR_10179

Photo of Simple Double Ring Infiltrometer

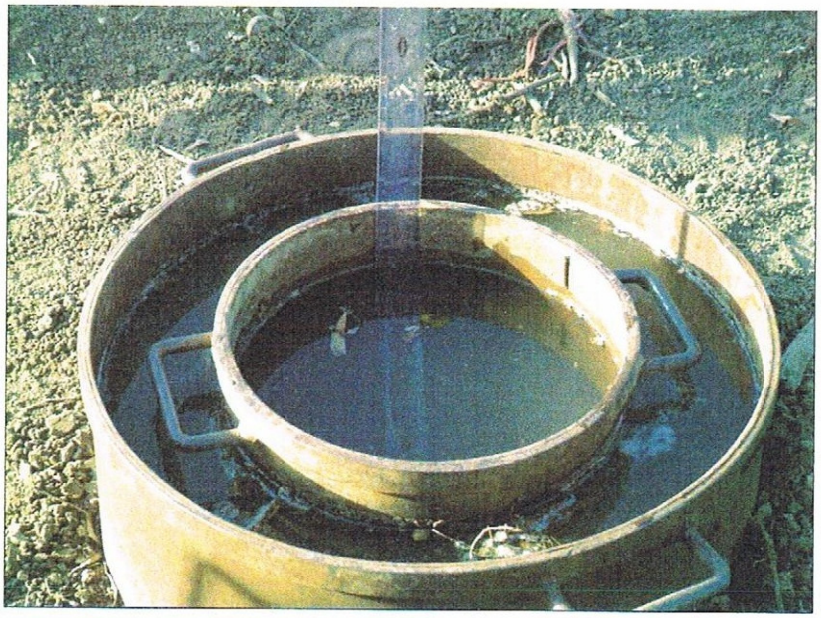
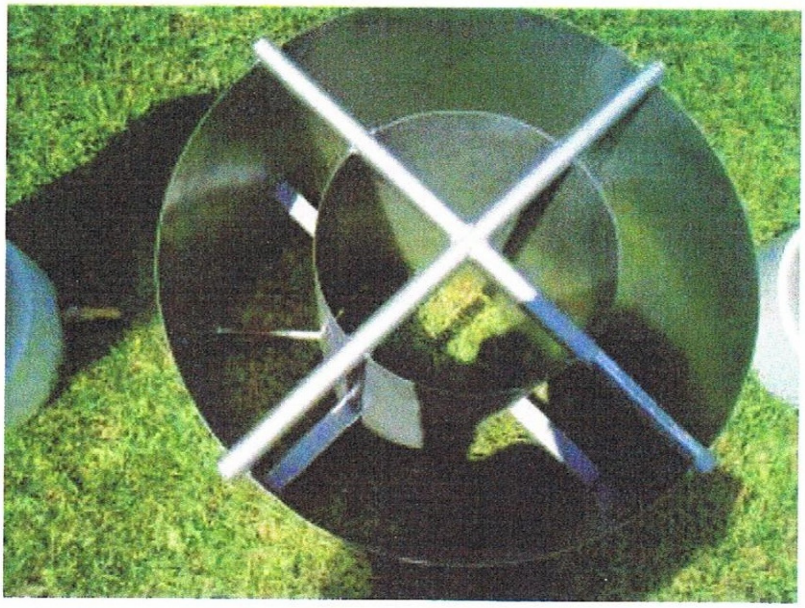


Photo of Pre-fabricated Double Ring Infiltrometer

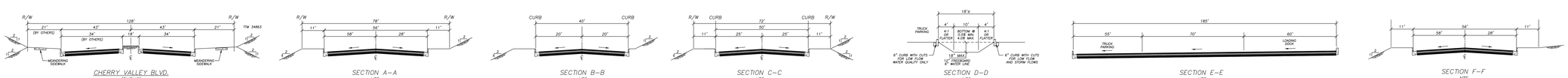


(Photo courtesy of Turf-Tec International)

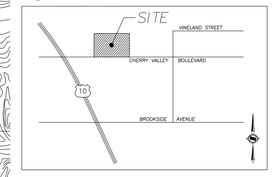
Figure 5
Double Ring Infiltration Apparatus

CVAR_10180





VICINITY MAP



UTILITY PROVIDERS & CONTACTS

ELECTRIC: SOUTHERN CALIFORNIA EDISON
P.O. BOX 6400
RANCHO CUCAMONGA, CA. 91729
(800) 655-4555

GAS: SOUTHERN CALIFORNIA GAS COMPANY
P.O. BOX 3150
SAN DIMAS, CA. 91773
(800) 427-2200

WATER: BEAUMONT CHERRY VALLEY WATER DISTRICT
560 MAGNOLIA AVENUE
BEAUMONT, CA. 92223
(951) 845-9581

SEWER: ON-SITE WASTE WATER TREATMENT PLANT

TELEPHONE: VERIZON
P.O. BOX 30001
INGLEWOOD, CA. 90313
(800) 352-5151

CABLE T.V.: ADELPHIA
1971 W. REDLANDS BOULEVARD, SUITE B
REDLANDS, CA. 92373
(909) 890-0886

LEGEND

PROJECT BOUNDARY
PROPOSED RIGHT OF WAY
PROPOSED PARCEL LINE
PROPOSED CENTERLINE
600 PROPOSED CONTOUR LINE
TOP OF SLOPE
TOE OF SLOPE
DAYLIGHT LINE
PROPOSED EASEMENT
RETAINING WALL
CATCH BASIN
PROPOSED STORM DRAIN
PROPOSED WATER
PROPOSED SEWER
FLOW LINE
580 EXISTING CONTOUR
EXISTING EASEMENT
CLR CENTERLINE RADIUS
RTWL RETAINING WALL
ESMT. EASEMENT

LEGAL DESCRIPTION

IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, BEING A PORTION OF THE NORTH HALF OF SECTION 30, TOWNSHIP 2 SOUTH, RANGE 1 WEST, SAN BERNARDINO MERIDIAN, ACCORDING TO THE OFFICIAL PLAT THEREOF.

STATEMENT OF OWNERSHIP

I HEREBY STATE THAT THIS MAP WAS PREPARED UNDER MY SUPERVISION AND THAT THE OWNER OF RECORD HAS KNOWLEDGE OF AND CONSENTS TO THE FILING OF THIS MAP.

REGISTERED PROFESSIONAL ENGINEER
RAUL R. HUDDLESTON
No. 58020
Expires
C.I.V.I.L.
STATE OF CALIFORNIA

DATE

DATE	09-04-12
W.O.	3079-4
GROSS AREA	230.0 AC±
CONTOUR INTERVAL	2'
TOTAL LOTS	10

DATE	REVISION	BY
--	--	--

PARCEL SUMMARY

PARCEL NO.	GROSS ACREAGE
PARCEL 1	45.0
PARCEL 2	5.7
PARCEL 3	62.1
PARCEL 4	18.5
PARCEL 5	0.4
PARCEL 6	8.8
PARCEL 7	11.3
PARCEL 8	38.1
PARCEL 9	17.2
PARCEL 10	19.5
SUB TOTAL	226.6
ROAD	3.4
TOTAL	230.0

MAP DATE IDENTIFIER
STATE OF CALIFORNIA DEPARTMENT OF THE NAVY
09/04/12 BY: KB
STATE OF CALIFORNIA
10/23/12

FEET
0 50 100 200
0 1/2 1 2
INCHES

PREPARED FOR:

TSG CHERRY VALLEY, LP
8951 RESEARCH DRIVE
IRVINE, CA. 92618
(949) 417-1396

PREPARED BY:

HUNSAKER & ASSOCIATES
IRVINE, INC.
PLANNING • ENGINEERING • SURVEYING
Three Hughes • Irvine, CA 92618
PX: (949) 583-0739 PH: (949) 583-1010

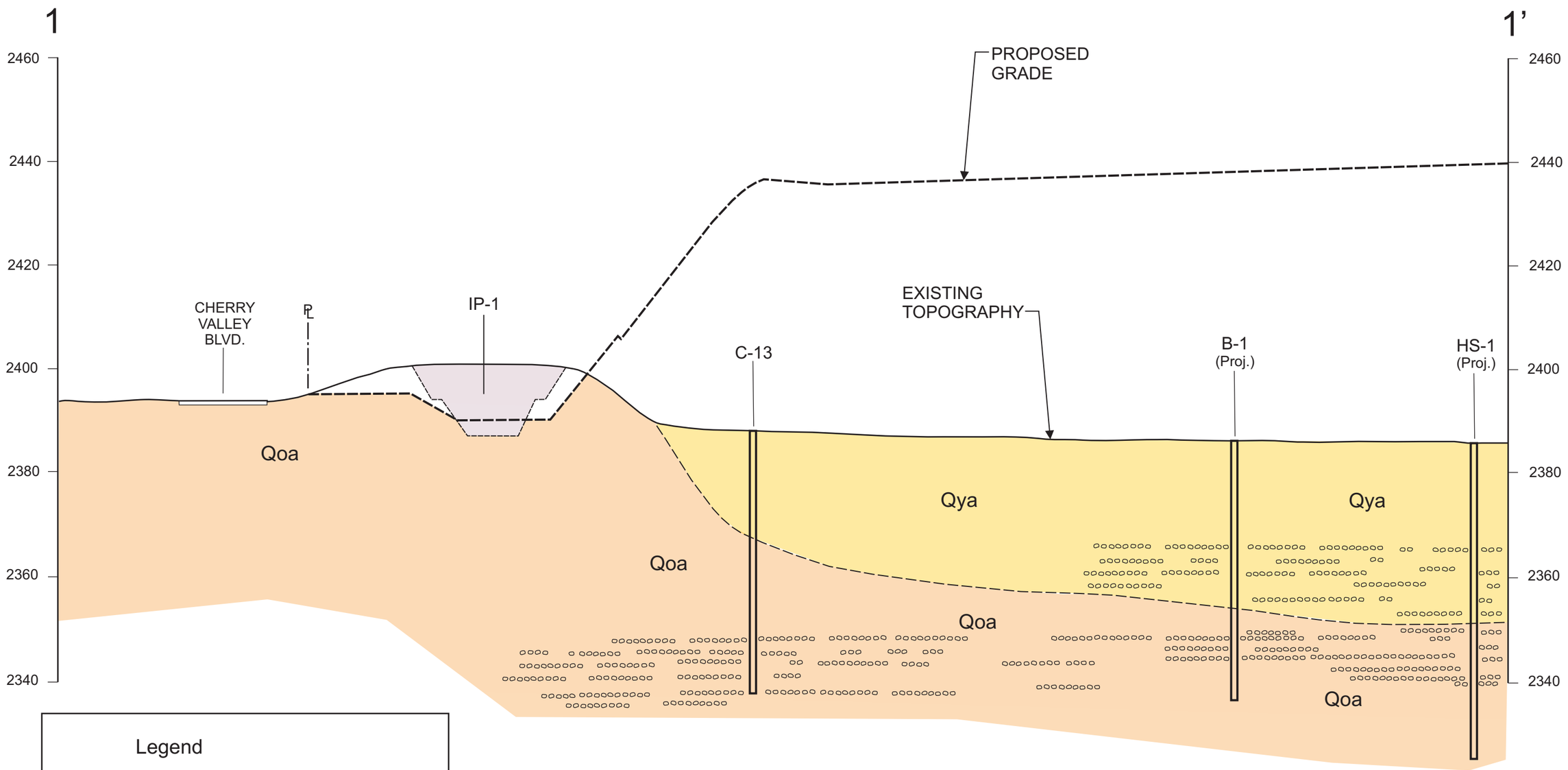
Revised
Figure 6
GEOTECHNICAL
MAP

PARCEL MAP NO. 36093

PROJECT NO.: 105-02
DATE: Oct. 23,2012

W.O. 3079-4 I-10 GATEWAY PLOT PLAN - PARCEL MAP NO. 36093 PM: BN: DOC.:

CVAR_10181



Legend

- YOUNG ALLUVIUM
- OLDER ALLUVIUM
- APPROXIMATE GEOLOGIC CONTACT
- GRAVELS AND GRAVELLY SAND
- INFILTRATION PIT EXCAVATION

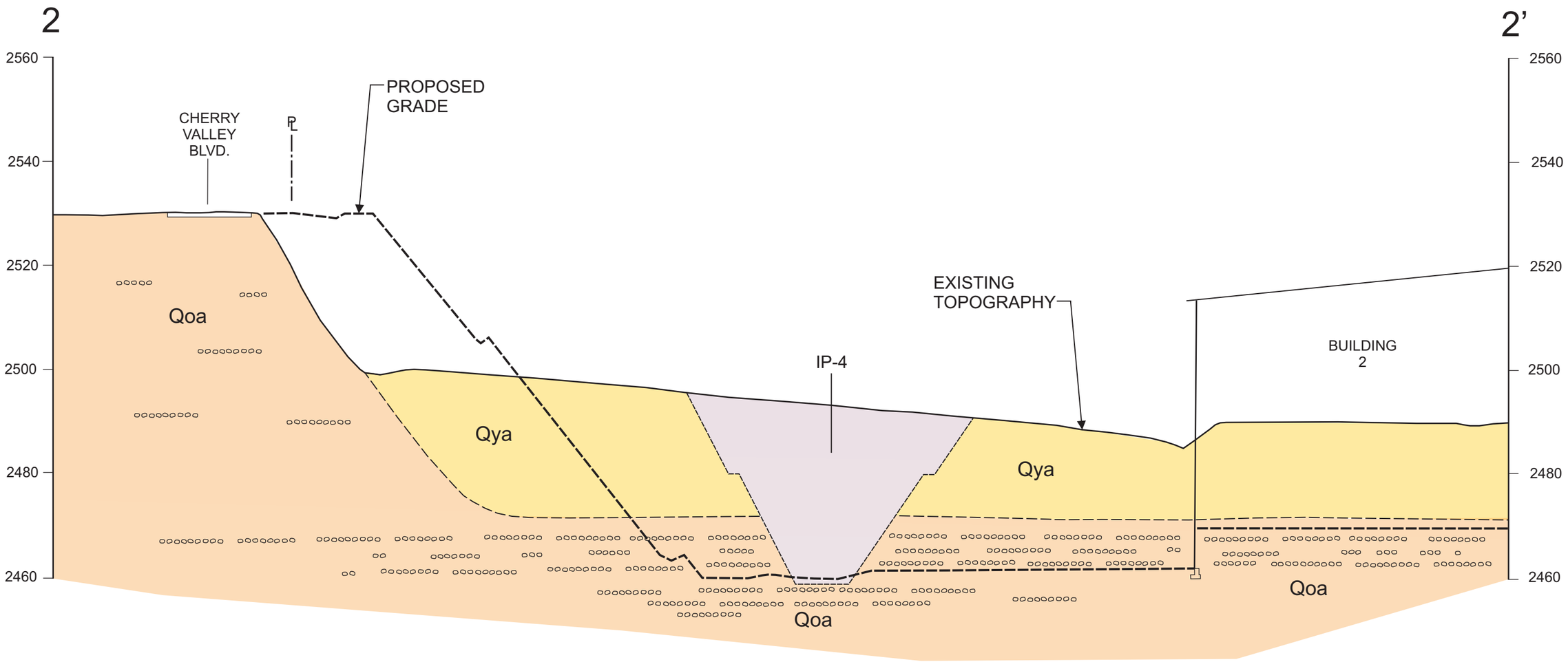
CROSS-SECTION 1-1'

HORIZONTAL SCALE: 1"=50'
VERTICAL SCALE: 1"=20'

PROJECT NO. :
105-02

DATE :
Oct. 23, 2012

CVAR_10182



***NOTE:** SEE CROSS-SECTION 1-1'
FOR LEGEND

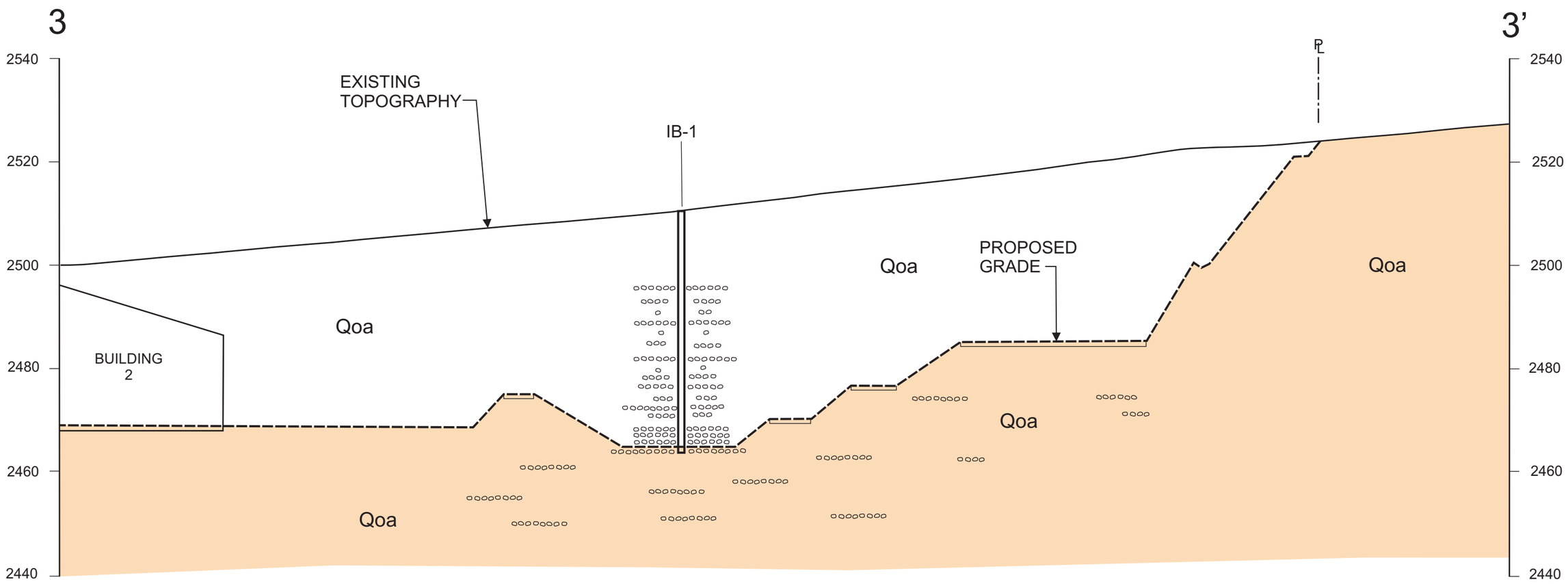
CROSS-SECTION 2-2'

HORIZONTAL SCALE: 1"=50'
VERTICAL SCALE: 1"=20'

PROJECT NO. :
105-02

DATE :
Oct. 23, 2012

CVAR_10183



CROSS-SECTION 3-3'

HORIZONTAL SCALE: 1"=50'
VERTICAL SCALE: 1"=20'

***NOTE:** SEE CROSS-SECTION 1-1'
FOR LEGEND

PROJECT NO. :
105-02
DATE :
Oct. 23, 2012

CVAR_10184

GINTER AND ASSOCIATES, INC
LOG OF EXPLORATORY BORING

PROJECT #: 105-02
DATE STARTED: 9/24/12
DATE FINISHED: 9/24/12
DRILLER: GREGG
TYPE OF DRILL RIG: Hollow Stem

PROJECT NAME: CALIMESA
GROUND ELEV: 2509
KELLEY WT/DRIVE/DROP: 140 lb./30"

BORING DESIG. IB-1
LOGGED BY: BW
SHEET 1 OF 1

NOTES: 2" PVC Casing with 0.020 Screen and # 3 Sand.

DEPTH (ft.)	ELEV. (ft.)	CLASSIFICATION	SAMPLE TYPE	BLOWS/6"	GRAPHIC LOG	DESCRIPTION	DRY DENSITY lb/ft³	MOISTURE CONTENT (%)
10			SPT	3/4/6		**Older Alluvium (Qoa):** Silty Sand and Sand, reddish brown and grayish brown, slightly moist, loose to medium dense.		
20			SPT	6/6/8		Gravel and Gravelly Sand, reddish brown and grayish brown, slightly moist, medium dense to dense. Gravelly Sand, reddish brown and grayish brown, slightly moist, occasional pebble clasts, medium dense to dense.		
30			SPT	12/14/20		Gravelly Sand, reddish brown and grayish brown, slightly moist, occasional pebble clasts, medium dense to dense.		
40			SPT	10/13/20		Gravelly Sand, reddish brown and grayish brown, slightly moist, occasional pebble clasts, medium dense to dense.		
			SPT	7/8/11		As at 40 Feet with slight increase in pebble size clasts		
50						Total Depth 46 Feet No Water No Caving		

105-02 IB-1.jpg

CVAR_10185

GEOTECHNICAL BORING LOG

PROJECT NO. 665-000-01
DATE STARTED 7/31/08
DATE FINISHED 7/31/08
DRILLER BC2
TYPE OF DRILL RIG Hollow Stem

PROJECT NAME Calimesa TSG
GROUND ELEV.(FT)
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. HS-1
LOGGED BY BW
NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	Other Tests
		SPT	8/6/5			**Alluvium: (Qal)** Silty Sand, yellowish brown, slightly moist, loose, occasional rootlets, fine-grained.				
5		R	16/11/8			Silty Sand, brown, slightly moist, loose, occasional rootlets, fine-grained.				
10		SPT	3/3/5			Silty Sand and lesser Gravelly Sand, slightly moist, loose, occasional pebble size clasts.	2.5			
15		R	5/6/7			Silty Sand and increasing Gravelly Sand, slightly moist, loose, occasional pebble size clasts.	2.7			
20		SPT	3/4/5			Gravelly Sand, yellowish brown, slightly moist, loose.	9.8			
25		R	6/11/11			Gravelly Sand, brown and grayish brown, moist, dense.	3.9	113.4	23	
		B								
30		SPT	4/7/6			Gravelly Sand, yellowish brown to olive brown, slightly moist, medium-dense.	4.3			
35		R	6//8/11			**Older Alluvium: (Qoa)** Finer Silty Sand yellowish brown to olive, moist, dense, with occasional Gravelly Sand lenses. Gravelly Sand and Clayey Sand, reddish brown, moist, dense.	8.2	109.8	43	

SAMPLE TYPES:
R RING (DRIVE) SAMPLE
S SPT (SPLIT SPOON) SAMPLE
B BULK SAMPLE T TUBE SAMPLE

Water Seepage
Groundwater
DS - Direct Shear
GS - Grain Size Analysis
EI - Expansion Index
CONS - Consolidation

NEBLETT & ASSOCIATES, INC.
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA 92649 714-840-8286

PLATE A-1

GEOTECHNICAL BORING LOG

PROJECT NO. 665-000-01
DATE STARTED 7/31/08
DATE FINISHED 7/31/08
DRILLER BC2
TYPE OF DRILL RIG Hollow Stem

PROJECT NAME Calimesa TSG
GROUND ELEV.(FT)
GW DEPTH (FT)
DRIVE WT.
DROP

BORING DESIG. HS-1
LOGGED BY BW
NOTE

DEPTH (feet)	ELEV.	SAMPLE TYPE	BLOWS/FT	LITHOLOGY	GROUP SYMBOL	GEOTECHNICAL DESCRIPTION	MOISTURE CONT. (%)	DRY (pcf) DENSITY	SAT-URATION (%)	Other Tests
		SPT	9/11/16			Gravelly Sand and lesser Silty Sand, brown to olive brown, moist, dense.	3.4			
45		R	21/41/50-3"			Clayey Sand and Silty Sand, reddish brown, moist, dense.	5.1	113.4	29	
50		SPT	8/6/9			Clayey Sand, reddish brown, moist, dense with lesser Gravelly Sand lenses, graysih brown, moist, dense.	19.6			
55						Difficulty Drilling 55-60 feet.				
60		SPT	41/50-3"			Clayey Sand and Silty Sand, reddish brown, moist, dense, occasional pebble size clasts. Total Depth 60.75 Feet. No Water.	9.9			

SAMPLE TYPES:
[R] RING (DRIVE) SAMPLE
[S] SPT (SPLIT SPOON) SAMPLE
[B] BULK SAMPLE [T] TUBE SAMPLE

Water Seepage
Groundwater
DS - Direct Shear
GS - Grain Size Analysis
EI - Expansion Index
CONS - Consolidation

NEBLETT & ASSOCIATES, INC.
4911 WARNER AVENUE, SUITE 218
HUNTINGTON BEACH, CA 92649 714-840-8286

PLATE A-2

EXPLORATORY BORING NO. B-20

Date Drilled: 7/8/05

Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61

Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A

Logged by: J.R.

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine to medium with coarse, olive brown	Qs				3.9		
				X		7	4.2	115	Ring
5				X		8	8.4	117	Ring
10				X		9	10.5	124	Ring
15		(SP-SM) Sand, fine to medium with coarse, gravel to 1", olive brown					3.5		
				X		21	4.8	117	Ring
20		(SM) Silty Sand, fine to medium with coarse, gravel to 1", and clay, red brown	Qya				4.5		
				X		11	3.3	121	Ring
25		END OF BORING							
		NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
30									
35									
40									
45									
50									
55									
60									
65									
70									

BORING LOG 75 FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3

Enclosure B-20

CVAR_10188

EXPLORATORY BORING NO. 21

Date Drilled: 7/8/05

Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61

Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A

Logged by: J.R.

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SP-SM) Sand, fine to medium with silt, olive brown	Qs				3.5		
						12	5.8	112	Ring
		(SM) Silty Sand, fine to medium, olive brown					10.5		
5						5	9.7	107	Ring
10						11	10.8	118	Ring
		(SM) Silty Sand, fine to medium with coarse and gravel to 1/2", olive brown					3.4		
15						12	4.2	125	Ring
20						21	7.0	117	Ring
		(SP) Sand, fine to medium with coarse and gravel to 1", light olive brown	Qya				3.0		
25						19	9.2	119	Ring
		END OF BORING							
30		NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
35									
40									
45									
50									
55									
60									
65									
70									

BORING LOG 75 FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3

Enclosure B-21

CVAR_10189

EXPLORATORY BORING NO. 1

Date Drilled: 8/11/04

Client: TSG Cherry Valley, LP

Equipment: CME 55 Drill Rig

Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A

Logged by: J.R.

Measured Depth to Water(ft): N/A

DEPTH (ft)	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0	(SM) Silty Sand, fine to medium, brown	Qs				4.1		SA, MDC, Cor.
					11	4.3	118	Ring
5					8	9.4	100	Ring, Consol, DS
10					11	4.5	112	Ring
15					8	6.6	113	Ring
20	(SP) Sand, fine to medium with coarse and gravel to 1", brown	Qya				4.1		
					13	2.3	106	Ring
25	(SM) Silty Sand, fine with gravel to 1/2", brown	Qoa			26	2.9	114	Ring
						7.1		
30	(SP) Sand, fine to medium with coarse, brown				30	4.7	118	Ring
						2.9		
35	(SP) Sand, fine to medium with coarse, brown				21	2.9	114	Ring
	(SM) Silty Sand, fine with medium, coarse, and gravel to 1/2", brown					5.0		
40					18	5.6	116	Ring
45					33	4.1	115	Ring
50	(SP) Sand, fine to medium with coarse and gravel to 3/8", olive brown				34	6.1	125	Ring
						2.5		
55	END OF BORING							
	NO BEDROCK, NO REFUSAL, NO FILL SLIGHT CAVING, NO GROUNDWATER							
60								
65								
70								

BORING_LOG_75_FT_04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3

Enclosure B-1

CVAR_10190

EXPLORATORY BORING NO. B-28

Date Drilled: 7/15/05

Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61

Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A

Logged by: J.R.

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine to medium, dark olive brown	Qs				7.7		
				X		3	12.0	109	Ring
5									
				X		4	9.3	113	Ring
10									
				X		7	10.3	115	Ring
15		(SP-SM) Sand, fine to medium with coarse, gravel to 1/2", olive brown	Qya				4.8		
				X		16	4.4	114	Ring
20		(SM) Silty Sand, fine to medium, olive brown					8.8		
				X		6	9.2	112	Ring
25									
				X		---	11.3	119	Ring
30		END OF BORING							
		NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
35									
40									
45									
50									
55									
60									
65									
70									

BORING_LOG_75_FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3

Enclosure B-28

CVAR_10191

EXPLORATORY BORING NO. B-29

Date Drilled: 7/15/05

Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61

Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A

Logged by: J.R.

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
							1.9		
		(SM) Silty Sand, fine to medium with coarse and gravel to 1/2", light olive brown	Qya	X		11	2.9	116	Ring
5				X		2	7.1	112	Ring
							3.9		
10		(SP-SM) Sand, fine to medium with coarse, olive gray		X		10	4.4	109	Ring
		(SM) Silty Sand, fine to coarse with gravel to 3", olive brown	Qoa						
15				X		20	4.1	120	Ring
							11.2		
20		(SM) Silty Sand, fine to medium with coarse and gravel to 2", red brown		X		5	11.6	122	Ring
							11.5		
25		(SM) Silty Sand, fine to medium with coarse and clay, yellow brown		X		11	12.0	125	Ring
							6.5		
30		(SM) Silty Sand, fine to medium with coarse and gravel to 1", yellow brown		X		35	7.0	121	Ring
		END OF BORING							
35		NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
40									
45									
50									
55									
60									
65									
70									

BORING_LOG_75_FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3

Enclosure B-29

CVAR_10192

EXPLORATORY BORING NO. B-31

Date Drilled: 7/15/05

Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61

Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A

Logged by: J.R.

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
							5.1		
		(SM) Silty Sand, fine to medium with coarse and gravel, olive brown	Qya	X		4	5.7		SPT
5				X		5	9.1		SPT
10		(SP-SM) Sand, fine to medium with coarse, silt, and gravel to 3/4", olive gray	Qoa	X		7	5.2		SPT
15				X		19	3.4		SPT
20				X		32	4.3		SPT
25		(SM) Silty Sand, fine to medium with coarse and gravel to 2", olive brown		X		25	5.3		SPT
30		(SP) Sand, fine to medium with coarse and silt, olive gray		X		26	3.4		SPT
35		(SM) Silty Sand, fine to medium with coarse and gravel to 2", olive gray		X		35	4.3		SPT
40		(SM) Silty Sand, fine to medium with coarse and gravel to 3/4", olive brown		X		24	7.1		SPT
45		(SM) Silty Sand, fine to medium, olive brown		X		26	7.2		SPT
50				X		29	7.4		SPT
55		END OF BORING NO REFUSAL NO BEDROCK FILL TO 9.0' SLIGHT CAVING NO FREE GROUNDWATER							
60									
65									
70									

BORING LOG .75 FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3

Enclosure B-31

CVAR_10193

EXPLORATORY BORING NO. B-32

Date Drilled: 7/15/05

Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61

Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A

Logged by: J.R.

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine to medium, light olive brown	Qya				2.9		
				X		3	4.5	104	Ring
5							3.5		
		(SP-SM) Sand, fine to medium with coarse and gravel to 2", olive gray		X		7	3.2	110	Ring
10				X		11	4.1	112	Ring
		(SP) Sand, fine to coarse with gravel to 1", olive gray					2.1		
15		(SM) Silty Sand, fine to medium with coarse and gravel to 1", olive brown					8.2		
				X		8	8.8	114	Ring
20		(SP) Sand, fine to coarse with gravel to 3/8" and silt, olive gray	Qoa				3.7		
				X		17	5.5	111	Ring
25		(SM) Silty Sand, fine to medium with coarse and gravel to 2 1/2", olive gray					4.0		
				X		27	3.3	126	Ring
30		END OF BORING							
		NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
35									
40									
45									
50									
55									
60									
65									
70									

BORING LOG 75 FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3

Enclosure B-32

CVAR_10194

EXPLORATORY BORING NO. 33

Date Drilled: 7/15/05

Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61

Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A

Logged by: J.R.

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine to medium with coarse and gravel to 1", brown	Qya				4.7		
				X		6	5.0	108	Ring
5				X		4	4.8	112	Ring
10				X		7	8.1	107	Ring
15		(SP-SM) Sand, fine to medium with coarse and gravel to 1", olive gray	Qoa						
				X		15	4.2	117	Ring
20				X		15	4.6	117	Ring
		END OF BORING							
25		NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
30									
35									
40									
45									
50									
55									
60									
65									
70									

BORING_LOG_75_FT_04806-3.GPJ_CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3

Enclosure B-33

CVAR_10195

EXPLORATORY BORING NO. B-34

Date Drilled: 7/15/05

Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61

Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A

Logged by: J.R.

Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine to medium with coarse, red brown	Qya				4.9		SA, SE
				X		3	6.2	111	Ring, DS
5				X		3	9.3	113	Ring, Consol
10				X		5	8.7	118	Ring
15				X		8	7.6	119	Ring
20				X		7	9.0	121	Ring
25		END OF BORING							
30		NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							
35									
40									
45									
50									
55									
60									
65									
70									

BORING_LOG_75_FT_04806-3.GPJ_CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3

Enclosure B-34

CVAR_10196

EXPLORATORY BORING NO. B-35

Date Drilled: 7/15/05 | Client: TSG Cherry Valley, LP

Equipment: Mobile Drill Rig B-61 | Driving Weight / Drop: 140 lbs/30 in

Surface Elevation(ft): N/A | Logged by: J.R. | Measured Depth to Water(ft): N/A

DEPTH (ft)	GRAPHIC LOG	VISUAL CLASSIFICATION	REMARKS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	FIELD MOISTURE (%)	DRY UNIT WT. (pcf)	LAB/FIELD TESTS
0		(SM) Silty Sand, fine to medium with coarse, olive brown	Qya	X		5	3.6 3.3	105	Ring
5		(SM) Silty Sand, fine to medium with coarse and gravel to 1", olive gray		X		5	4.7 6.2	107	Ring
10				X		12	4.6	118	Ring
15		(SP-SM) Sand, fine to coarse with gravel to 1/2" and silt, olive gray		X		13	3.7 9.1	119	Ring
20		(SM) Silty Sand, fine to medium with coarse, olive gray	Qoa	X		19	4.9 4.6	118	Ring
25		(SP-SM) Sand, fine to coarse with gravel to 2 1/2" and silt, olive gray		X		26	3.4 3.5	120	Ring
		END OF BORING NO REFUSAL NO BEDROCK NO FILL SLIGHT CAVING NO FREE GROUNDWATER							

BORING_LOG_75_FT 04806-3.GPJ CHJ.GDT 8/12/05

C.H.J.

244± ACRES, CHERRY VALLEY PARCEL
RIVERSIDE COUNTY, CA

Job No. 04806-3

Enclosure B-35

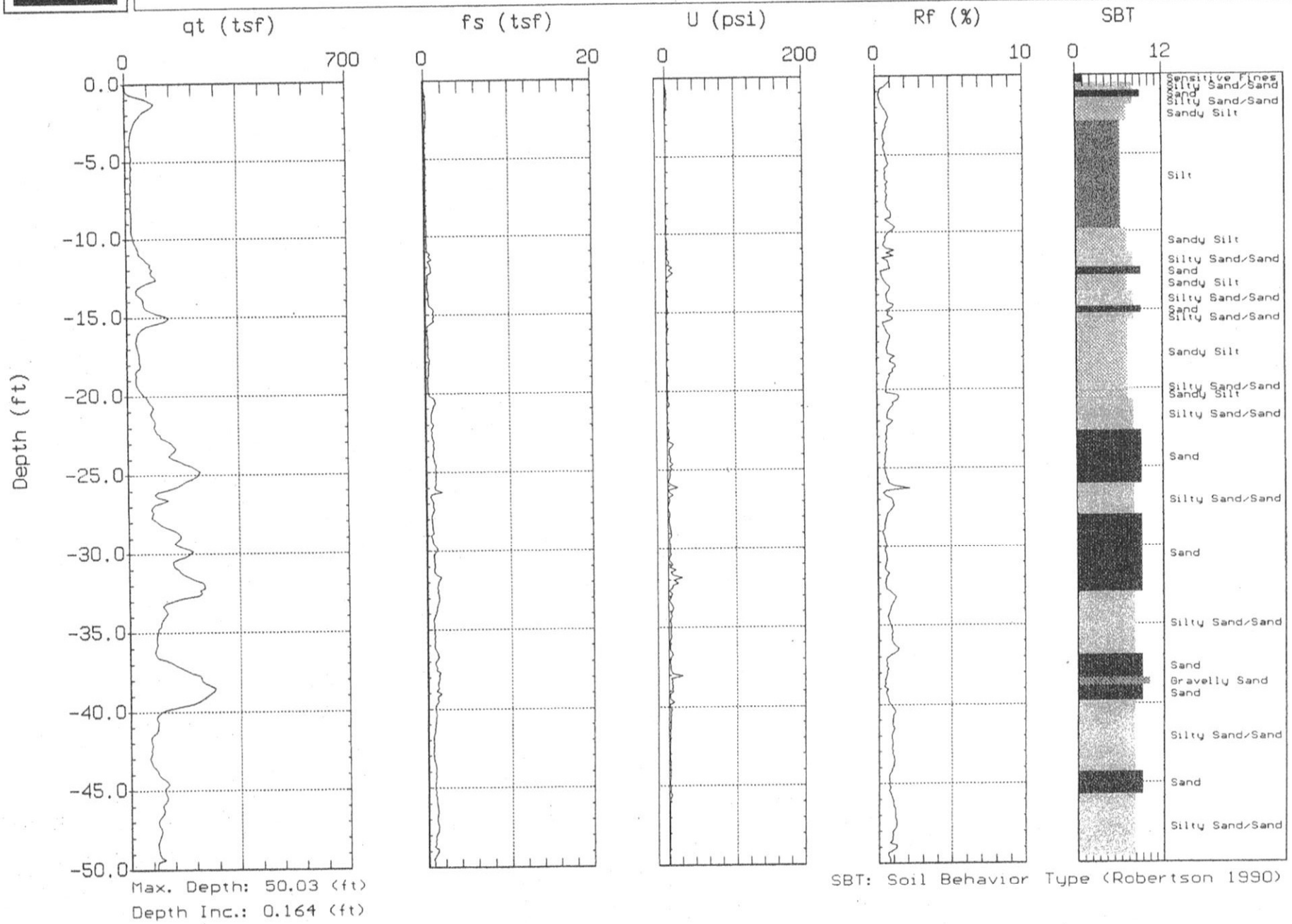
CVAR_10197

GREGG

CHJ

Site: 04806-3
Location: CPT-01

Engineer: T.DAVIS
Date: 06:29:05 09:58



Max. Depth: 50.03 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)

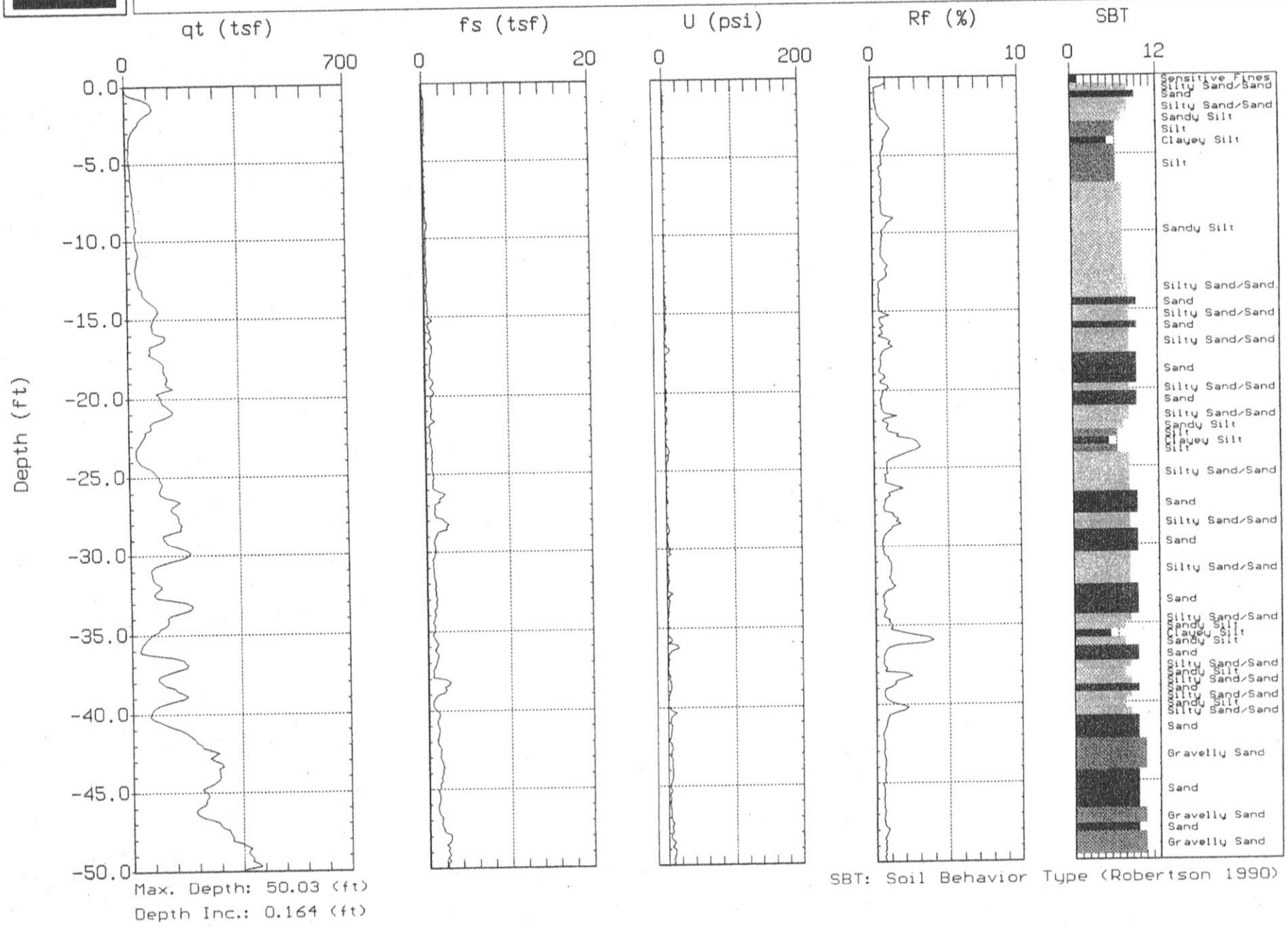
CVAR_10198

GREGG

CHJ

Site: 04806-3
Location: CPT-13

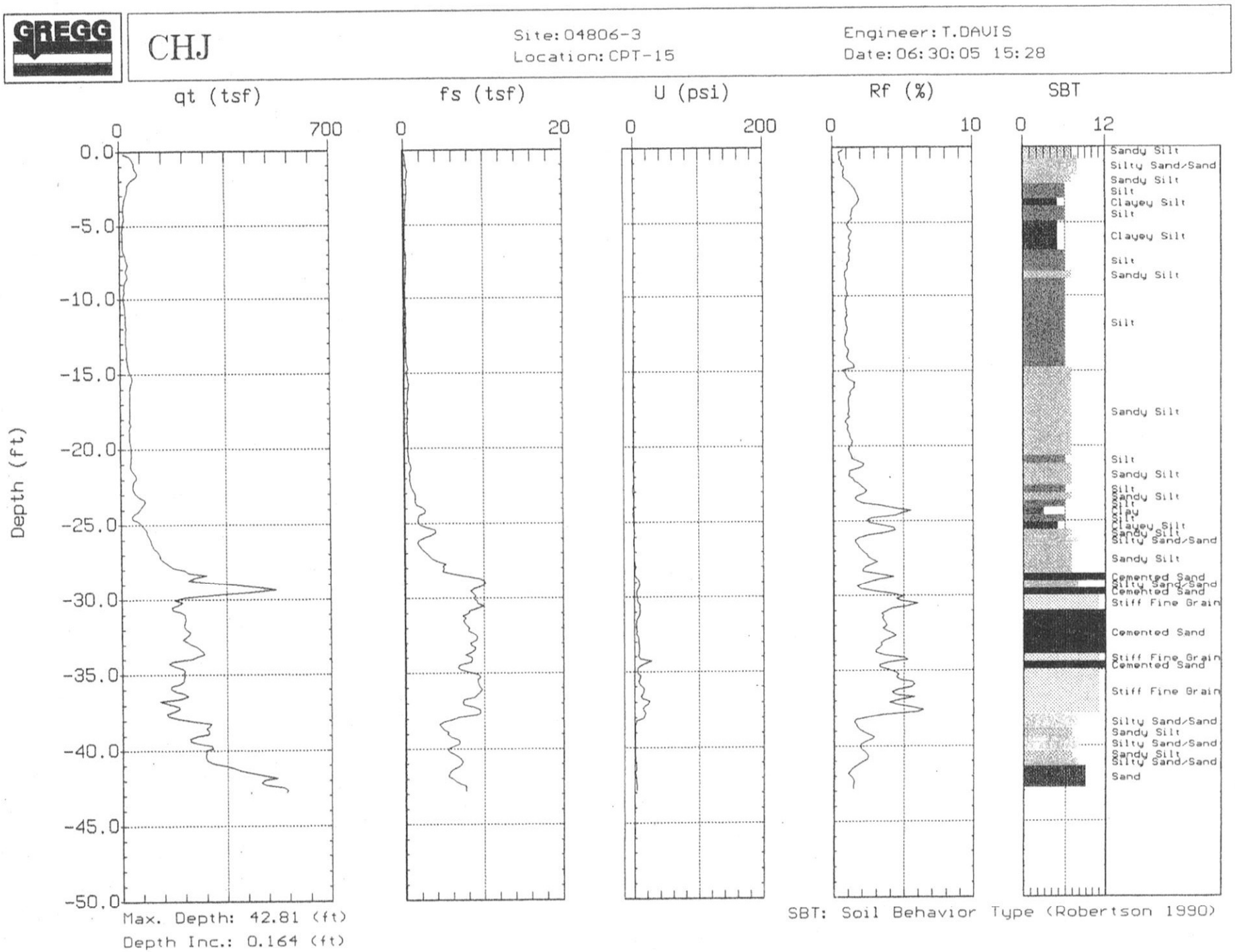
Engineer: T.DAVIS
Date: 06:29:05 09:18



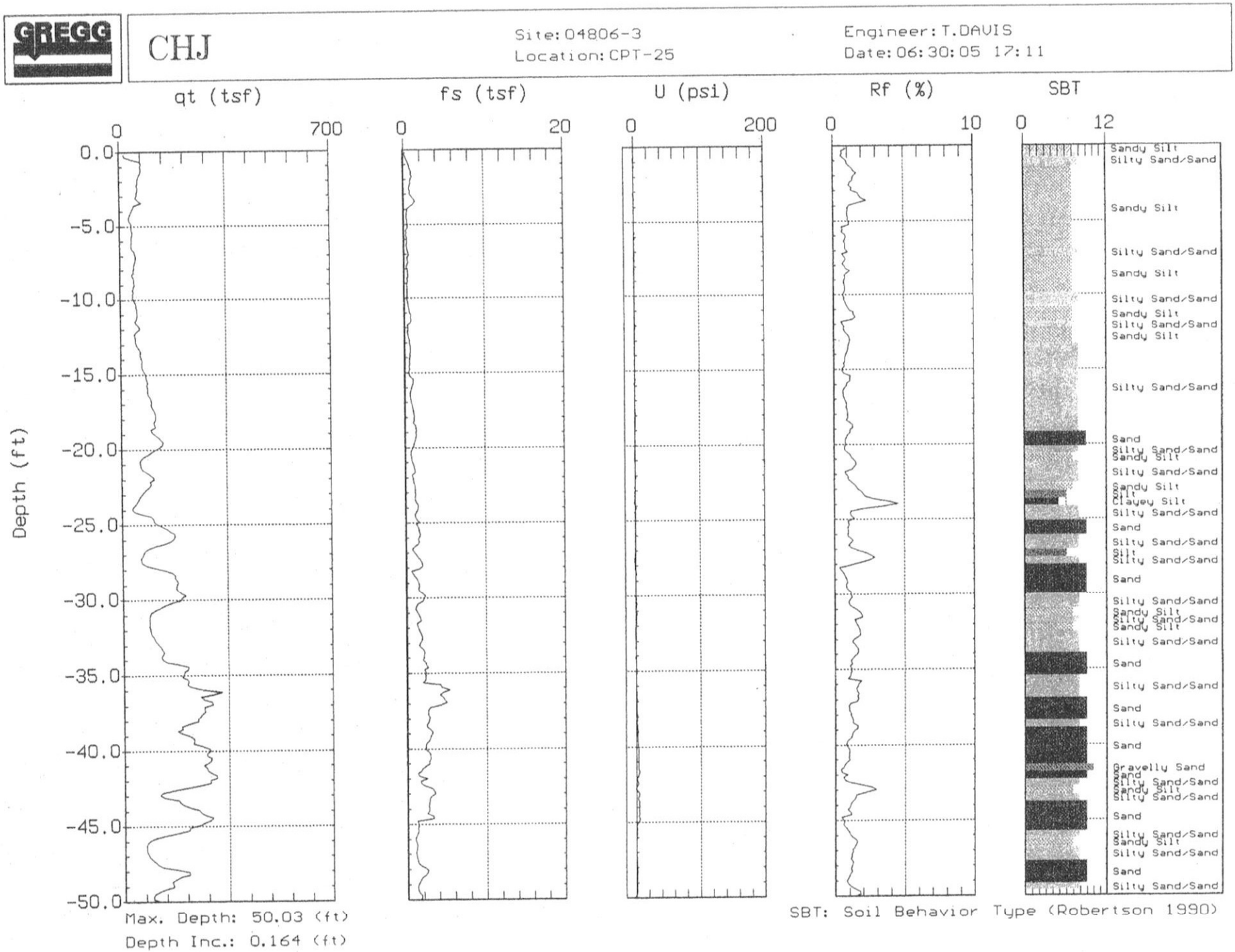
Max. Depth: 50.03 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)

CVAR_10199


GREGG
CHJ
Site: 04806-3
Location: CPT-15
Engineer: T.DAVIS
Date: 06:30:05 15:28
qt (tsf)
fs (tsf)
U (psi)
Rf (%)
SBT
0
700
20
200
10
12
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
-35.0
-40.0
-45.0
Depth (ft)
Sandy Silt
Silty Sand/Sand
Sandy Silt
Silt
Clayey Silt
Silt
Clayey Silt
Silt
Sandy Silt
Silt
Sandy Silt
Silt
Sandy Silt
Silt
Clay
Silt
Clayey Silt
Sandy Silt
Silty Sand/Sand
Sandy Silt
Cemented Sand
Silty Sand/Sand
Cemented Sand
Stiff Fine Grain
Cemented Sand
Stiff Fine Grain
Cemented Sand
Stiff Fine Grain
Silty Sand/Sand
Sandy Silt
Silty Sand/Sand
Sandy Silt
Silty Sand/Sand
Sand
Max. Depth: 42.81 (ft)
Depth Inc.: 0.164 (ft)
SBT: Soil Behavior Type (Robertson 1990)

CVAR_10200


GREGG
CHJ
Site: 04806-3
Location: CPT-25
Engineer: T.DAVIS
Date: 06:30:05 17:11
qt (tsf)
fs (tsf)
U (psi)
Rf (%)
SBT
0
700
20
200
10
12
Depth (ft)
0.0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
-35.0
-40.0
-45.0
-50.0
Sandy Silt
Silty Sand/Sand
Sandy Silt
Silty Sand/Sand
Sandy Silt
Silty Sand/Sand
Sandy Silt
Silty Sand/Sand
Sandy Silt
Silty Sand/Sand
Sand
Silty Sand/Sand
Sandy Silt
Silty Sand/Sand
Sandy Silt
Clayey Silt
Silty Sand/Sand
Sand
Silty Sand/Sand
Silt
Silty Sand/Sand
Sand
Silty Sand/Sand
Sandy Silt
Silty Sand/Sand
Sandy Silt
Silty Sand/Sand
Sand
Silty Sand/Sand
Sand
Silty Sand/Sand
Sand
Gravelly Sand
Sand
Silty Sand/Sand
Sandy Silt
Silty Sand/Sand
Sand
Silty Sand/Sand
Sandy Silt
Silty Sand/Sand
Sand
Silty Sand/Sand
Max. Depth: 50.03 (ft)
Depth Inc.: 0.164 (ft)
SBT: Soil Behavior Type (Robertson 1990)

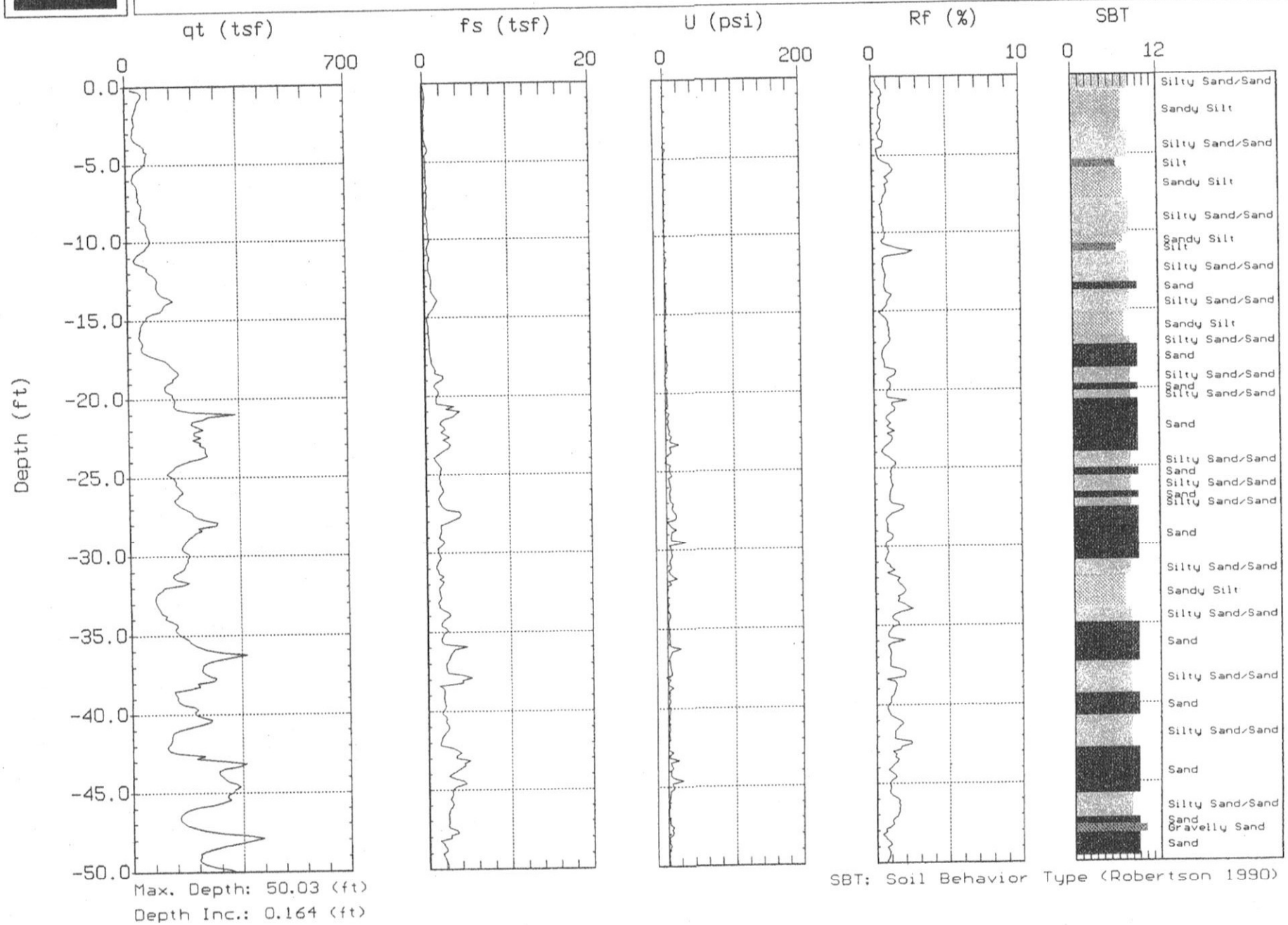
CVAR_10201

GREGG

CHJ

Site: 04806-3
Location: CPT-27

Engineer: T.DAVIS
Date: 06:30:05 17:57



Max. Depth: 50.03 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)

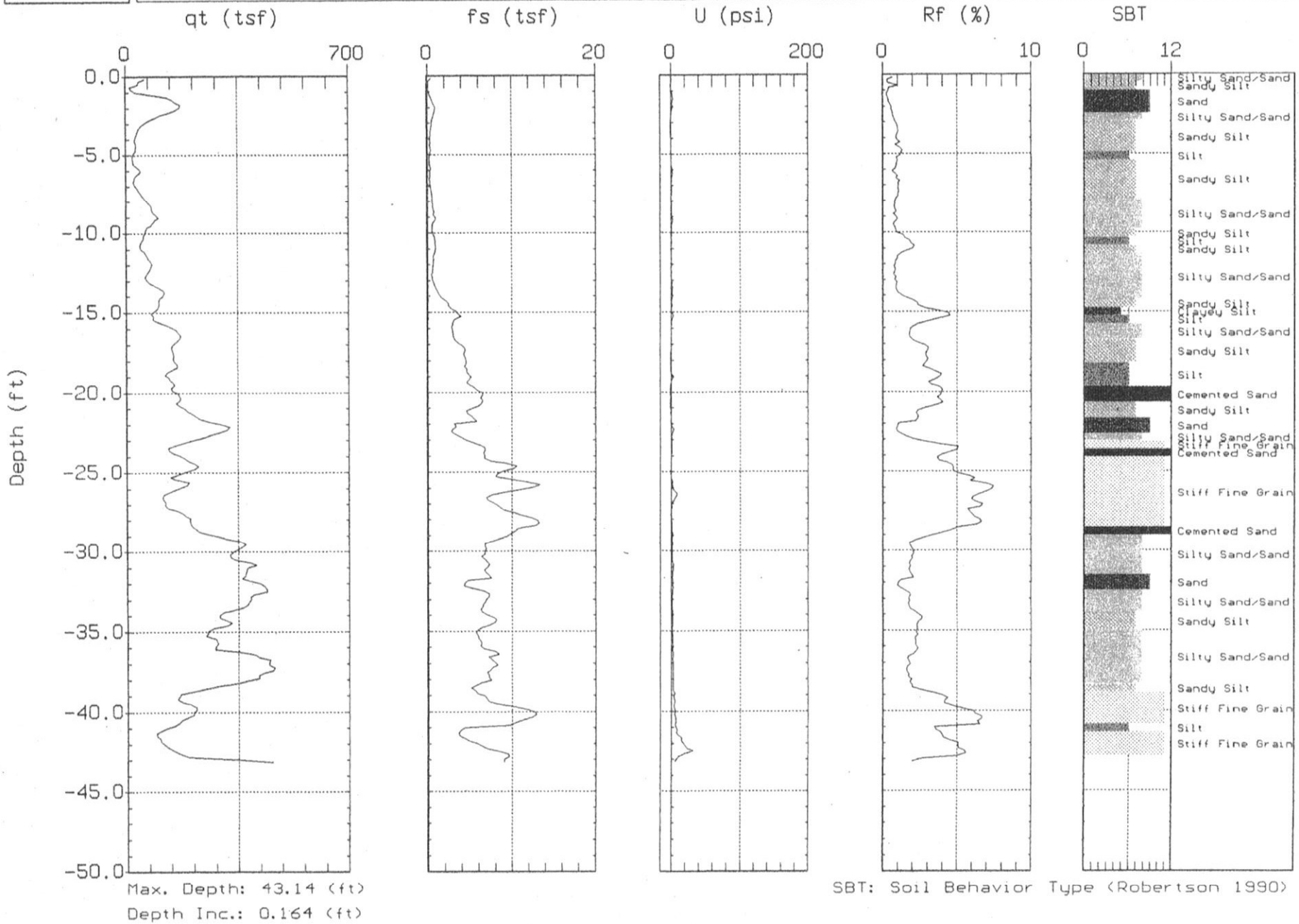
CVAR_10202

GREGG

CHJ

Site: 04806-3
Location: CPT-29

Engineer: T.DAVIS
Date: 07:01:05 07:00



Max. Depth: 43.14 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)

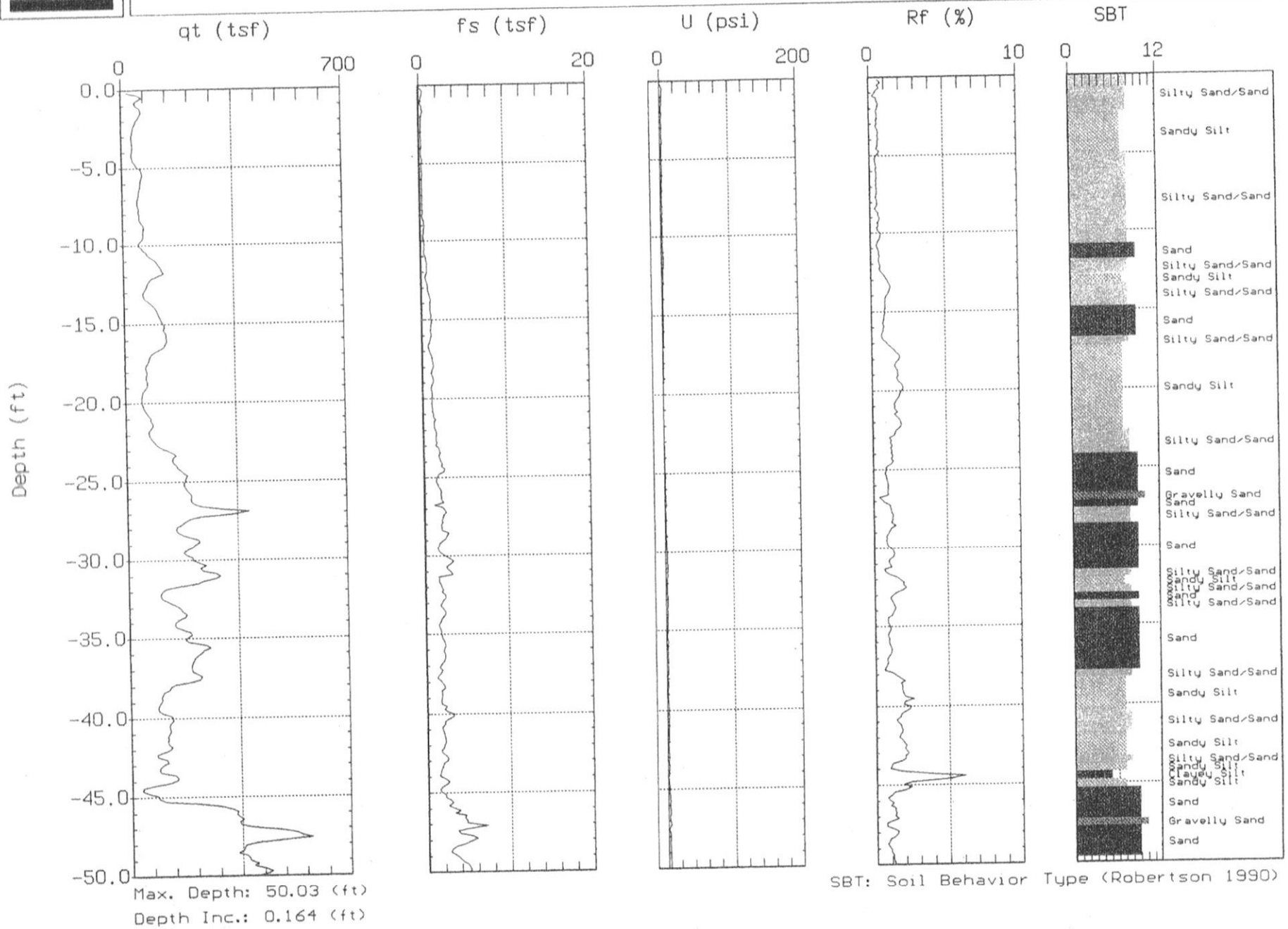
CVAR_10203

GREGG

CHJ

Site: 04806-3
Location: CPT-31

Engineer: T.DAVIS
Date: 07:01:05 09:03



Max. Depth: 50.03 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)

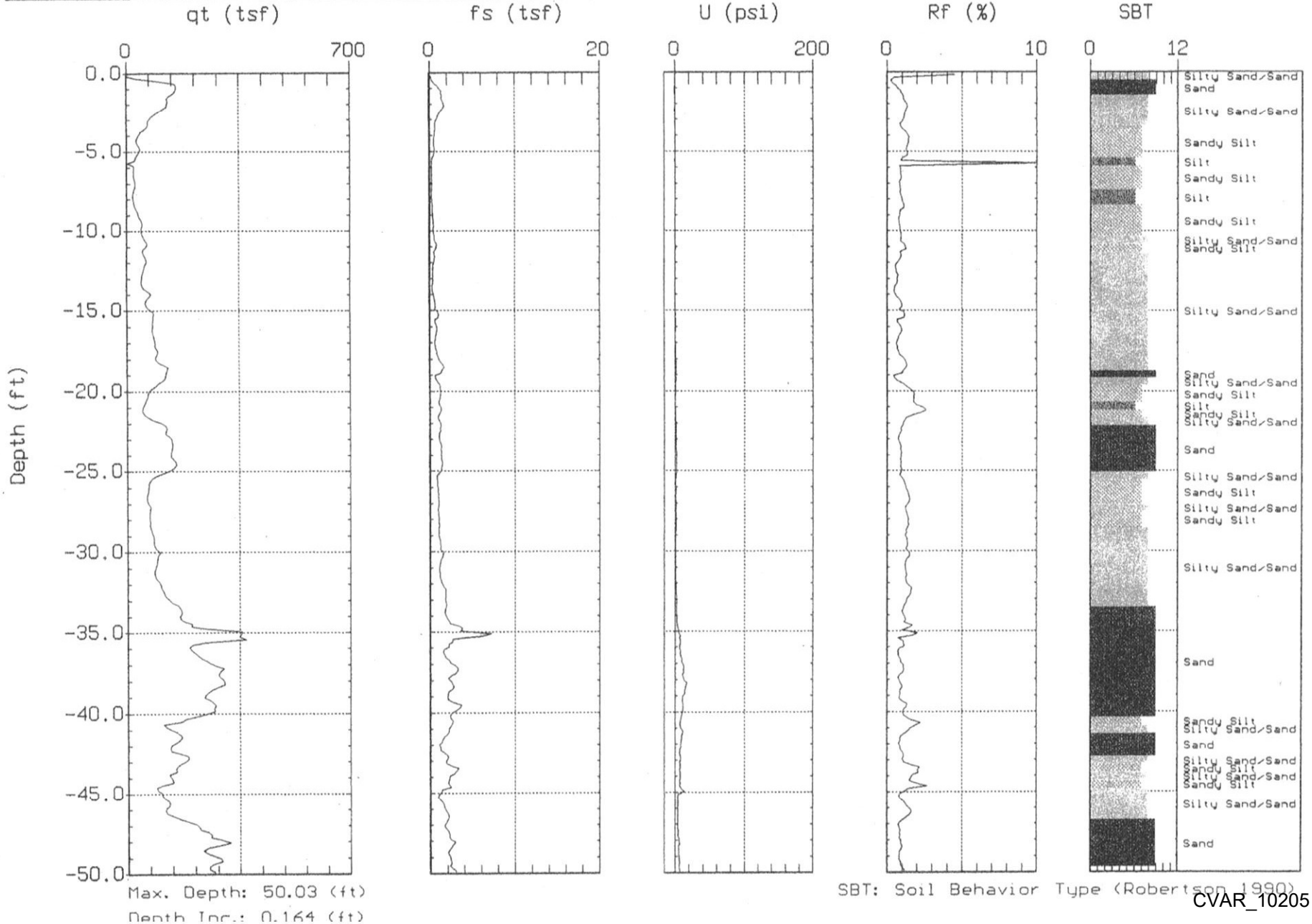
CVAR_10204

GREGG

CHJ

Site: 04806-3
Location: CPT-32

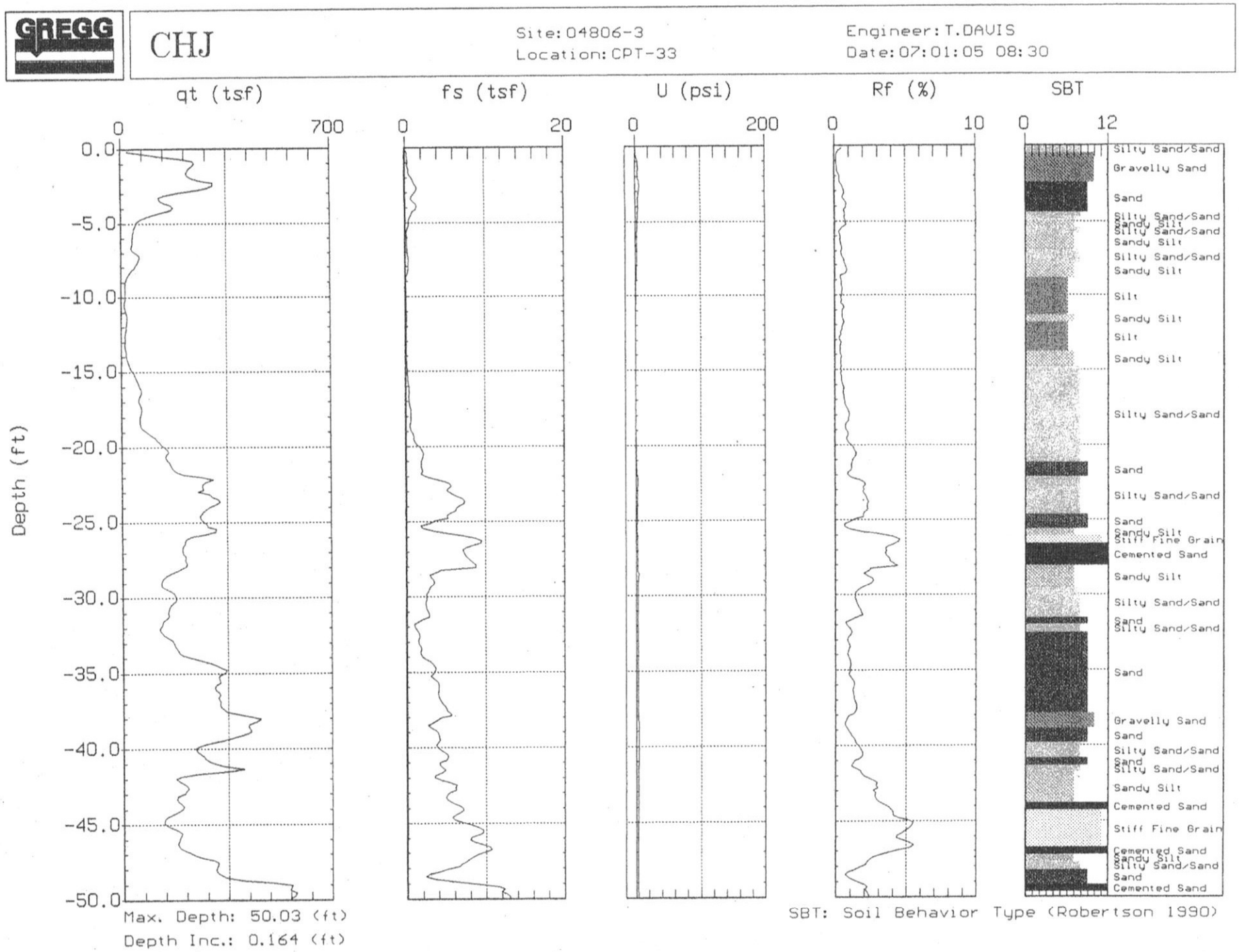
Engineer: T.DAVIS
Date: 07:01:05 09:31



Max. Depth: 50.03 (ft)
Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson 1990)

CVAR_10205


GREGG
CHJ
Site: 04806-3
Location: CPT-33
Engineer: T.DAVIS
Date: 07:01:05 08:30
qt (tsf)
fs (tsf)
U (psi)
Rf (%)
SBT
Depth (ft)
Max. Depth: 50.03 (ft)
Depth Inc.: 0.164 (ft)
SBT: Soil Behavior Type (Robertson 1990)

CVAR_10206

IP-4 PROFILE NORTHERLY WALL

N80W

1 inch = 5 feet

Krotovina

Krotovina

Krotovina

Silty Fine-Grained Sand

Qya

Qya

Qya

Silty Fine-Grained Sand

Silty Fine-Grained Sand (Coarsening Downward)

Qya

?

?

?

?

Qoa

Sand and Silty Fine-Grained Sand (Oxidized)

Qoa

Gravelly Sand

Gravelly Sand

Qoa

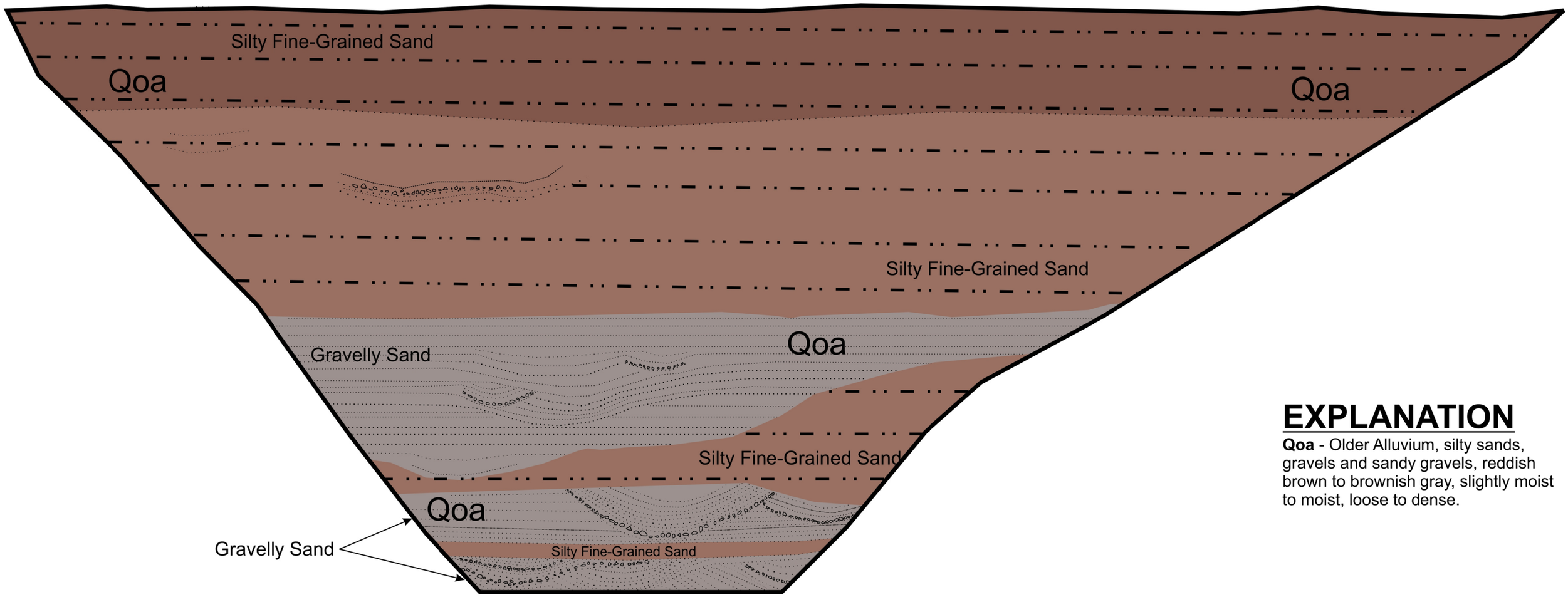
Gravelly Sand

CVAR_10207

IP-1 PROFILE NORTHERLY WALL

N88E

1 inch = 2.5 feet



EXPLANATION

Qoa - Older Alluvium, silty sands, gravels and sandy gravels, reddish brown to brownish gray, slightly moist to moist, loose to dense.

LOG OF INFILTRATION PIT IP-1

GINTER AND ASSOCIATES, INC

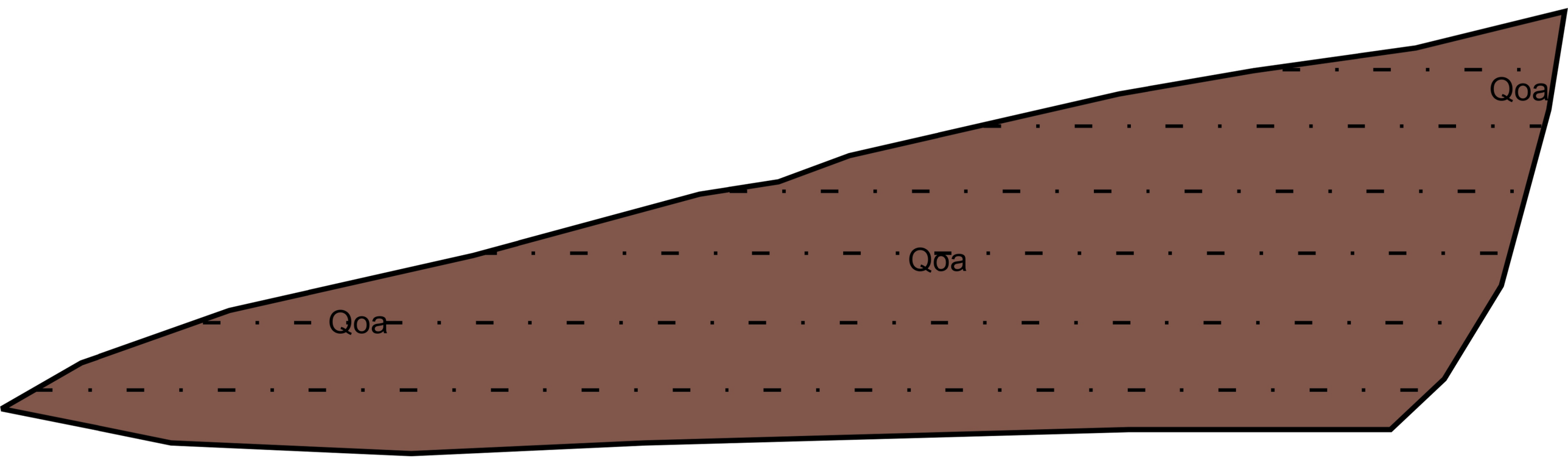
PROJECT # 105-02 | **DATE**

CVAR_10208

IP-2 PROFILE EASTERLY WALL

N33W

1 inch = 2.5 feet

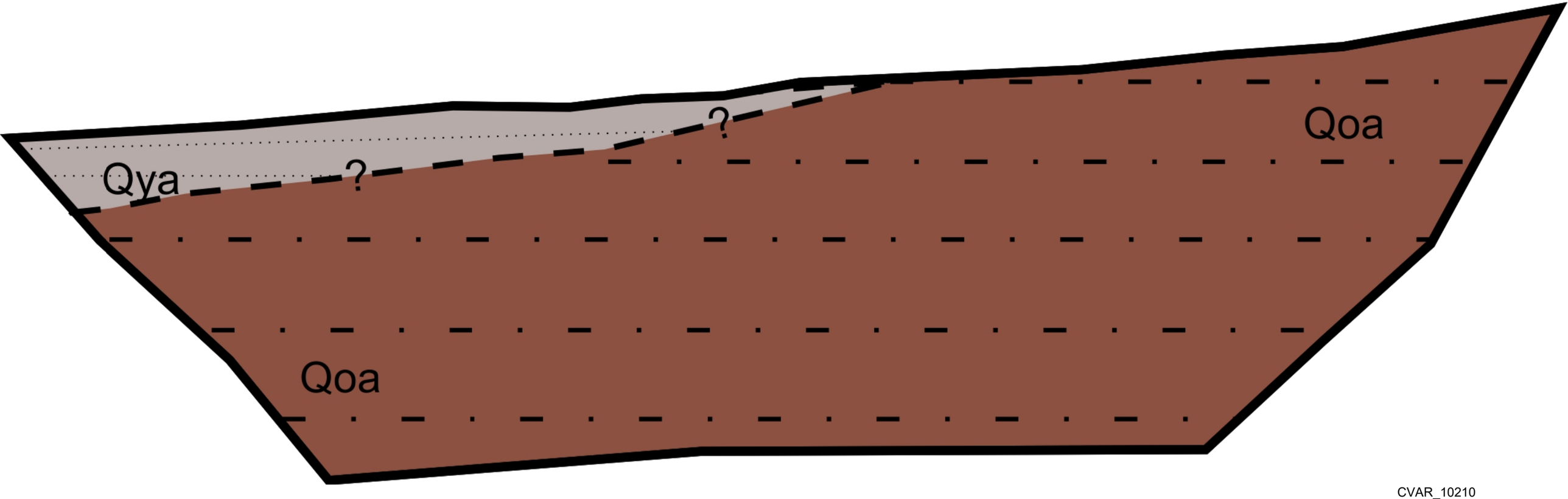


CVAR_10209

IP-3 PROFILE EASTERLY WALL

N48W

1 inch = 2.5 feet



CVAR_10210

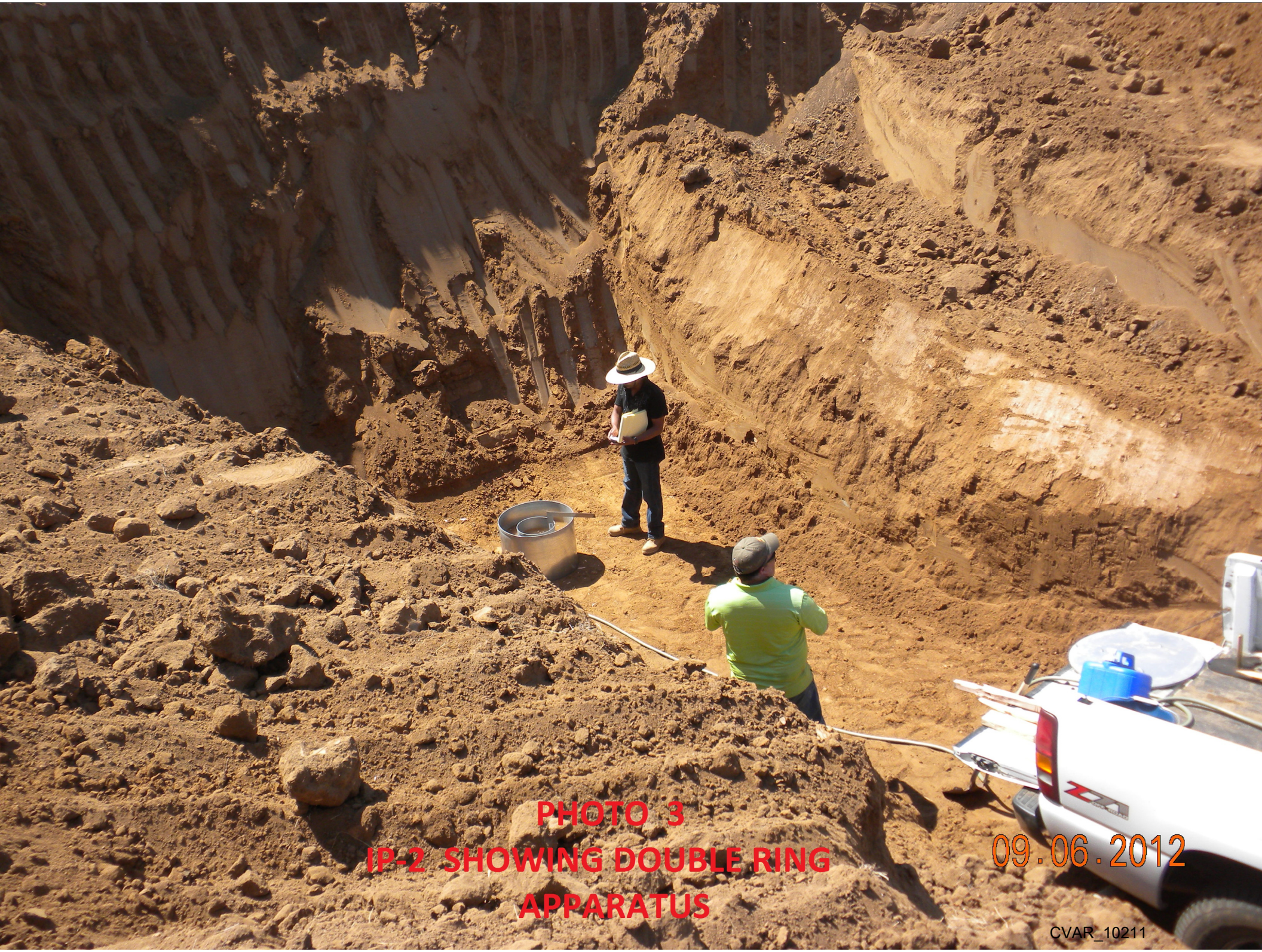


PHOTO 3

IP-2 SHOWING DOUBLE RING APPARATUS

CVAR_10211



PHOTO 1
VIEWING WEST AT IP-1

CVAR_10212



PHOTO 2

IP-1 SHOWING GRAVEL INTERBEDS

CVAR_10213

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

N/A

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

N/A

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

R 07 W | R 06 W | R 05 W | R 04 W | R 03 W | R 02 W | R 01 W | R 01 E | R 02 E | R 03 E | R 04 E | R 05 E

T 01 S
T 02 S
T 03 S
T 04 S
T 05 S
T 06 S
T 07 S
T 08 S

PROJECT LOCATION=0.79"

0.85 MiraLoma
0.61 Riverside North
0.54 Riverside South
0.68 PigeonPass
0.66 MorenoEast
0.85 Beaumont
0.88 PradoDam
0.51 Woodcrest
0.50 LakeMathews
0.68 PerrisReservoir
0.87 VistaGrandeGS
0.70 SanJacintoNWS
1.18 Idyllwild
0.58 SunCity
0.68 Winchester
0.70 ElsinoreNWS
1.11 ElCarisoStation
0.90 HurkeyCreek
0.77 WildomarLaCresta
0.52 SkinnerLake
0.65 Anza
0.77 SantaRosaPlateau
1.00 TemeculaNWS
0.64 AguangaValley

Santa Ana River Watershed
Santa Margarita Watershed

JURUPA VALLEY | EASTVALE | NORCO | CORONA | RIVERSIDE | MORENO VALLEY | CALIMESA | BEAUMONT | SAN JACINTO | PERRIS | CANYON LAKE | LAKE ELSINORE | WILDOMAR | MENIFEE | HEMET | MURRIETA | TEMECULA

06	05	04	03	02	01
07	08	09	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

N

Rain Gage Locations

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Isohyetal Map for the 85th Percentile 24 hour Storm Event

July 2011

CVAR_10217



WQMP Project Report

County of Riverside Stormwater Program

Santa Ana River Watershed Geodatabase

Monday, October 13, 2014

Note: The information provided in this report and on the Stormwater Geodatabase for the County of Riverside Stormwater Program is intended to provide basic guidance in the preparation of the applicant's Water Quality Management Plan (WQMP) and should not be relied upon without independent verification.

Project Site Parcel Number(s):	413270012, 407090009, 413270013, 407090010, 407090015, 407220007, 413270008, 407090008, 407220008, 407220016, 407220009, 407220004, 407220017
Latitude/Longitude:	33.9724, -117.0229
Thomas Brothers Page:	690
Project Site Acreage:	224.41
Watershed(s):	SANTA ANA
This Project Site Resides in the following Hydrologic Unit (s) (HUC):	**HUC Name** - HUC Number **San Timoteo Canyon-San Timoteo Wash** - 180702030403
The HUCs Contribute stormwater to the following 303d listed water bodies and TMDLs which may include drainage from your proposed Project Site:	**WBID Name** - WBID Number **Santa Ana River, Reach 3** - CAR8012100019990211140353 **Santa Ana River, Reach 4** - CAR8012700019990211142130
These 303d listed Water bodies and TMDLs have the following Pollutants of Concern (POC):	**Bacterial Indicators** - Pathogens **Metals/Metalloids** - Copper, Lead
Is the Site subject to Hydromodification:	Yes
Limitations on Infiltration:	**Project Site Onsite Soils Group(s)** - A, C, D **Known Groundwater Contamination Plumes within 1000'** - No **Adjacent Water Supply Wells(s)** - No information available please contact your local water agency for more information. Your local contact agency is YUCAIPA VALLEY WATER DISTRICT. Your local wholesaler contact agency is SAN GORGONIO PASS WATER AGENCY.
Environmentally Sensitive Areas within 200'(Fish and Wildlife Habitat/Species):	None
Environmentally Sensitive Areas within 200'(CVMSHCP):	None
Environmentally Sensitive Areas within 200'(WRMSHCP):	Narrow Endemic Plants Survey Req. - NAP,Steven's Kangaroo Rat
Groundwater elevation from Mean Sea Level:	2261
85th Percentile Design Storm Depth (in):	0.793
Groundwater Basin:	Beaumont
MSHCP/CVMSHCP Criteria Cell(s):	No Data
Retention Ordinance Information:	No Data
Studies and Reports Related to Project Site:	IBI Scores - Southern Cal bulletin118_4-sc water_fact_3_7.11 8039-SAR-Hydromodification 2006-Report-on-Water-Supply-Issues-LAFCO 2010 Urban Water Management Plan SGPWA-B-W ByerlyReport2005Dec5 RiversideCountyOrdinance859.2 sir_2006-5026 v2-ReportOnWaterConditions-2010-200dpi Beaumont MDP 2012 Annual Report of Santa Ana River

DMA A

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: ALBERT A WEBB ASSOCIATES — Date: 10/13/2014

Designed by: REC — Case No:

Company Project Number/Name: 14-0213 SHOPOFF

BMP Identification

BMP NAME / ID: BASIN A

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.79 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
A	*811000*	*Roofs*	*1*	*0.89*	*723412*			
A	*317290*	*Ornamental Landscaping*	*0.1*	*0.11*	*35047.2*			
A	*757798*	*Concrete or Asphalt*	*1*	*0.89*	*675955.8*			

Extended Detention Basin Design Procedure	BMP Subarea No. A	Legend:	Required Entries / Calculated Cells

Company Name: ALBERT A. WEBB ASSOCIATES — Date: 13-Oct

Designed by: RC — County/City Case No.:

Design Volume

Tributary Area (BMP Subarea) — A_T = 43.3 acres

Enter $V_{BMP,}$ determined from Section 2.1 of this Handbook — V_{BMP} = 94,432 ft^3

Basin Footprint

Overall Geometry

Length at Basin Bottom Surface — Length = 1020 ft

Width at Basin Bottom Surface — Width = 40 ft

Meets 1.5 : 1 requirement? ✓

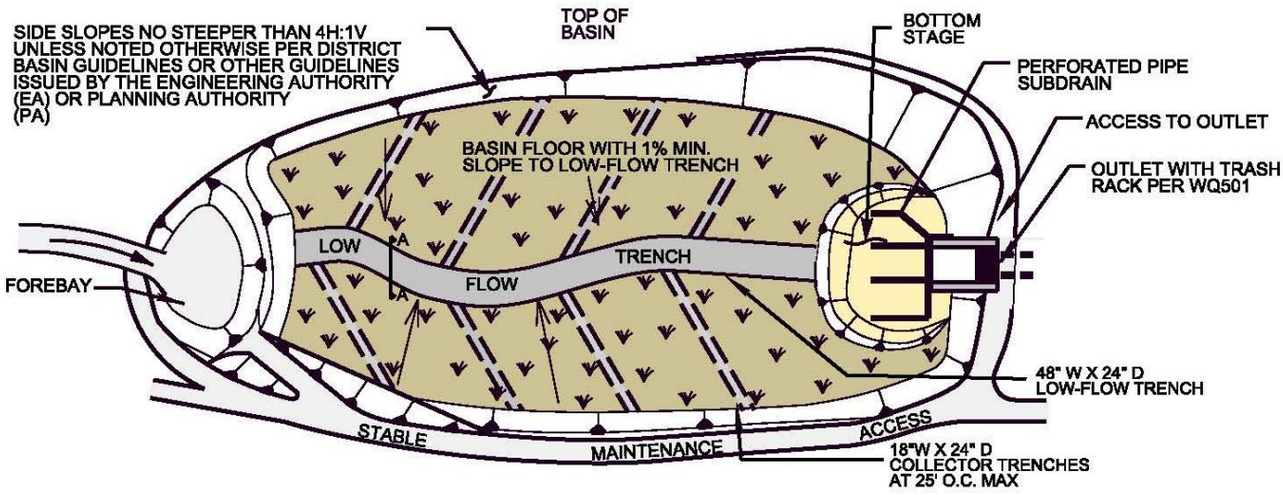
Side Slopes per "Basin Guidelines", Sect. 1.2 — H:V < 4:1, Verify Consistency with Basin Guidelines, Section 1.2 — z = 3 :1

Proposed Basin Depth (with no freeboard) — D_B = 5.00 ft

Depth of freeboard (if used) — D_{FB} = 1.00 ft

Minimum Required Allowance for Total Depth (including proposed basin depth, freeboard, minimum depth of bottom stage (D_{BS}=0.33') and minimum filter depth (D_{FD}=2.33')) — D_{REQ} = 8.7 ft

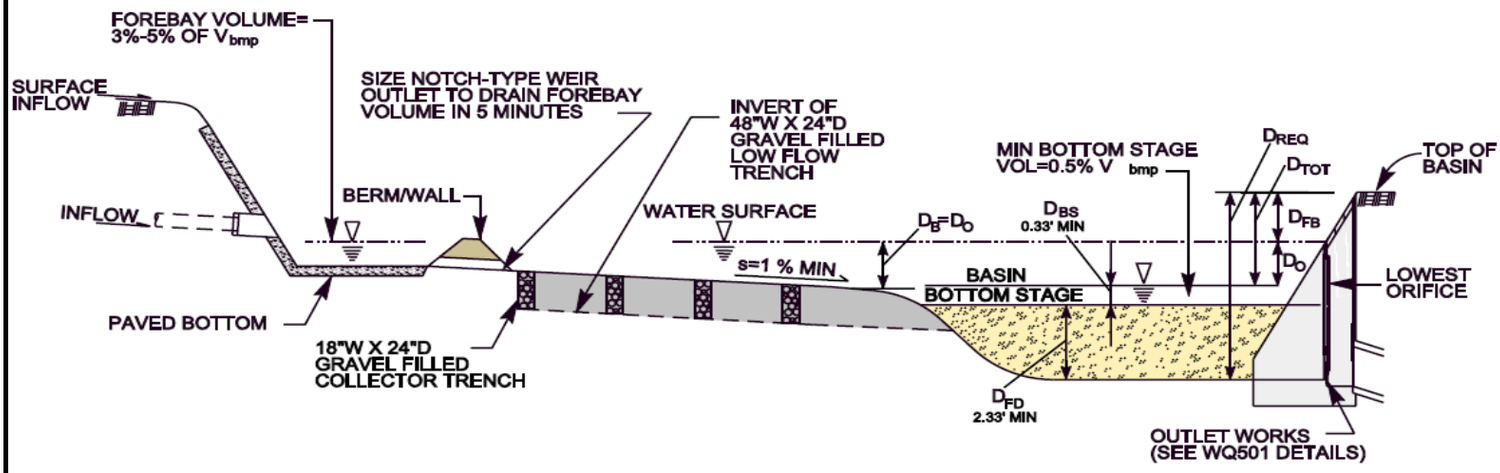
Depth from design water surface elevation to lowest orifice — D_O = 5.0 ft



Basin Design

Basin Design

Proposed Total Basin Depth (proposed depth plus freeboard)		D_{TOT} = 6.00	ft
Basin Invert Longitudinal Slope		Slope = 1.00	%
Basin Invert Transverse Slope (1% min)	Slope must be 1% minimum	Slope = 0.5	%
Basin Volume		V_{Basin} = 96790	ft^3



Forebay Design

Forebay Volume (3 - 5% V_{BMP})		V_{FB} = 4500	ft^3
Forebay Depth (height of berm)		D_{FBY} = 1	ft
Minimum Forebay Surface Area		A_{FB} = 4500	ft^2
Rectangular weir (notch)		W = 12.00	in

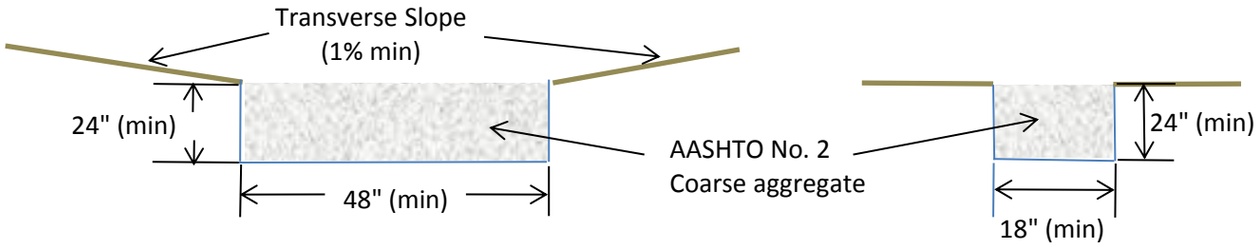
Dry Weather and Low-Flow Management

Low-Flow Trench (see graphic below)

Depth (24 inches minimum, gravel filled)	Depth =	24	inches
Width (48 inches minimum)	Width =	48	inches
Trench Invert Longitudinal Slope	Slope =	0.5	%

Collector Trenches (see graphic below)

Depth (24 inches minimum)	Depth =	24	inches
Width (18 inches minimum)	Width =	18	inches
Trench Invert Longitudinal Slope	Slope =	0.5	%
Spacing (25 feet on center maximum)	S =	25	feet



Low-Flow Trench **Collector Trench**

Bottom Stage (Sand Filter) Design

Depth of the Bottom Stage (4" minimum ponding)	D_{BS} =	6	in
Surface Area of Bottom Stage	A_{BS} =	500	ft^2
Dry Weather Ponded Volume (above sand layer)	V_{BS} =	250	ft^3

Is V_{BS} no less than 0.5% V_{BMP}? OK

Depth of ASTM-C33 sand (18 inch minimum)

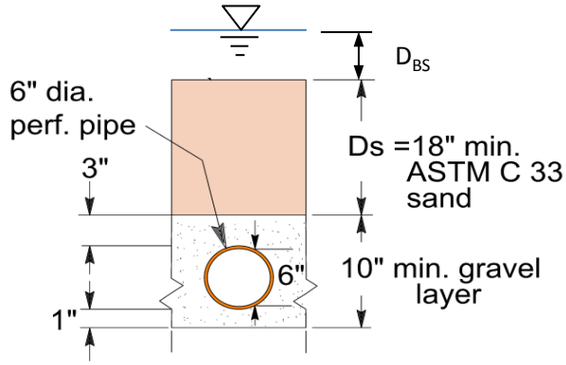
Ds = 18 inches

Diameter of Subdrains

ϕ = 6 in

Subdrain Spacing

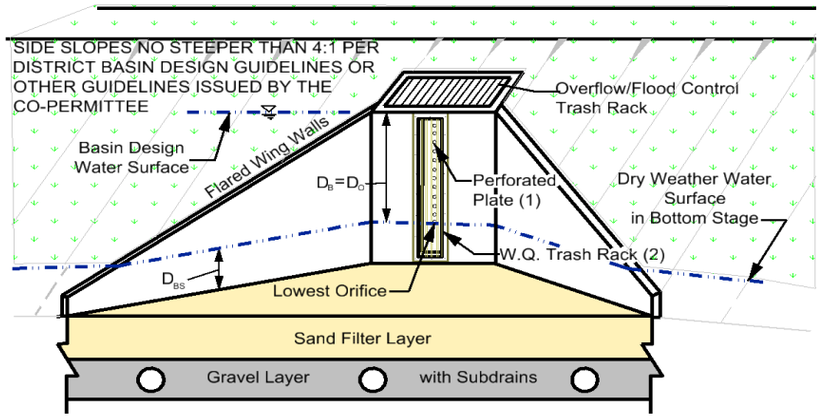
s = 10 ft. on center



Basin Outlet Design

Outlet Design

Assume an orifice area. Based on the information provided above, the spreadsheet provides discharge vs. stage data. Enter the volume vs. stage data for each interval. This information is used to route the volume through the basin. The size of the orifice is acceptable when the data shows that less than 50% of V_{BMP} has drained in 24 hours, and that 100% drawdown occurs within 72 hours.



Flow Rate, Q (cfs)

$$Q=CA[2g(H-H_o)]^{0.5}$$

Discharge Coefficient,

Default, C = 0.66

Other, C =

Orifice Area (ft^2)

Orifice Diameter, d; number of orifices per row, n; and number of orifice rows, N (from the bottom up).

d = 2.5 inches

n = 2 per row

N = 1 rows

Aeff = 0.068 ft^2 per row

or

Aeff = 9.813 in^2 per row

From outflow hydrograph, the time where 50% of V_{BMP} has drained from the basin (24 hour minimum):

Time (50%) = 29.12 hrs

OK

From outflow hydrograph, the time where 100% V_{BMP} has drained from the basin(within 72 hours):

Time (100 %) = 59.92 hrs

OK

Headwater Elev. / Stage (ft)	Discharge (cfs)	Volume (acre-ft)	Δt (hrs.)
0	0.0000	0.0000	
0.33	0.2083	0.008	0.93
0.67	0.2948	0.072	3.08
1.00	0.3609	0.163	3.36
1.33	0.4167	0.290	3.95
1.67	0.4660	0.521	6.33
2.00	0.5104	0.741	5.45
2.33	0.5513	1.004	5.99
2.67	0.5894	1.418	8.78
3.00	0.6251	1.753	6.68
3.33	0.6589	2.102	6.58
3.67	0.6911	2.592	8.78
4.00	*0.7218*	*2.978*	
4.33	*0.7513*	*3.379*	
4.67	*0.7797*	*3.939*	
5.00	*0.8070*	*4.378*	
5.33			
5.67			
6.00			
6.33			
6.67			
7.00			
7.33			
7.67			
8.00			
8.33			
8.67			
9.00			
9.33			
9.67			
10.00			
		∑ =	59.92

Notes:

DMA B

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: ALBERT A WEBB ASSOCIATES — Date: 10/13/2014

Designed by: REC — Case No:

Company Project Number/Name: 14-0213 SHOPOFF

BMP Identification

BMP NAME / ID: BASIN B

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.79 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
B	*1012760*	*Roofs*	*1*	*0.89*	*903381.9*			
B	*760661*	*Ornamental Landscaping*	*0.1*	*0.11*	*84021.1*			
B	*870554*	*Concrete or Asphalt*	*1*	*0.89*	*776534.2*			

Extended Detention Basin Design Procedure	BMP Subarea No. B	Legend:	Required Entries / Calculated Cells

Company Name: ALBERT A. WEBB ASSOCIATES — Date: 14-Oct

Designed by: RC — County/City Case No.:

Design Volume

Tributary Area (BMP Subarea) — A_T = 60.7 acres

Enter $V_{BMP,}$ determined from Section 2.1 of this Handbook — V_{BMP} = 116,126 ft^3

Basin Footprint

Overall Geometry

Length at Basin Bottom Surface — Length = 750 ft

Width at Basin Bottom Surface — Width = 250 ft

Meets 1.5 : 1 requirement? ✓

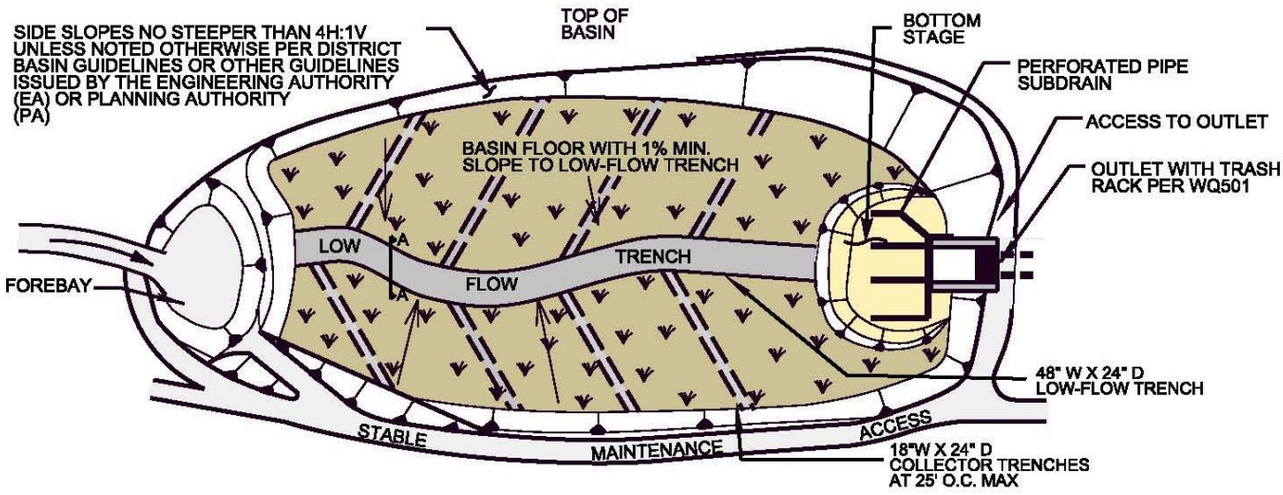
Side Slopes per "Basin Guidelines", Sect. 1.2 — H:V < 4:1, Verify Consistency with Basin Guidelines, Section 1.2 — z = 3 :1

Proposed Basin Depth (with no freeboard) — D_B = 3.00 ft

Depth of freeboard (if used) — D_{FB} = 1.00 ft

Minimum Required Allowance for Total Depth (including proposed basin depth, freeboard, minimum depth of bottom stage (D_{BS}=0.33') and minimum filter depth (D_{FD}=2.33')) — D_{REQ} = 6.7 ft

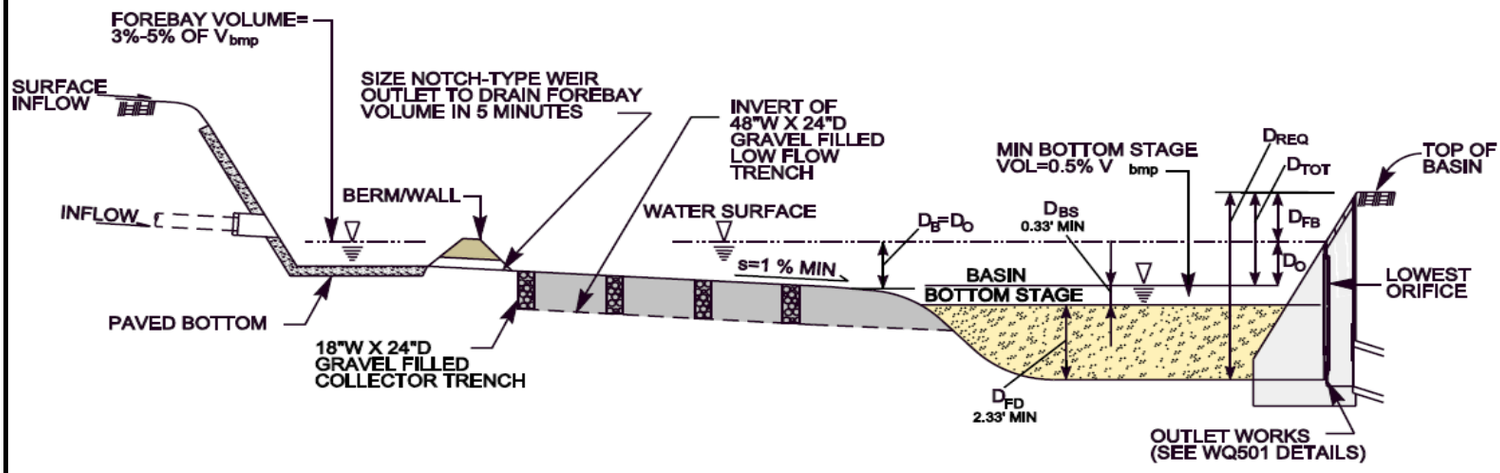
Depth from design water surface elevation to lowest orifice — D_O = 3.0 ft



Basin Design

Basin Design

Proposed Total Basin Depth (proposed depth plus freeboard)		D_{TOT} =	4.00 ft
Basin Invert Longitudinal Slope	Minimum Slope is 1%	Slope =	0.50 %
Basin Invert Transverse Slope (1% min)		Slope =	1 %
Basin Volume		V_{Basin} =	499532 ft^3



Forebay Design

Forebay Volume (3 - 5% V_{BMP})		V_{FB} =	5000 ft^3
Forebay Depth (height of berm)		D_{FBY} =	1 ft
Minimum Forebay Surface Area		A_{FB} =	5000 ft^2
Rectangular weir (notch)		W =	12.00 in

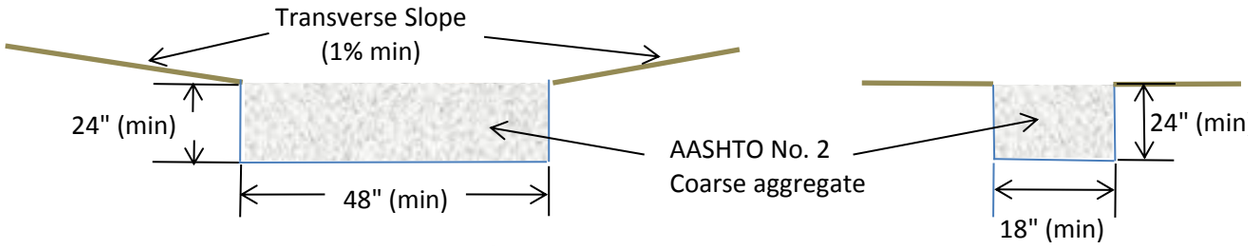
Dry Weather and Low-Flow Management

Low-Flow Trench (see graphic below)

Depth (24 inches minimum, gravel filled)	Depth =	24	inches
Width (48 inches minimum)	Width =	48	inches
Trench Invert Longitudinal Slope	Slope =	0.5	%

Collector Trenches (see graphic below)

Depth (24 inches minimum)	Depth =	24	inches
Width (18 inches minimum)	Width =	18	inches
Trench Invert Longitudinal Slope	Slope =	0.5	%
Spacing (25 feet on center maximum)	S =	25	feet



Low-Flow Trench **Collector Trench**

Bottom Stage (Sand Filter) Design

Depth of the Bottom Stage (4" minimum ponding)	D_{BS} =	6	in
Surface Area of Bottom Stage	A_{BS} =	500	ft^2
Dry Weather Ponded Volume (above sand layer)	V_{BS} =	250	ft^3

Is V_{BS} no less than 0.5% V_{BMP}? OK

Depth of ASTM-C33 sand (18 inch minimum)

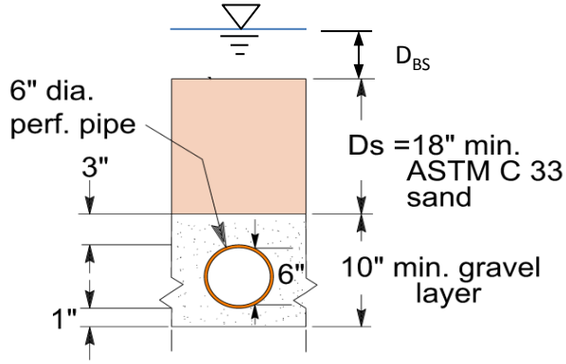
Ds = 18 inches

Diameter of Subdrains

ϕ = 6 in

Subdrain Spacing

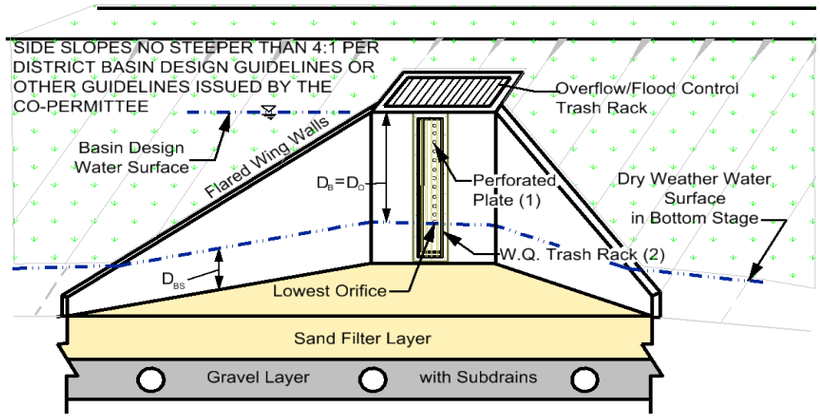
s = 10 ft. on center



Basin Outlet Design

Outlet Design

Assume an orifice area. Based on the information provided above, the spreadsheet provides discharge vs. stage data. Enter the volume vs. stage data for each interval. This information is used to route the volume through the basin. The size of the orifice is acceptable when the data shows that less than 50% of V_{BMP} has drained in 24 hours, and that 100% drawdown occurs within 72 hours.



Flow Rate, Q (cfs)

$$Q=CA[2g(H-H_o)]^{0.5}$$

Discharge Coefficient,

Default, C = 0.66

Other, C =

Orifice Area (ft^2)

Orifice Diameter, d; number of orifices per row, n; and number of orifice rows, N (from the bottom up).

d = 3.5 inches

n = 2 per row

N = 1 rows

Aeff = 0.134 ft^2 per row

or

Aeff = 19.233 in^2 per row

From outflow hydrograph, the time where 50% of V_{BMP} has drained from the basin (24 hour minimum):

Time (50%) = 25.16 hrs

OK

From outflow hydrograph, the time where 100% V_{BMP} has drained from the basin(within 72 hours):

Time (100 %) = 48.10 hrs

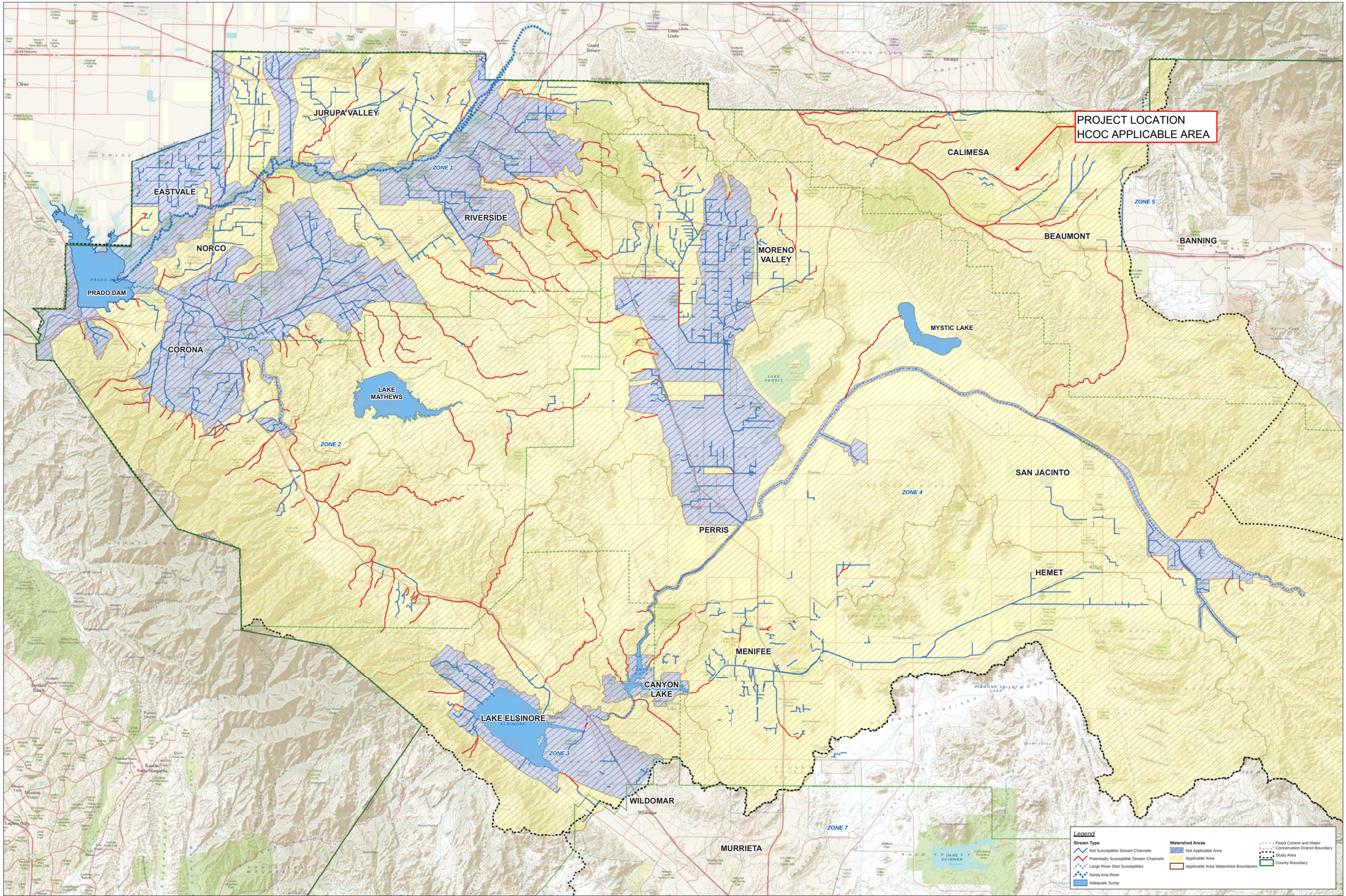
OK

Headwater Elev. / Stage (ft)	Discharge (cfs)	Volume (acre-ft)	Δt (hrs.)
0	0.0000	0.0000	
0.33	0.4082	0.011	0.65
0.67	0.5777	0.146	3.31
1.00	0.7074	0.430	5.35
1.33	0.8167	0.961	8.43
1.67	0.9133	2.108	16.04
2.00	1.0004	3.240	14.31
2.33	*1.0805*	*4.486*	
2.67	*1.1552*	*6.197*	
3.00	*1.2252*	*7.513*	
3.33			
3.67			
4.00			
4.33			
4.67			
5.00			
5.33			
5.67			
6.00			
6.33			
6.67			
7.00			
7.33			
7.67			
8.00			
8.33			
8.67			
9.00			
9.33			
9.67			
10.00			
		∑ =	48.10

Notes:

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern



HCOC Applicability Map

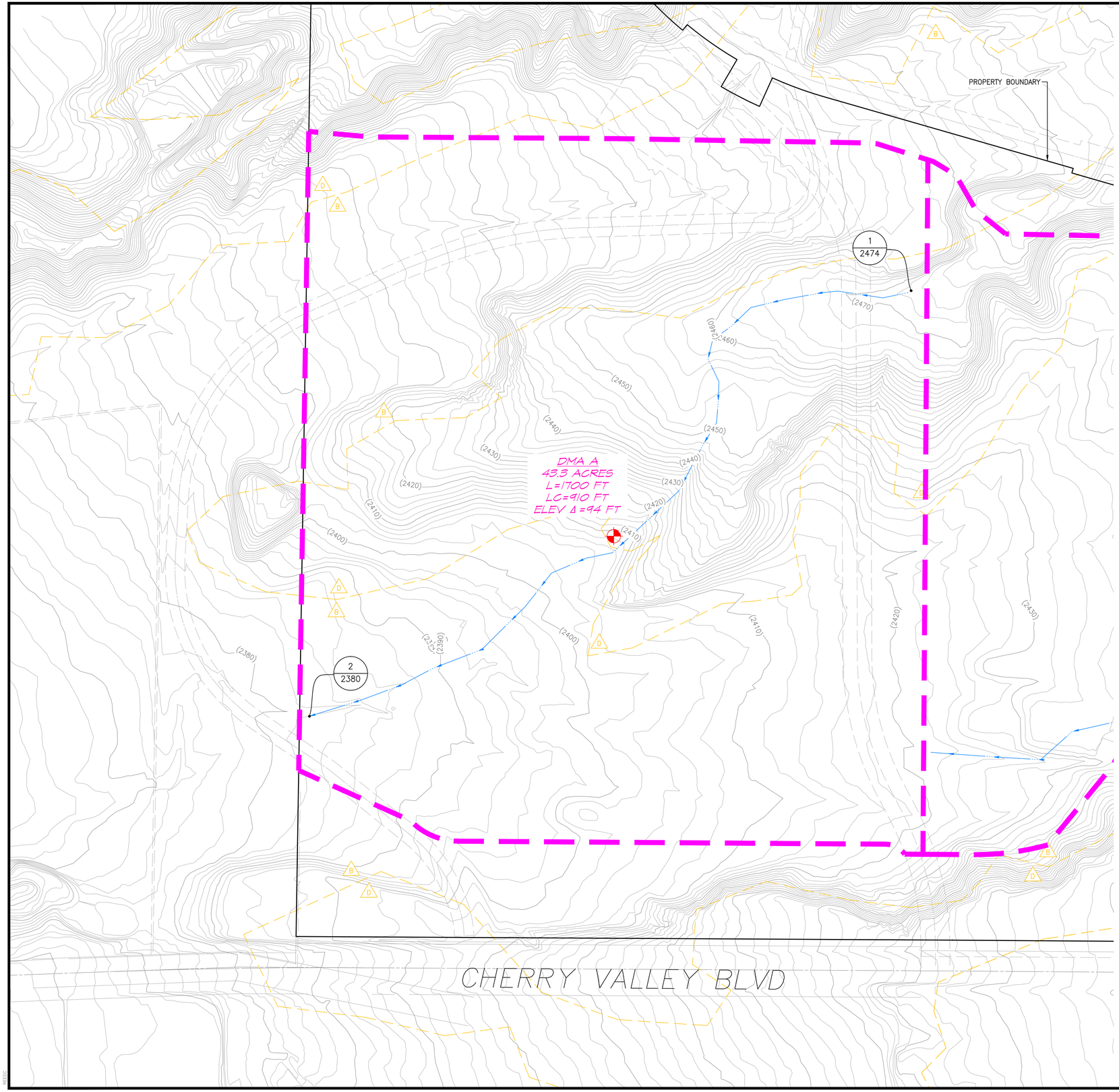
Hydromodification Susceptibility Determination Report Mapping
Riverside County Flood Control and Water Conservation District

EVIR 1092

Map 2

DMA A

UNIT HYDROGRAPH EXHIBIT
DMA A



LEGEND

- DRAINAGE BOUNDARY
- DRAINAGE PATH
- SOIL TYPE BOUNDARY
- CENTROID

N
W WEBB E
S

100' 0 100'

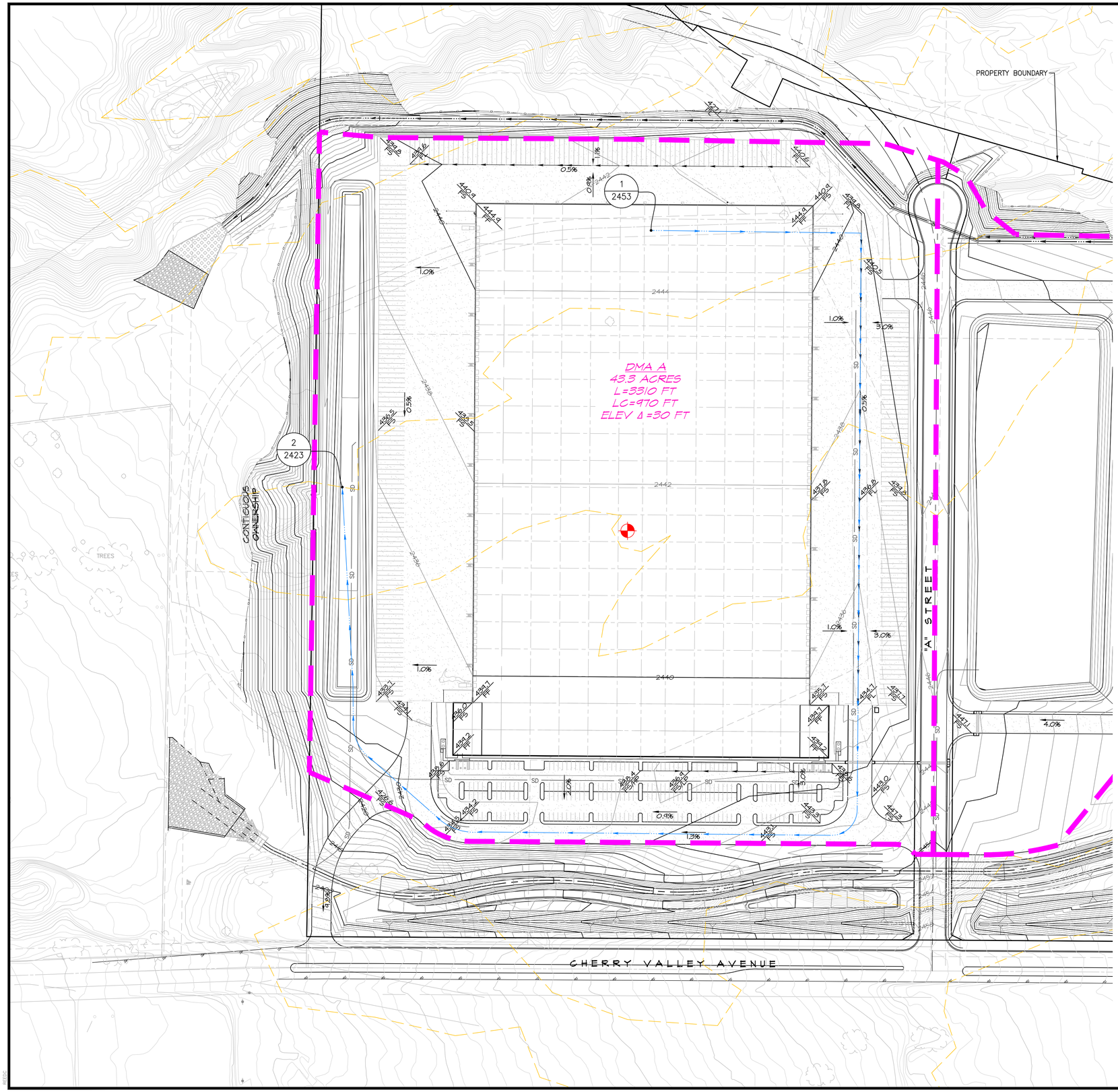
COUNTY OF RIVERSIDE
SAN GORGONIO CROSSINGS

HYDROLOGY MAP
UNIT HYDROGRAPH
EXISTING CONDITIONS
DMA A

SCALE: N/A	ALBERT A. WEBB ASSOCIATES	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	W.O. WO
DATE: DATE			SHEET DMA A
DESIGNED: DESIGNER			OF # SHEETS
CHECKED: CHECKER			
PLN CK REF: REF			DWG. NO.
F.B. F.B.			

R:\2014\14-0213\PLOT\14-0213 UH 100 EX.dwg 10/22/2014 8:05:35 AM

CVAR_10235



LEGEND

- DRAINAGE BOUNDARY
- DRAINAGE PATH
- SOIL TYPE BOUNDARY
- CENTROID

N
W WEBB E
S

100' 0 100'

COUNTY OF RIVERSIDE
SHOPOFF REALTY - SAN GORGONIO CROSSINGS

HYDROLOGY MAP
UNIT HYDROGRAPH
PROPOSED CONDITIONS
DMA A

SCALE:	ALBERT A. WEBB ASSOCIATES ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	W.O. WO
DATE: DATE		SHEET DMA A
DESIGNED: DESIGNER		OF # SHEETS
CHECKED: CHECKER		
PLN CK REF: REF		DWG. NO.
F.B. F.B.		

CVAR_10236

UNIT HYDROGRAPH INPUT DATA
DMA A

14-0213 Date 10/21/2014
SHOPOFF

UNIT HYDROGRAPH INPUT DATA - BASIN A

		EXISTING		DEVELOPED	
TOTAL AREA		43.30		43.30	
L (ft)		1700.00		3310.00	
Lc (ft)		910.00		970.00	
DIFFERENCE IN ELEV. (ft)		94.00		30.00	
AVERAGE "N"		0.040		0.015	
LOW LOSS RATE		0.85 (2YR)-0.9 (10YR)		0.18	
AMC		1(2YR) 2 (10YR)			
AMC II SOIL GROUP BREAKDOWN (Plate C-1.18)					
	A				
	B	0.68		0.68	
	C				
	D	0.32		0.32	
% IMPERVIOUS		0		90	
RI		88	*	62	**
FOOTHILL					

* Barren (Rockland, eroded, graded land) (Plate D-5.5 Runoff Index Numbers)

A	78
B	86
C	91
D	93

** Urban Residential Landscaping (Plate D-5.5 Runoff Index Numbers)

A	32
B	56
C	69
D	75

2-YR 1-HR	0.57
100-YR 1-HR	3.00
2-YR 3-HR	1.00
100-YR 3-HR	2.20
2-YR 6-HR	1.40
100-YR 6-HR	3.20
2-YR 24-HR	2.60
100-YR 24-HR	7.00

HYDROLOGY RESULTS SUMMARY
DMA A

UNIT HYDROGRAPH/ROUTING SUMMARY

14-0213 SHOPOFF

ON-SITE CONDITIONS

DMA A

Treated Area:	43.3	AC
Vbmp:	94,432	CF
Vbmp Depth:	3.4	FT

		EXISTING CONDITIONS		PROPOSED CONDITIONS		PROPOSED CONDITIONS		
		Unit Hydrograph		Unit Hydrograph		Basin Routing		
STORM YEAR	DURATION HOUR	Peak Flow CFS	Total Volume Ac-Ft	Peak Flow CFS	Total Volume Ac-Ft	Routed Peak CFS	Basin Volume Ac.Ft.	Basin Depth Ft.
2	24	3.9	1.0	10.8	5.5	3.8	3.5	4.4

UNIT HYDROGRAPH
DMA A
EXISTING CONDITIONS
2-YEAR 24-HOUR

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004, Version 7.0
Study date 10/21/14 File: AEX242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

14-0213 SHOPOFF
UNIT HYDROGRAPH
DMA A
EXISTING CONDITIONS
2-YEAR 24-HOUR

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 43.30(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.30(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 1700.00(Ft.)
Length along longest watercourse measured to centroid = 910.00(Ft.)
Length along longest watercourse = 0.322 Mi.
Length along longest watercourse measured to centroid = 0.172 Mi.
Difference in elevation = 94.00(Ft.)
Slope along watercourse = 291.9529 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.109 Hr.
Lag time = 6.53 Min.
25% of lag time = 1.63 Min.
40% of lag time = 2.61 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
43.30	2.60	112.58

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
43.30	7.00	303.10

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 2.600(In)
Area Averaged 100-Year Rainfall = 7.000(In)

Point rain (area averaged) = 2.600(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 2.600(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
43.300	88.00	0.000

Total Area Entered = 43.30(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
88.0	74.8	0.305	0.000	0.305	1.000	0.305
					Sum (F) =	0.305

Area averaged mean soil loss (F) (In/Hr) = 0.305
Minimum soil loss rate ((In/Hr)) = 0.153
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	76.587	8.338	3.639
2	0.167	153.173	46.146	20.137
3	0.250	229.760	25.949	11.324
4	0.333	306.346	10.129	4.420
5	0.417	382.933	5.283	2.305
6	0.500	459.519	2.278	0.994
7	0.583	536.106	0.821	0.358
8	0.667	612.692	0.549	0.240
9	0.750	689.279	0.390	0.170
10	0.833	765.865	0.116	0.051
			Sum = 100.000 Sum=	43.638

Unit Time	(Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.021	0.541	0.019	0.00
2	0.17	0.07	0.021	0.539	0.019	0.00
3	0.25	0.07	0.021	0.537	0.019	0.00
4	0.33	0.10	0.031	0.535	0.028	0.00
5	0.42	0.10	0.031	0.533	0.028	0.00
6	0.50	0.10	0.031	0.531	0.028	0.00
7	0.58	0.10	0.031	0.529	0.028	0.00
8	0.67	0.10	0.031	0.527	0.028	0.00
9	0.75	0.10	0.031	0.525	0.028	0.00
10	0.83	0.13	0.042	0.523	0.037	0.00
11	0.92	0.13	0.042	0.521	0.037	0.00
12	1.00	0.13	0.042	0.519	0.037	0.00
13	1.08	0.10	0.031	0.516	0.028	0.00
14	1.17	0.10	0.031	0.514	0.028	0.00
15	1.25	0.10	0.031	0.512	0.028	0.00
16	1.33	0.10	0.031	0.510	0.028	0.00
17	1.42	0.10	0.031	0.508	0.028	0.00
18	1.50	0.10	0.031	0.506	0.028	0.00
19	1.58	0.10	0.031	0.504	0.028	0.00
20	1.67	0.10	0.031	0.502	0.028	0.00
21	1.75	0.10	0.031	0.500	0.028	0.00
22	1.83	0.13	0.042	0.498	0.037	0.00
23	1.92	0.13	0.042	0.496	0.037	0.00
24	2.00	0.13	0.042	0.494	0.037	0.00
25	2.08	0.13	0.042	0.492	0.037	0.00
26	2.17	0.13	0.042	0.490	0.037	0.00
27	2.25	0.13	0.042	0.488	0.037	0.00
28	2.33	0.13	0.042	0.486	0.037	0.00
29	2.42	0.13	0.042	0.484	0.037	0.00
30	2.50	0.13	0.042	0.482	0.037	0.00
31	2.58	0.17	0.052	0.480	0.047	0.01
32	2.67	0.17	0.052	0.478	0.047	0.01
33	2.75	0.17	0.052	0.476	0.047	0.01
34	2.83	0.17	0.052	0.474	0.047	0.01
35	2.92	0.17	0.052	0.472	0.047	0.01
36	3.00	0.17	0.052	0.470	0.047	0.01
37	3.08	0.17	0.052	0.469	0.047	0.01
38	3.17	0.17	0.052	0.467	0.047	0.01
39	3.25	0.17	0.052	0.465	0.047	0.01
40	3.33	0.17	0.052	0.463	0.047	0.01
41	3.42	0.17	0.052	0.461	0.047	0.01

42	3.50	0.17	0.052	0.459	0.047	0.01
43	3.58	0.17	0.052	0.457	0.047	0.01
44	3.67	0.17	0.052	0.455	0.047	0.01
45	3.75	0.17	0.052	0.453	0.047	0.01
46	3.83	0.20	0.062	0.451	0.056	0.01
47	3.92	0.20	0.062	0.449	0.056	0.01
48	4.00	0.20	0.062	0.447	0.056	0.01
49	4.08	0.20	0.062	0.445	0.056	0.01
50	4.17	0.20	0.062	0.444	0.056	0.01
51	4.25	0.20	0.062	0.442	0.056	0.01
52	4.33	0.23	0.073	0.440	0.066	0.01
53	4.42	0.23	0.073	0.438	0.066	0.01
54	4.50	0.23	0.073	0.436	0.066	0.01
55	4.58	0.23	0.073	0.434	0.066	0.01
56	4.67	0.23	0.073	0.432	0.066	0.01
57	4.75	0.23	0.073	0.430	0.066	0.01
58	4.83	0.27	0.083	0.429	0.075	0.01
59	4.92	0.27	0.083	0.427	0.075	0.01
60	5.00	0.27	0.083	0.425	0.075	0.01
61	5.08	0.20	0.062	0.423	0.056	0.01
62	5.17	0.20	0.062	0.421	0.056	0.01
63	5.25	0.20	0.062	0.419	0.056	0.01
64	5.33	0.23	0.073	0.418	0.066	0.01
65	5.42	0.23	0.073	0.416	0.066	0.01
66	5.50	0.23	0.073	0.414	0.066	0.01
67	5.58	0.27	0.083	0.412	0.075	0.01
68	5.67	0.27	0.083	0.410	0.075	0.01
69	5.75	0.27	0.083	0.408	0.075	0.01
70	5.83	0.27	0.083	0.407	0.075	0.01
71	5.92	0.27	0.083	0.405	0.075	0.01
72	6.00	0.27	0.083	0.403	0.075	0.01
73	6.08	0.30	0.094	0.401	0.084	0.01
74	6.17	0.30	0.094	0.399	0.084	0.01
75	6.25	0.30	0.094	0.398	0.084	0.01
76	6.33	0.30	0.094	0.396	0.084	0.01
77	6.42	0.30	0.094	0.394	0.084	0.01
78	6.50	0.30	0.094	0.392	0.084	0.01
79	6.58	0.33	0.104	0.391	0.094	0.01
80	6.67	0.33	0.104	0.389	0.094	0.01
81	6.75	0.33	0.104	0.387	0.094	0.01
82	6.83	0.33	0.104	0.385	0.094	0.01
83	6.92	0.33	0.104	0.384	0.094	0.01
84	7.00	0.33	0.104	0.382	0.094	0.01
85	7.08	0.33	0.104	0.380	0.094	0.01
86	7.17	0.33	0.104	0.378	0.094	0.01
87	7.25	0.33	0.104	0.377	0.094	0.01
88	7.33	0.37	0.114	0.375	0.103	0.01
89	7.42	0.37	0.114	0.373	0.103	0.01
90	7.50	0.37	0.114	0.372	0.103	0.01
91	7.58	0.40	0.125	0.370	0.112	0.01
92	7.67	0.40	0.125	0.368	0.112	0.01
93	7.75	0.40	0.125	0.366	0.112	0.01
94	7.83	0.43	0.135	0.365	0.122	0.01
95	7.92	0.43	0.135	0.363	0.122	0.01
96	8.00	0.43	0.135	0.361	0.122	0.01
97	8.08	0.50	0.156	0.360	0.140	0.02
98	8.17	0.50	0.156	0.358	0.140	0.02
99	8.25	0.50	0.156	0.356	0.140	0.02
100	8.33	0.50	0.156	0.355	0.140	0.02
101	8.42	0.50	0.156	0.353	0.140	0.02
102	8.50	0.50	0.156	0.351	0.140	0.02
103	8.58	0.53	0.166	0.350	0.150	0.02
104	8.67	0.53	0.166	0.348	0.150	0.02
105	8.75	0.53	0.166	0.346	0.150	0.02
106	8.83	0.57	0.177	0.345	0.159	0.02
107	8.92	0.57	0.177	0.343	0.159	0.02
108	9.00	0.57	0.177	0.342	0.159	0.02
109	9.08	0.63	0.198	0.340	0.178	0.02
110	9.17	0.63	0.198	0.338	0.178	0.02
111	9.25	0.63	0.198	0.337	0.178	0.02
112	9.33	0.67	0.208	0.335	0.187	0.02
113	9.42	0.67	0.208	0.334	0.187	0.02
114	9.50	0.67	0.208	0.332	0.187	0.02
115	9.58	0.70	0.218	0.330	0.197	0.02
116	9.67	0.70	0.218	0.329	0.197	0.02

117	9.75	0.70	0.218	0.327	0.197	0.02
118	9.83	0.73	0.229	0.326	0.206	0.02
119	9.92	0.73	0.229	0.324	0.206	0.02
120	10.00	0.73	0.229	0.322	0.206	0.02
121	10.08	0.50	0.156	0.321	0.140	0.02
122	10.17	0.50	0.156	0.319	0.140	0.02
123	10.25	0.50	0.156	0.318	0.140	0.02
124	10.33	0.50	0.156	0.316	0.140	0.02
125	10.42	0.50	0.156	0.315	0.140	0.02
126	10.50	0.50	0.156	0.313	0.140	0.02
127	10.58	0.67	0.208	0.312	0.187	0.02
128	10.67	0.67	0.208	0.310	0.187	0.02
129	10.75	0.67	0.208	0.309	0.187	0.02
130	10.83	0.67	0.208	0.307	0.187	0.02
131	10.92	0.67	0.208	0.306	0.187	0.02
132	11.00	0.67	0.208	0.304	0.187	0.02
133	11.08	0.63	0.198	0.303	0.178	0.02
134	11.17	0.63	0.198	0.301	0.178	0.02
135	11.25	0.63	0.198	0.300	0.178	0.02
136	11.33	0.63	0.198	0.298	0.178	0.02
137	11.42	0.63	0.198	0.297	0.178	0.02
138	11.50	0.63	0.198	0.295	0.178	0.02
139	11.58	0.57	0.177	0.294	0.159	0.02
140	11.67	0.57	0.177	0.292	0.159	0.02
141	11.75	0.57	0.177	0.291	0.159	0.02
142	11.83	0.60	0.187	0.289	0.168	0.02
143	11.92	0.60	0.187	0.288	0.168	0.02
144	12.00	0.60	0.187	0.286	0.168	0.02
145	12.08	0.83	0.260	0.285	0.234	0.03
146	12.17	0.83	0.260	0.284	0.234	0.03
147	12.25	0.83	0.260	0.282	0.234	0.03
148	12.33	0.87	0.270	0.281	0.243	0.03
149	12.42	0.87	0.270	0.279	0.243	0.03
150	12.50	0.87	0.270	0.278	0.243	0.03
151	12.58	0.93	0.291	0.277	---	0.01
152	12.67	0.93	0.291	0.275	---	0.02
153	12.75	0.93	0.291	0.274	---	0.02
154	12.83	0.97	0.302	0.272	---	0.03
155	12.92	0.97	0.302	0.271	---	0.03
156	13.00	0.97	0.302	0.270	---	0.03
157	13.08	1.13	0.354	0.268	---	0.09
158	13.17	1.13	0.354	0.267	---	0.09
159	13.25	1.13	0.354	0.266	---	0.09
160	13.33	1.13	0.354	0.264	---	0.09
161	13.42	1.13	0.354	0.263	---	0.09
162	13.50	1.13	0.354	0.262	---	0.09
163	13.58	0.77	0.239	0.260	0.215	0.02
164	13.67	0.77	0.239	0.259	0.215	0.02
165	13.75	0.77	0.239	0.258	0.215	0.02
166	13.83	0.77	0.239	0.256	0.215	0.02
167	13.92	0.77	0.239	0.255	0.215	0.02
168	14.00	0.77	0.239	0.254	0.215	0.02
169	14.08	0.90	0.281	0.252	---	0.03
170	14.17	0.90	0.281	0.251	---	0.03
171	14.25	0.90	0.281	0.250	---	0.03
172	14.33	0.87	0.270	0.249	---	0.02
173	14.42	0.87	0.270	0.247	---	0.02
174	14.50	0.87	0.270	0.246	---	0.02
175	14.58	0.87	0.270	0.245	---	0.03
176	14.67	0.87	0.270	0.243	---	0.03
177	14.75	0.87	0.270	0.242	---	0.03
178	14.83	0.83	0.260	0.241	---	0.02
179	14.92	0.83	0.260	0.240	---	0.02
180	15.00	0.83	0.260	0.238	---	0.02
181	15.08	0.80	0.250	0.237	---	0.01
182	15.17	0.80	0.250	0.236	---	0.01
183	15.25	0.80	0.250	0.235	---	0.01
184	15.33	0.77	0.239	0.234	---	0.01
185	15.42	0.77	0.239	0.232	---	0.01
186	15.50	0.77	0.239	0.231	---	0.01
187	15.58	0.63	0.198	0.230	0.178	0.02
188	15.67	0.63	0.198	0.229	0.178	0.02
189	15.75	0.63	0.198	0.228	0.178	0.02
190	15.83	0.63	0.198	0.227	0.178	0.02
191	15.92	0.63	0.198	0.225	0.178	0.02

192	16.00	0.63	0.198	0.224	0.178	0.02
193	16.08	0.13	0.042	0.223	0.037	0.00
194	16.17	0.13	0.042	0.222	0.037	0.00
195	16.25	0.13	0.042	0.221	0.037	0.00
196	16.33	0.13	0.042	0.220	0.037	0.00
197	16.42	0.13	0.042	0.219	0.037	0.00
198	16.50	0.13	0.042	0.217	0.037	0.00
199	16.58	0.10	0.031	0.216	0.028	0.00
200	16.67	0.10	0.031	0.215	0.028	0.00
201	16.75	0.10	0.031	0.214	0.028	0.00
202	16.83	0.10	0.031	0.213	0.028	0.00
203	16.92	0.10	0.031	0.212	0.028	0.00
204	17.00	0.10	0.031	0.211	0.028	0.00
205	17.08	0.17	0.052	0.210	0.047	0.01
206	17.17	0.17	0.052	0.209	0.047	0.01
207	17.25	0.17	0.052	0.208	0.047	0.01
208	17.33	0.17	0.052	0.207	0.047	0.01
209	17.42	0.17	0.052	0.206	0.047	0.01
210	17.50	0.17	0.052	0.205	0.047	0.01
211	17.58	0.17	0.052	0.204	0.047	0.01
212	17.67	0.17	0.052	0.203	0.047	0.01
213	17.75	0.17	0.052	0.202	0.047	0.01
214	17.83	0.13	0.042	0.201	0.037	0.00
215	17.92	0.13	0.042	0.200	0.037	0.00
216	18.00	0.13	0.042	0.199	0.037	0.00
217	18.08	0.13	0.042	0.198	0.037	0.00
218	18.17	0.13	0.042	0.197	0.037	0.00
219	18.25	0.13	0.042	0.196	0.037	0.00
220	18.33	0.13	0.042	0.195	0.037	0.00
221	18.42	0.13	0.042	0.194	0.037	0.00
222	18.50	0.13	0.042	0.193	0.037	0.00
223	18.58	0.10	0.031	0.192	0.028	0.00
224	18.67	0.10	0.031	0.191	0.028	0.00
225	18.75	0.10	0.031	0.190	0.028	0.00
226	18.83	0.07	0.021	0.189	0.019	0.00
227	18.92	0.07	0.021	0.188	0.019	0.00
228	19.00	0.07	0.021	0.187	0.019	0.00
229	19.08	0.10	0.031	0.186	0.028	0.00
230	19.17	0.10	0.031	0.186	0.028	0.00
231	19.25	0.10	0.031	0.185	0.028	0.00
232	19.33	0.13	0.042	0.184	0.037	0.00
233	19.42	0.13	0.042	0.183	0.037	0.00
234	19.50	0.13	0.042	0.182	0.037	0.00
235	19.58	0.10	0.031	0.181	0.028	0.00
236	19.67	0.10	0.031	0.181	0.028	0.00
237	19.75	0.10	0.031	0.180	0.028	0.00
238	19.83	0.07	0.021	0.179	0.019	0.00
239	19.92	0.07	0.021	0.178	0.019	0.00
240	20.00	0.07	0.021	0.177	0.019	0.00
241	20.08	0.10	0.031	0.177	0.028	0.00
242	20.17	0.10	0.031	0.176	0.028	0.00
243	20.25	0.10	0.031	0.175	0.028	0.00
244	20.33	0.10	0.031	0.174	0.028	0.00
245	20.42	0.10	0.031	0.173	0.028	0.00
246	20.50	0.10	0.031	0.173	0.028	0.00
247	20.58	0.10	0.031	0.172	0.028	0.00
248	20.67	0.10	0.031	0.171	0.028	0.00
249	20.75	0.10	0.031	0.171	0.028	0.00
250	20.83	0.07	0.021	0.170	0.019	0.00
251	20.92	0.07	0.021	0.169	0.019	0.00
252	21.00	0.07	0.021	0.169	0.019	0.00
253	21.08	0.10	0.031	0.168	0.028	0.00
254	21.17	0.10	0.031	0.167	0.028	0.00
255	21.25	0.10	0.031	0.167	0.028	0.00
256	21.33	0.07	0.021	0.166	0.019	0.00
257	21.42	0.07	0.021	0.165	0.019	0.00
258	21.50	0.07	0.021	0.165	0.019	0.00
259	21.58	0.10	0.031	0.164	0.028	0.00
260	21.67	0.10	0.031	0.163	0.028	0.00
261	21.75	0.10	0.031	0.163	0.028	0.00
262	21.83	0.07	0.021	0.162	0.019	0.00
263	21.92	0.07	0.021	0.162	0.019	0.00
264	22.00	0.07	0.021	0.161	0.019	0.00
265	22.08	0.10	0.031	0.161	0.028	0.00
266	22.17	0.10	0.031	0.160	0.028	0.00

267	22.25	0.10	0.031	0.160	0.028	0.00
268	22.33	0.07	0.021	0.159	0.019	0.00
269	22.42	0.07	0.021	0.159	0.019	0.00
270	22.50	0.07	0.021	0.158	0.019	0.00
271	22.58	0.07	0.021	0.158	0.019	0.00
272	22.67	0.07	0.021	0.157	0.019	0.00
273	22.75	0.07	0.021	0.157	0.019	0.00
274	22.83	0.07	0.021	0.156	0.019	0.00
275	22.92	0.07	0.021	0.156	0.019	0.00
276	23.00	0.07	0.021	0.156	0.019	0.00
277	23.08	0.07	0.021	0.155	0.019	0.00
278	23.17	0.07	0.021	0.155	0.019	0.00
279	23.25	0.07	0.021	0.155	0.019	0.00
280	23.33	0.07	0.021	0.154	0.019	0.00
281	23.42	0.07	0.021	0.154	0.019	0.00
282	23.50	0.07	0.021	0.154	0.019	0.00
283	23.58	0.07	0.021	0.154	0.019	0.00
284	23.67	0.07	0.021	0.153	0.019	0.00
285	23.75	0.07	0.021	0.153	0.019	0.00
286	23.83	0.07	0.021	0.153	0.019	0.00
287	23.92	0.07	0.021	0.153	0.019	0.00
288	24.00	0.07	0.021	0.153	0.019	0.00
	Sum =	100.0			Sum =	3.3

Flood volume = Effective rainfall 0.27(In)
times area 43.3(Ac.)/[(In)/(Ft.)] = 1.0(Ac.Ft)
Total soil loss = 2.33(In)
Total soil loss = 8.391(Ac.Ft)
Total rainfall = 2.60(In)
Flood volume = 43108.2 Cubic Feet
Total soil loss = 365522.6 Cubic Feet

Peak flow rate of this hydrograph = 3.873(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.01	Q	|	|	|	|
0+10	0.0004	0.05	Q	|	|	|	|
0+15	0.0009	0.07	Q	|	|	|	|
0+20	0.0015	0.09	Q	|	|	|	|
0+25	0.0023	0.11	Q	|	|	|	|
0+30	0.0031	0.13	Q	|	|	|	|
0+35	0.0040	0.13	Q	|	|	|	|
0+40	0.0049	0.13	Q	|	|	|	|
0+45	0.0059	0.14	Q	|	|	|	|
0+50	0.0068	0.14	Q	|	|	|	|
0+55	0.0079	0.16	Q	|	|	|	|
1+ 0	0.0091	0.17	Q	|	|	|	|
1+ 5	0.0103	0.17	Q	|	|	|	|
1+10	0.0114	0.15	Q	|	|	|	|
1+15	0.0124	0.14	Q	|	|	|	|
1+20	0.0134	0.14	Q	|	|	|	|
1+25	0.0143	0.14	Q	|	|	|	|
1+30	0.0152	0.14	Q	|	|	|	|
1+35	0.0162	0.14	Q	|	|	|	|
1+40	0.0171	0.14	Q	|	|	|	|
1+45	0.0181	0.14	Q	|	|	|	|
1+50	0.0190	0.14	Q	|	|	|	|
1+55	0.0201	0.16	Q	|	|	|	|
2+ 0	0.0213	0.17	Q	|	|	|	|
2+ 5	0.0226	0.18	Q	|	|	|	|
2+10	0.0238	0.18	Q	|	|	|	|
2+15	0.0250	0.18	QV	|	|	|	|
2+20	0.0263	0.18	QV	|	|	|	|
2+25	0.0275	0.18	QV	|	|	|	|
2+30	0.0288	0.18	QV	|	|	|	|
2+35	0.0301	0.19	QV	|	|	|	|
2+40	0.0315	0.21	QV	|	|	|	|
2+45	0.0330	0.22	QV	|	|	|	|

2+50	0.0345	0.22	QV	|	|	|	|
2+55	0.0361	0.23	QV	|	|	|	|
3+ 0	0.0376	0.23	QV	|	|	|	|
3+ 5	0.0392	0.23	QV	|	|	|	|
3+10	0.0407	0.23	QV	|	|	|	|
3+15	0.0423	0.23	QV	|	|	|	|
3+20	0.0439	0.23	QV	|	|	|	|
3+25	0.0454	0.23	QV	|	|	|	|
3+30	0.0470	0.23	QV	|	|	|	|
3+35	0.0486	0.23	QV	|	|	|	|
3+40	0.0501	0.23	Q V	|	|	|	|
3+45	0.0517	0.23	Q V	|	|	|	|
3+50	0.0533	0.23	Q V	|	|	|	|
3+55	0.0550	0.25	|QV	|	|	|	|
4+ 0	0.0568	0.26	|QV	|	|	|	|
4+ 5	0.0587	0.27	|QV	|	|	|	|
4+10	0.0605	0.27	|QV	|	|	|	|
4+15	0.0624	0.27	|QV	|	|	|	|
4+20	0.0643	0.28	|QV	|	|	|	|
4+25	0.0664	0.30	|QV	|	|	|	|
4+30	0.0685	0.31	|QV	|	|	|	|
4+35	0.0706	0.31	|QV	|	|	|	|
4+40	0.0728	0.32	|QV	|	|	|	|
4+45	0.0750	0.32	|Q V	|	|	|	|
4+50	0.0772	0.32	|Q V	|	|	|	|
4+55	0.0796	0.34	|Q V	|	|	|	|
5+ 0	0.0820	0.35	|Q V	|	|	|	|
5+ 5	0.0844	0.35	|Q V	|	|	|	|
5+10	0.0866	0.31	|Q V	|	|	|	|
5+15	0.0886	0.29	|Q V	|	|	|	|
5+20	0.0905	0.28	|Q V	|	|	|	|
5+25	0.0926	0.30	|Q V	|	|	|	|
5+30	0.0947	0.31	|Q V	|	|	|	|
5+35	0.0969	0.32	|Q V	|	|	|	|
5+40	0.0993	0.34	|Q V	|	|	|	|
5+45	0.1017	0.35	|Q V	|	|	|	|
5+50	0.1042	0.36	|Q V	|	|	|	|
5+55	0.1067	0.36	|Q V	|	|	|	|
6+ 0	0.1092	0.36	|Q V	|	|	|	|
6+ 5	0.1117	0.37	|Q V	|	|	|	|
6+10	0.1144	0.39	|Q V	|	|	|	|
6+15	0.1171	0.40	|Q V	|	|	|	|
6+20	0.1199	0.40	|Q V	|	|	|	|
6+25	0.1227	0.41	|Q V	|	|	|	|
6+30	0.1255	0.41	|Q V	|	|	|	|
6+35	0.1283	0.41	|Q V	|	|	|	|
6+40	0.1313	0.43	|Q V	|	|	|	|
6+45	0.1344	0.45	|Q V	|	|	|	|
6+50	0.1375	0.45	|Q V	|	|	|	|
6+55	0.1406	0.45	|Q V	|	|	|	|
7+ 0	0.1437	0.45	|Q V	|	|	|	|
7+ 5	0.1468	0.45	|Q V	|	|	|	|
7+10	0.1500	0.45	|Q V	|	|	|	|
7+15	0.1531	0.45	|Q V	|	|	|	|
7+20	0.1563	0.46	|Q V	|	|	|	|
7+25	0.1595	0.48	|Q V	|	|	|	|
7+30	0.1629	0.49	|Q V	|	|	|	|
7+35	0.1664	0.50	|Q V	|	|	|	|
7+40	0.1700	0.52	| Q V	|	|	|	|
7+45	0.1736	0.54	| Q V	|	|	|	|
7+50	0.1774	0.54	| Q V	|	|	|	|
7+55	0.1813	0.57	| Q V	|	|	|	|
8+ 0	0.1853	0.58	| Q V	|	|	|	|
8+ 5	0.1894	0.59	| Q V	|	|	|	|
8+10	0.1938	0.64	| Q V	|	|	|	|
8+15	0.1983	0.66	| Q V |	|	|	|
8+20	0.2030	0.67	| Q V |	|	|	|
8+25	0.2076	0.68	| Q V |	|	|	|
8+30	0.2123	0.68	| Q V |	|	|	|
8+35	0.2170	0.68	| Q V |	|	|	|
8+40	0.2219	0.71	| Q V |	|	|	|
8+45	0.2268	0.72	| Q V|	|	|	|
8+50	0.2318	0.73	| Q V|	|	|	|
8+55	0.2370	0.75	| Q V|	|	|	|
9+ 0	0.2422	0.76	| Q V|	|	|	|

9+ 5	0.2476	0.77	Q	V			
9+10	0.2532	0.82	Q	V			
9+15	0.2590	0.84	Q	V			
9+20	0.2649	0.86	Q	V			
9+25	0.2710	0.88	Q	V			
9+30	0.2772	0.90	Q	V			
9+35	0.2834	0.91	Q	V			
9+40	0.2898	0.93	Q	V			
9+45	0.2963	0.94	Q	V			
9+50	0.3029	0.95	Q	V			
9+55	0.3096	0.98	Q	V			
10+ 0	0.3164	0.99	Q	V			
10+ 5	0.3231	0.97	Q	V			
10+10	0.3288	0.82	Q	V			
10+15	0.3339	0.74	Q	V			
10+20	0.3388	0.71	Q	V			
10+25	0.3435	0.69	Q	V			
10+30	0.3483	0.69	Q	V			
10+35	0.3531	0.70	Q	V			
10+40	0.3587	0.81	Q	V			
10+45	0.3646	0.86	Q	V			
10+50	0.3707	0.89	Q	V			
10+55	0.3769	0.90	Q	V			
11+ 0	0.3831	0.90	Q	V			
11+ 5	0.3894	0.90	Q	V			
11+10	0.3954	0.88	Q	V			
11+15	0.4014	0.87	Q	V			
11+20	0.4074	0.87	Q	V			
11+25	0.4134	0.86	Q	V			
11+30	0.4193	0.86	Q	V			
11+35	0.4252	0.86	Q	V			
11+40	0.4308	0.81	Q	V			
11+45	0.4362	0.79	Q	V			
11+50	0.4416	0.78	Q	V			
11+55	0.4472	0.80	Q	V			
12+ 0	0.4527	0.81	Q	V			
12+ 5	0.4585	0.84	Q	V			
12+10	0.4653	0.99	Q	V			
12+15	0.4727	1.07	Q	V			
12+20	0.4803	1.11	Q	V			
12+25	0.4882	1.15	Q	V			
12+30	0.4963	1.17	Q	V			
12+35	0.5040	1.13	Q	V			
12+40	0.5101	0.89	Q	V			
12+45	0.5155	0.78	Q	V			
12+50	0.5211	0.81	Q	V			
12+55	0.5283	1.05	Q	V			
13+ 0	0.5367	1.21	Q	V			
13+ 5	0.5470	1.50	Q	V			
13+10	0.5652	2.63	Q	V			
13+15	0.5878	3.29	Q	V			
13+20	0.6124	3.58	Q	V			
13+25	0.6383	3.76	Q	V			
13+30	0.6650	3.87	Q	V			
13+35	0.6905	3.70	Q	V			
13+40	0.7068	2.36	Q	V			
13+45	0.7179	1.61	Q	V			
13+50	0.7270	1.32	Q	V			
13+55	0.7350	1.17	Q	V			
14+ 0	0.7426	1.10	Q	V			
14+ 5	0.7501	1.09	Q	V			
14+10	0.7582	1.17	Q	V			
14+15	0.7667	1.24	Q	V			
14+20	0.7754	1.27	Q	V			
14+25	0.7831	1.12	Q	V			
14+30	0.7904	1.06	Q	V			
14+35	0.7977	1.07	Q	V			
14+40	0.8053	1.10	Q	V			
14+45	0.8132	1.14	Q	V			
14+50	0.8211	1.16	Q	V			
14+55	0.8280	1.00	Q	V			
15+ 0	0.8344	0.93	Q	V			
15+ 5	0.8407	0.90	Q	V			
15+10	0.8456	0.72	Q	V			
15+15	0.8501	0.65	Q	V			

15+20	0.8543	0.61	| Q	|	|	|	V |
15+25	0.8573	0.43	|Q	|	|	|	V |
15+30	0.8597	0.35	|Q	|	|	|	V |
15+35	0.8624	0.39	|Q	|	|	|	V |
15+40	0.8668	0.63	| Q	|	|	|	V |
15+45	0.8720	0.76	| Q	|	|	|	V |
15+50	0.8776	0.81	| Q	|	|	|	V |
15+55	0.8834	0.84	| Q	|	|	|	V |
16+ 0	0.8893	0.85	| Q	|	|	|	V |
16+ 5	0.8948	0.80	| Q	|	|	|	V |
16+10	0.8982	0.49	|Q	|	|	|	V |
16+15	0.9003	0.31	|Q	|	|	|	V |
16+20	0.9020	0.25	Q	|	|	|	V |
16+25	0.9035	0.21	Q	|	|	|	V |
16+30	0.9048	0.19	Q	|	|	|	V |
16+35	0.9061	0.19	Q	|	|	|	V |
16+40	0.9072	0.16	Q	|	|	|	V |
16+45	0.9082	0.15	Q	|	|	|	V |
16+50	0.9092	0.14	Q	|	|	|	V |
16+55	0.9101	0.14	Q	|	|	|	V |
17+ 0	0.9111	0.14	Q	|	|	|	V |
17+ 5	0.9121	0.14	Q	|	|	|	V |
17+10	0.9133	0.19	Q	|	|	|	V |
17+15	0.9148	0.21	Q	|	|	|	V |
17+20	0.9163	0.22	Q	|	|	|	V |
17+25	0.9178	0.22	Q	|	|	|	V |
17+30	0.9194	0.23	Q	|	|	|	V |
17+35	0.9209	0.23	Q	|	|	|	V |
17+40	0.9225	0.23	Q	|	|	|	V |
17+45	0.9241	0.23	Q	|	|	|	V |
17+50	0.9256	0.22	Q	|	|	|	V |
17+55	0.9270	0.20	Q	|	|	|	V |
18+ 0	0.9283	0.19	Q	|	|	|	V |
18+ 5	0.9296	0.19	Q	|	|	|	V |
18+10	0.9308	0.18	Q	|	|	|	V |
18+15	0.9321	0.18	Q	|	|	|	V |
18+20	0.9334	0.18	Q	|	|	|	V |
18+25	0.9346	0.18	Q	|	|	|	V |
18+30	0.9359	0.18	Q	|	|	|	V |
18+35	0.9371	0.18	Q	|	|	|	V |
18+40	0.9382	0.16	Q	|	|	|	V |
18+45	0.9392	0.15	Q	|	|	|	V |
18+50	0.9401	0.14	Q	|	|	|	V |
18+55	0.9409	0.11	Q	|	|	|	V |
19+ 0	0.9416	0.10	Q	|	|	|	V |
19+ 5	0.9423	0.10	Q	|	|	|	V |
19+10	0.9431	0.12	Q	|	|	|	V |
19+15	0.9440	0.13	Q	|	|	|	V |
19+20	0.9449	0.14	Q	|	|	|	V |
19+25	0.9460	0.16	Q	|	|	|	V |
19+30	0.9472	0.17	Q	|	|	|	V |
19+35	0.9484	0.17	Q	|	|	|	V |
19+40	0.9494	0.15	Q	|	|	|	V |
19+45	0.9504	0.14	Q	|	|	|	V |
19+50	0.9514	0.14	Q	|	|	|	V |
19+55	0.9521	0.11	Q	|	|	|	V |
20+ 0	0.9528	0.10	Q	|	|	|	V |
20+ 5	0.9535	0.10	Q	|	|	|	V |
20+10	0.9543	0.12	Q	|	|	|	V |
20+15	0.9552	0.13	Q	|	|	|	V |
20+20	0.9561	0.13	Q	|	|	|	V |
20+25	0.9571	0.13	Q	|	|	|	V |
20+30	0.9580	0.14	Q	|	|	|	V |
20+35	0.9589	0.14	Q	|	|	|	V |
20+40	0.9599	0.14	Q	|	|	|	V |
20+45	0.9608	0.14	Q	|	|	|	V |
20+50	0.9617	0.13	Q	|	|	|	V |
20+55	0.9625	0.11	Q	|	|	|	V |
21+ 0	0.9632	0.10	Q	|	|	|	V |
21+ 5	0.9638	0.10	Q	|	|	|	V |
21+10	0.9646	0.12	Q	|	|	|	V |
21+15	0.9655	0.13	Q	|	|	|	V|
21+20	0.9664	0.13	Q	|	|	|	V|
21+25	0.9672	0.11	Q	|	|	|	V|
21+30	0.9679	0.10	Q	|	|	|	V|

21+35	0.9685	0.10	Q	|	|	|	V|
21+40	0.9693	0.12	Q	|	|	|	V|
21+45	0.9702	0.13	Q	|	|	|	V|
21+50	0.9711	0.13	Q	|	|	|	V|
21+55	0.9719	0.11	Q	|	|	|	V|
22+ 0	0.9725	0.10	Q	|	|	|	V|
22+ 5	0.9732	0.10	Q	|	|	|	V|
22+10	0.9740	0.12	Q	|	|	|	V|
22+15	0.9749	0.13	Q	|	|	|	V|
22+20	0.9758	0.13	Q	|	|	|	V|
22+25	0.9766	0.11	Q	|	|	|	V|
22+30	0.9772	0.10	Q	|	|	|	V|
22+35	0.9779	0.09	Q	|	|	|	V|
22+40	0.9785	0.09	Q	|	|	|	V|
22+45	0.9792	0.09	Q	|	|	|	V|
22+50	0.9798	0.09	Q	|	|	|	V|
22+55	0.9804	0.09	Q	|	|	|	V|
23+ 0	0.9810	0.09	Q	|	|	|	V|
23+ 5	0.9817	0.09	Q	|	|	|	V|
23+10	0.9823	0.09	Q	|	|	|	V|
23+15	0.9829	0.09	Q	|	|	|	V|
23+20	0.9835	0.09	Q	|	|	|	V|
23+25	0.9842	0.09	Q	|	|	|	V|
23+30	0.9848	0.09	Q	|	|	|	V|
23+35	0.9854	0.09	Q	|	|	|	V|
23+40	0.9860	0.09	Q	|	|	|	V|
23+45	0.9867	0.09	Q	|	|	|	V|
23+50	0.9873	0.09	Q	|	|	|	V|
23+55	0.9879	0.09	Q	|	|	|	V|
24+ 0	0.9885	0.09	Q	|	|	|	V|
24+ 5	0.9891	0.08	Q	|	|	|	V|
24+10	0.9894	0.04	Q	|	|	|	V|
24+15	0.9895	0.02	Q	|	|	|	V|
24+20	0.9896	0.01	Q	|	|	|	V|
24+25	0.9896	0.00	Q	|	|	|	V|
24+30	0.9896	0.00	Q	|	|	|	V|
24+35	0.9896	0.00	Q	|	|	|	V|
24+40	0.9896	0.00	Q	|	|	|	V|
24+45	0.9896	0.00	Q	|	|	|	V

UNIT HYDROGRAPH
DMA A
PROPOSED CONDITIONS
2-YEAR 24-HOUR

U n i t H y d r o g r a p h A n a l y s i s

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Study date 10/21/14 File: APROP242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

14-0213 SHOPOFF
UNIT HYDROGRAPH
DMA A
EXISTING CONDITIONS
2-YEAR 24-HOUR

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 43.30(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.30(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 3310.00(Ft.)
Length along longest watercourse measured to centroid = 970.00(Ft.)
Length along longest watercourse = 0.627 Mi.
Length along longest watercourse measured to centroid = 0.184 Mi.
Difference in elevation = 30.00(Ft.)
Slope along watercourse = 47.8550 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.076 Hr.
Lag time = 4.56 Min.
25% of lag time = 1.14 Min.
40% of lag time = 1.82 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
43.30	2.60	112.58

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
43.30	7.00	303.10

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 2.600(In)
Area Averaged 100-Year Rainfall = 7.000(In)

Point rain (area averaged) = 2.600(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 2.600(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
0.000	62.00	0.900
43.300	62.00	0.900

Total Area Entered = 43.30(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
62.0	42.0	0.650	0.900	0.124	0.000	0.000
62.0	42.0	0.650	0.900	0.124	1.000	0.124
					Sum (F) =	0.124

Area averaged mean soil loss (F) (In/Hr) = 0.124
Minimum soil loss rate ((In/Hr)) = 0.062
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	109.748	17.877	7.801
2	0.167	219.496	56.181	24.516
3	0.250	329.244	16.899	7.374
4	0.333	438.992	6.258	2.731
5	0.417	548.740	1.680	0.733
6	0.500	658.488	0.772	0.337
7	0.583	768.235	0.334	0.146
			Sum = 100.000 Sum=	43.638

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.021	0.219	0.004	0.02
2	0.17	0.07	0.021	0.218	0.004	0.02
3	0.25	0.07	0.021	0.217	0.004	0.02
4	0.33	0.10	0.031	0.217	0.006	0.03
5	0.42	0.10	0.031	0.216	0.006	0.03
6	0.50	0.10	0.031	0.215	0.006	0.03
7	0.58	0.10	0.031	0.214	0.006	0.03
8	0.67	0.10	0.031	0.213	0.006	0.03
9	0.75	0.10	0.031	0.212	0.006	0.03
10	0.83	0.13	0.042	0.212	0.007	0.03
11	0.92	0.13	0.042	0.211	0.007	0.03
12	1.00	0.13	0.042	0.210	0.007	0.03
13	1.08	0.10	0.031	0.209	0.006	0.03
14	1.17	0.10	0.031	0.208	0.006	0.03
15	1.25	0.10	0.031	0.207	0.006	0.03
16	1.33	0.10	0.031	0.207	0.006	0.03
17	1.42	0.10	0.031	0.206	0.006	0.03
18	1.50	0.10	0.031	0.205	0.006	0.03
19	1.58	0.10	0.031	0.204	0.006	0.03
20	1.67	0.10	0.031	0.203	0.006	0.03
21	1.75	0.10	0.031	0.202	0.006	0.03
22	1.83	0.13	0.042	0.202	0.007	0.03
23	1.92	0.13	0.042	0.201	0.007	0.03
24	2.00	0.13	0.042	0.200	0.007	0.03
25	2.08	0.13	0.042	0.199	0.007	0.03
26	2.17	0.13	0.042	0.198	0.007	0.03
27	2.25	0.13	0.042	0.198	0.007	0.03
28	2.33	0.13	0.042	0.197	0.007	0.03
29	2.42	0.13	0.042	0.196	0.007	0.03
30	2.50	0.13	0.042	0.195	0.007	0.03
31	2.58	0.17	0.052	0.194	0.009	0.04
32	2.67	0.17	0.052	0.194	0.009	0.04
33	2.75	0.17	0.052	0.193	0.009	0.04
34	2.83	0.17	0.052	0.192	0.009	0.04
35	2.92	0.17	0.052	0.191	0.009	0.04
36	3.00	0.17	0.052	0.190	0.009	0.04
37	3.08	0.17	0.052	0.190	0.009	0.04
38	3.17	0.17	0.052	0.189	0.009	0.04
39	3.25	0.17	0.052	0.188	0.009	0.04
40	3.33	0.17	0.052	0.187	0.009	0.04
41	3.42	0.17	0.052	0.186	0.009	0.04
42	3.50	0.17	0.052	0.186	0.009	0.04
43	3.58	0.17	0.052	0.185	0.009	0.04

44	3.67	0.17	0.052	0.184	0.009	0.04
45	3.75	0.17	0.052	0.183	0.009	0.04
46	3.83	0.20	0.062	0.183	0.011	0.05
47	3.92	0.20	0.062	0.182	0.011	0.05
48	4.00	0.20	0.062	0.181	0.011	0.05
49	4.08	0.20	0.062	0.180	0.011	0.05
50	4.17	0.20	0.062	0.180	0.011	0.05
51	4.25	0.20	0.062	0.179	0.011	0.05
52	4.33	0.23	0.073	0.178	0.013	0.06
53	4.42	0.23	0.073	0.177	0.013	0.06
54	4.50	0.23	0.073	0.176	0.013	0.06
55	4.58	0.23	0.073	0.176	0.013	0.06
56	4.67	0.23	0.073	0.175	0.013	0.06
57	4.75	0.23	0.073	0.174	0.013	0.06
58	4.83	0.27	0.083	0.173	0.015	0.07
59	4.92	0.27	0.083	0.173	0.015	0.07
60	5.00	0.27	0.083	0.172	0.015	0.07
61	5.08	0.20	0.062	0.171	0.011	0.05
62	5.17	0.20	0.062	0.170	0.011	0.05
63	5.25	0.20	0.062	0.170	0.011	0.05
64	5.33	0.23	0.073	0.169	0.013	0.06
65	5.42	0.23	0.073	0.168	0.013	0.06
66	5.50	0.23	0.073	0.168	0.013	0.06
67	5.58	0.27	0.083	0.167	0.015	0.07
68	5.67	0.27	0.083	0.166	0.015	0.07
69	5.75	0.27	0.083	0.165	0.015	0.07
70	5.83	0.27	0.083	0.165	0.015	0.07
71	5.92	0.27	0.083	0.164	0.015	0.07
72	6.00	0.27	0.083	0.163	0.015	0.07
73	6.08	0.30	0.094	0.162	0.017	0.08
74	6.17	0.30	0.094	0.162	0.017	0.08
75	6.25	0.30	0.094	0.161	0.017	0.08
76	6.33	0.30	0.094	0.160	0.017	0.08
77	6.42	0.30	0.094	0.160	0.017	0.08
78	6.50	0.30	0.094	0.159	0.017	0.08
79	6.58	0.33	0.104	0.158	0.019	0.09
80	6.67	0.33	0.104	0.157	0.019	0.09
81	6.75	0.33	0.104	0.157	0.019	0.09
82	6.83	0.33	0.104	0.156	0.019	0.09
83	6.92	0.33	0.104	0.155	0.019	0.09
84	7.00	0.33	0.104	0.155	0.019	0.09
85	7.08	0.33	0.104	0.154	0.019	0.09
86	7.17	0.33	0.104	0.153	0.019	0.09
87	7.25	0.33	0.104	0.152	0.019	0.09
88	7.33	0.37	0.114	0.152	0.021	0.09
89	7.42	0.37	0.114	0.151	0.021	0.09
90	7.50	0.37	0.114	0.150	0.021	0.09
91	7.58	0.40	0.125	0.150	0.022	0.10
92	7.67	0.40	0.125	0.149	0.022	0.10
93	7.75	0.40	0.125	0.148	0.022	0.10
94	7.83	0.43	0.135	0.148	0.024	0.11
95	7.92	0.43	0.135	0.147	0.024	0.11
96	8.00	0.43	0.135	0.146	0.024	0.11
97	8.08	0.50	0.156	0.146	---	0.01
98	8.17	0.50	0.156	0.145	---	0.01
99	8.25	0.50	0.156	0.144	---	0.01
100	8.33	0.50	0.156	0.144	---	0.01
101	8.42	0.50	0.156	0.143	---	0.01
102	8.50	0.50	0.156	0.142	---	0.01
103	8.58	0.53	0.166	0.142	---	0.02
104	8.67	0.53	0.166	0.141	---	0.03
105	8.75	0.53	0.166	0.140	---	0.03
106	8.83	0.57	0.177	0.140	---	0.04
107	8.92	0.57	0.177	0.139	---	0.04
108	9.00	0.57	0.177	0.138	---	0.04
109	9.08	0.63	0.198	0.138	---	0.06
110	9.17	0.63	0.198	0.137	---	0.06
111	9.25	0.63	0.198	0.136	---	0.06
112	9.33	0.67	0.208	0.136	---	0.07
113	9.42	0.67	0.208	0.135	---	0.07
114	9.50	0.67	0.208	0.134	---	0.07
115	9.58	0.70	0.218	0.134	---	0.08
116	9.67	0.70	0.218	0.133	---	0.09
117	9.75	0.70	0.218	0.132	---	0.09
118	9.83	0.73	0.229	0.132	---	0.10

119	9.92	0.73	0.229	0.131	---	0.10
120	10.00	0.73	0.229	0.130	---	0.10
121	10.08	0.50	0.156	0.130	---	0.03
122	10.17	0.50	0.156	0.129	---	0.03
123	10.25	0.50	0.156	0.129	---	0.03
124	10.33	0.50	0.156	0.128	---	0.03
125	10.42	0.50	0.156	0.127	---	0.03
126	10.50	0.50	0.156	0.127	---	0.03
127	10.58	0.67	0.208	0.126	---	0.08
128	10.67	0.67	0.208	0.126	---	0.08
129	10.75	0.67	0.208	0.125	---	0.08
130	10.83	0.67	0.208	0.124	---	0.08
131	10.92	0.67	0.208	0.124	---	0.08
132	11.00	0.67	0.208	0.123	---	0.08
133	11.08	0.63	0.198	0.122	---	0.08
134	11.17	0.63	0.198	0.122	---	0.08
135	11.25	0.63	0.198	0.121	---	0.08
136	11.33	0.63	0.198	0.121	---	0.08
137	11.42	0.63	0.198	0.120	---	0.08
138	11.50	0.63	0.198	0.119	---	0.08
139	11.58	0.57	0.177	0.119	---	0.06
140	11.67	0.57	0.177	0.118	---	0.06
141	11.75	0.57	0.177	0.118	---	0.06
142	11.83	0.60	0.187	0.117	---	0.07
143	11.92	0.60	0.187	0.117	---	0.07
144	12.00	0.60	0.187	0.116	---	0.07
145	12.08	0.83	0.260	0.115	---	0.14
146	12.17	0.83	0.260	0.115	---	0.15
147	12.25	0.83	0.260	0.114	---	0.15
148	12.33	0.87	0.270	0.114	---	0.16
149	12.42	0.87	0.270	0.113	---	0.16
150	12.50	0.87	0.270	0.112	---	0.16
151	12.58	0.93	0.291	0.112	---	0.18
152	12.67	0.93	0.291	0.111	---	0.18
153	12.75	0.93	0.291	0.111	---	0.18
154	12.83	0.97	0.302	0.110	---	0.19
155	12.92	0.97	0.302	0.110	---	0.19
156	13.00	0.97	0.302	0.109	---	0.19
157	13.08	1.13	0.354	0.109	---	0.24
158	13.17	1.13	0.354	0.108	---	0.25
159	13.25	1.13	0.354	0.107	---	0.25
160	13.33	1.13	0.354	0.107	---	0.25
161	13.42	1.13	0.354	0.106	---	0.25
162	13.50	1.13	0.354	0.106	---	0.25
163	13.58	0.77	0.239	0.105	---	0.13
164	13.67	0.77	0.239	0.105	---	0.13
165	13.75	0.77	0.239	0.104	---	0.13
166	13.83	0.77	0.239	0.104	---	0.14
167	13.92	0.77	0.239	0.103	---	0.14
168	14.00	0.77	0.239	0.103	---	0.14
169	14.08	0.90	0.281	0.102	---	0.18
170	14.17	0.90	0.281	0.102	---	0.18
171	14.25	0.90	0.281	0.101	---	0.18
172	14.33	0.87	0.270	0.101	---	0.17
173	14.42	0.87	0.270	0.100	---	0.17
174	14.50	0.87	0.270	0.100	---	0.17
175	14.58	0.87	0.270	0.099	---	0.17
176	14.67	0.87	0.270	0.099	---	0.17
177	14.75	0.87	0.270	0.098	---	0.17
178	14.83	0.83	0.260	0.098	---	0.16
179	14.92	0.83	0.260	0.097	---	0.16
180	15.00	0.83	0.260	0.097	---	0.16
181	15.08	0.80	0.250	0.096	---	0.15
182	15.17	0.80	0.250	0.096	---	0.15
183	15.25	0.80	0.250	0.095	---	0.15
184	15.33	0.77	0.239	0.095	---	0.14
185	15.42	0.77	0.239	0.094	---	0.15
186	15.50	0.77	0.239	0.094	---	0.15
187	15.58	0.63	0.198	0.093	---	0.10
188	15.67	0.63	0.198	0.093	---	0.10
189	15.75	0.63	0.198	0.092	---	0.11
190	15.83	0.63	0.198	0.092	---	0.11
191	15.92	0.63	0.198	0.091	---	0.11
192	16.00	0.63	0.198	0.091	---	0.11
193	16.08	0.13	0.042	0.090	0.007	0.03

194	16.17	0.13	0.042	0.090	0.007	0.03
195	16.25	0.13	0.042	0.089	0.007	0.03
196	16.33	0.13	0.042	0.089	0.007	0.03
197	16.42	0.13	0.042	0.088	0.007	0.03
198	16.50	0.13	0.042	0.088	0.007	0.03
199	16.58	0.10	0.031	0.088	0.006	0.03
200	16.67	0.10	0.031	0.087	0.006	0.03
201	16.75	0.10	0.031	0.087	0.006	0.03
202	16.83	0.10	0.031	0.086	0.006	0.03
203	16.92	0.10	0.031	0.086	0.006	0.03
204	17.00	0.10	0.031	0.085	0.006	0.03
205	17.08	0.17	0.052	0.085	0.009	0.04
206	17.17	0.17	0.052	0.085	0.009	0.04
207	17.25	0.17	0.052	0.084	0.009	0.04
208	17.33	0.17	0.052	0.084	0.009	0.04
209	17.42	0.17	0.052	0.083	0.009	0.04
210	17.50	0.17	0.052	0.083	0.009	0.04
211	17.58	0.17	0.052	0.082	0.009	0.04
212	17.67	0.17	0.052	0.082	0.009	0.04
213	17.75	0.17	0.052	0.082	0.009	0.04
214	17.83	0.13	0.042	0.081	0.007	0.03
215	17.92	0.13	0.042	0.081	0.007	0.03
216	18.00	0.13	0.042	0.080	0.007	0.03
217	18.08	0.13	0.042	0.080	0.007	0.03
218	18.17	0.13	0.042	0.080	0.007	0.03
219	18.25	0.13	0.042	0.079	0.007	0.03
220	18.33	0.13	0.042	0.079	0.007	0.03
221	18.42	0.13	0.042	0.078	0.007	0.03
222	18.50	0.13	0.042	0.078	0.007	0.03
223	18.58	0.10	0.031	0.078	0.006	0.03
224	18.67	0.10	0.031	0.077	0.006	0.03
225	18.75	0.10	0.031	0.077	0.006	0.03
226	18.83	0.07	0.021	0.077	0.004	0.02
227	18.92	0.07	0.021	0.076	0.004	0.02
228	19.00	0.07	0.021	0.076	0.004	0.02
229	19.08	0.10	0.031	0.075	0.006	0.03
230	19.17	0.10	0.031	0.075	0.006	0.03
231	19.25	0.10	0.031	0.075	0.006	0.03
232	19.33	0.13	0.042	0.074	0.007	0.03
233	19.42	0.13	0.042	0.074	0.007	0.03
234	19.50	0.13	0.042	0.074	0.007	0.03
235	19.58	0.10	0.031	0.073	0.006	0.03
236	19.67	0.10	0.031	0.073	0.006	0.03
237	19.75	0.10	0.031	0.073	0.006	0.03
238	19.83	0.07	0.021	0.072	0.004	0.02
239	19.92	0.07	0.021	0.072	0.004	0.02
240	20.00	0.07	0.021	0.072	0.004	0.02
241	20.08	0.10	0.031	0.071	0.006	0.03
242	20.17	0.10	0.031	0.071	0.006	0.03
243	20.25	0.10	0.031	0.071	0.006	0.03
244	20.33	0.10	0.031	0.071	0.006	0.03
245	20.42	0.10	0.031	0.070	0.006	0.03
246	20.50	0.10	0.031	0.070	0.006	0.03
247	20.58	0.10	0.031	0.070	0.006	0.03
248	20.67	0.10	0.031	0.069	0.006	0.03
249	20.75	0.10	0.031	0.069	0.006	0.03
250	20.83	0.07	0.021	0.069	0.004	0.02
251	20.92	0.07	0.021	0.068	0.004	0.02
252	21.00	0.07	0.021	0.068	0.004	0.02
253	21.08	0.10	0.031	0.068	0.006	0.03
254	21.17	0.10	0.031	0.068	0.006	0.03
255	21.25	0.10	0.031	0.067	0.006	0.03
256	21.33	0.07	0.021	0.067	0.004	0.02
257	21.42	0.07	0.021	0.067	0.004	0.02
258	21.50	0.07	0.021	0.067	0.004	0.02
259	21.58	0.10	0.031	0.066	0.006	0.03
260	21.67	0.10	0.031	0.066	0.006	0.03
261	21.75	0.10	0.031	0.066	0.006	0.03
262	21.83	0.07	0.021	0.066	0.004	0.02
263	21.92	0.07	0.021	0.065	0.004	0.02
264	22.00	0.07	0.021	0.065	0.004	0.02
265	22.08	0.10	0.031	0.065	0.006	0.03
266	22.17	0.10	0.031	0.065	0.006	0.03
267	22.25	0.10	0.031	0.065	0.006	0.03
268	22.33	0.07	0.021	0.064	0.004	0.02

269	22.42	0.07	0.021	0.064	0.004	0.02
270	22.50	0.07	0.021	0.064	0.004	0.02
271	22.58	0.07	0.021	0.064	0.004	0.02
272	22.67	0.07	0.021	0.064	0.004	0.02
273	22.75	0.07	0.021	0.063	0.004	0.02
274	22.83	0.07	0.021	0.063	0.004	0.02
275	22.92	0.07	0.021	0.063	0.004	0.02
276	23.00	0.07	0.021	0.063	0.004	0.02
277	23.08	0.07	0.021	0.063	0.004	0.02
278	23.17	0.07	0.021	0.063	0.004	0.02
279	23.25	0.07	0.021	0.063	0.004	0.02
280	23.33	0.07	0.021	0.062	0.004	0.02
281	23.42	0.07	0.021	0.062	0.004	0.02
282	23.50	0.07	0.021	0.062	0.004	0.02
283	23.58	0.07	0.021	0.062	0.004	0.02
284	23.67	0.07	0.021	0.062	0.004	0.02
285	23.75	0.07	0.021	0.062	0.004	0.02
286	23.83	0.07	0.021	0.062	0.004	0.02
287	23.92	0.07	0.021	0.062	0.004	0.02
288	24.00	0.07	0.021	0.062	0.004	0.02
Sum =		100.0			Sum =	18.3

Flood volume = Effective rainfall 1.53(In)
times area 43.3(Ac.)/[(In)/(Ft.)] = 5.5(Ac.Ft)
Total soil loss = 1.07(In)
Total soil loss = 3.871(Ac.Ft)
Total rainfall = 2.60(In)
Flood volume = 240002.7 Cubic Feet
Total soil loss = 168628.2 Cubic Feet

Peak flow rate of this hydrograph = 10.780(CFS)

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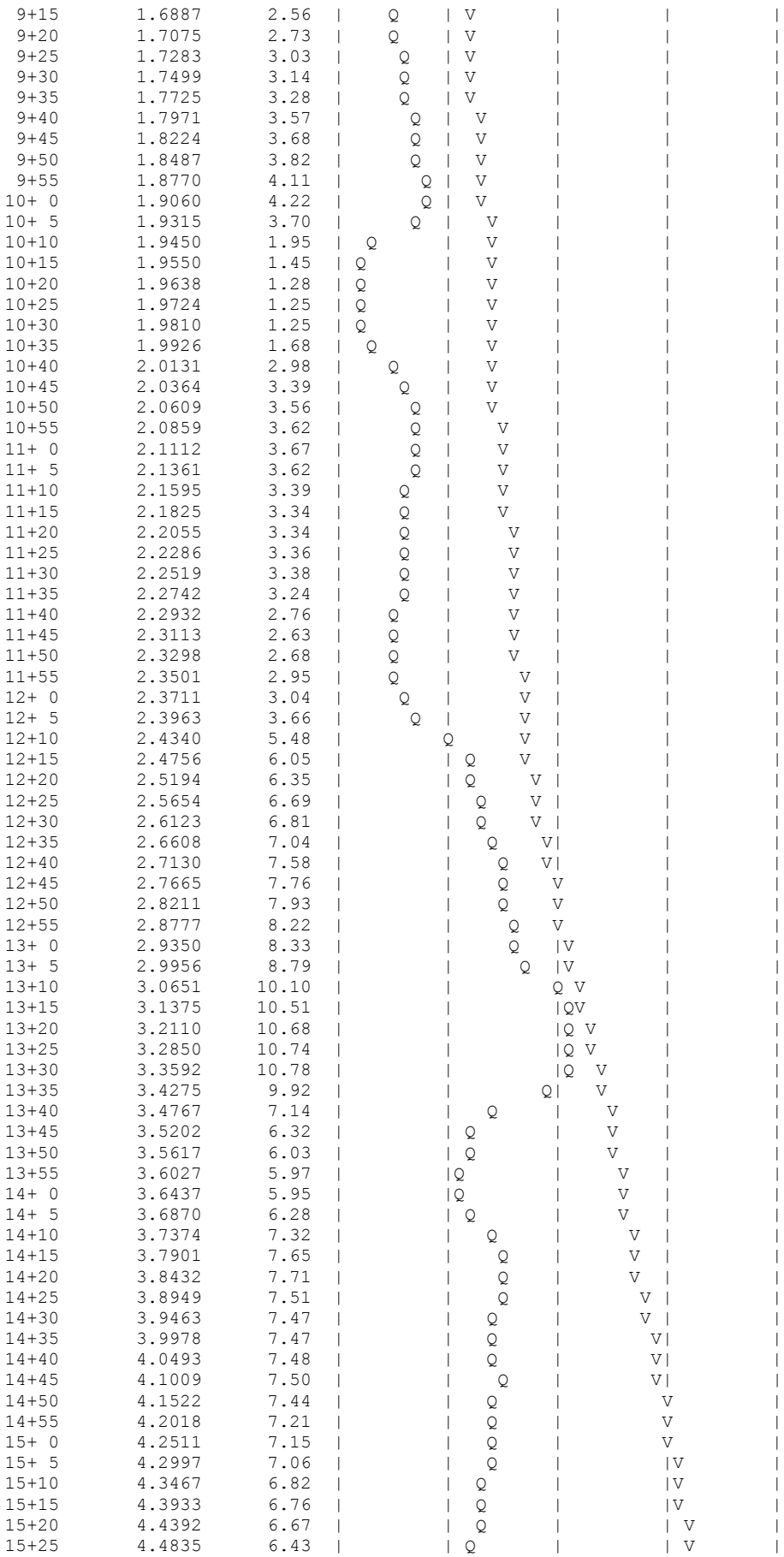
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0009	0.13	Q				
0+10	0.0047	0.55	VQ				
0+15	0.0094	0.68	VQ				
0+20	0.0148	0.79	VQ				
0+25	0.0218	1.01	V Q				
0+30	0.0292	1.08	V Q				
0+35	0.0369	1.11	V Q				
0+40	0.0445	1.11	V Q				
0+45	0.0522	1.12	V Q				
0+50	0.0604	1.18	V Q				
0+55	0.0699	1.39	V Q				
1+ 0	0.0800	1.46	V Q				
1+ 5	0.0897	1.41	V Q				
1+10	0.0980	1.21	V Q				
1+15	0.1059	1.15	V Q				
1+20	0.1137	1.13	V Q				
1+25	0.1214	1.12	V Q				
1+30	0.1291	1.12	V Q				
1+35	0.1368	1.12	V Q				
1+40	0.1445	1.12	|VQ				
1+45	0.1522	1.12	|VQ				
1+50	0.1604	1.18	|VQ				
1+55	0.1699	1.39	|VQ				
2+ 0	0.1800	1.46	|VQ				
2+ 5	0.1902	1.48	|VQ				
2+10	0.2004	1.49	|VQ				
2+15	0.2106	1.49	|VQ				
2+20	0.2209	1.49	|VQ				
2+25	0.2311	1.49	|VQ				
2+30	0.2414	1.49	|VQ				
2+35	0.2521	1.56	|V Q				
2+40	0.2643	1.76	|V Q				
2+45	0.2769	1.83	| VQ				
2+50	0.2896	1.85	| VQ				
2+55	0.3024	1.86	| VQ				

3+ 0	0.3152	1.86	VQ			
3+ 5	0.3280	1.86	VQ			
3+10	0.3409	1.86	VQ			
3+15	0.3537	1.86	VQ			
3+20	0.3665	1.86	VQ			
3+25	0.3793	1.86	VQ			
3+30	0.3921	1.86	VQ			
3+35	0.4050	1.86	VQ			
3+40	0.4178	1.86	Q			
3+45	0.4306	1.86	Q			
3+50	0.4439	1.93	Q			
3+55	0.4586	2.14	VQ			
4+ 0	0.4737	2.20	VQ			
4+ 5	0.4891	2.22	VQ			
4+10	0.5044	2.23	VQ			
4+15	0.5198	2.23	VQ			
4+20	0.5356	2.30	VQ			
4+25	0.5529	2.51	VQ			
4+30	0.5706	2.57	VQ			
4+35	0.5885	2.60	VQ			
4+40	0.6064	2.60	VQ			
4+45	0.6244	2.60	VQ			
4+50	0.6428	2.67	VQ			
4+55	0.6626	2.88	VQ			
5+ 0	0.6829	2.94	VQ			
5+ 5	0.7024	2.83	Q			
5+10	0.7191	2.42	QV			
5+15	0.7350	2.30	QV			
5+20	0.7509	2.32	QV			
5+25	0.7683	2.52	Q			
5+30	0.7860	2.57	Q			
5+35	0.8044	2.66	Q			
5+40	0.8242	2.88	Q			
5+45	0.8445	2.94	QV			
5+50	0.8649	2.97	QV			
5+55	0.8854	2.97	QV			
6+ 0	0.9059	2.98	QV			
6+ 5	0.9269	3.05	Q			
6+10	0.9493	3.25	Q			
6+15	0.9721	3.32	QV			
6+20	0.9951	3.34	QV			
6+25	1.0182	3.35	QV			
6+30	1.0412	3.35	QV			
6+35	1.0648	3.42	QV			
6+40	1.0897	3.63	Q			
6+45	1.1152	3.69	QV			
6+50	1.1407	3.71	QV			
6+55	1.1663	3.72	QV			
7+ 0	1.1920	3.72	QV			
7+ 5	1.2176	3.72	QV			
7+10	1.2432	3.72	Q V			
7+15	1.2689	3.72	Q V			
7+20	1.2950	3.79	Q V			
7+25	1.3225	4.00	Q V			
7+30	1.3505	4.06	QV			
7+35	1.3791	4.15	Q V			
7+40	1.4092	4.37	Q V			
7+45	1.4397	4.43	Q V			
7+50	1.4709	4.52	QV			
7+55	1.5035	4.74	QV			
8+ 0	1.5366	4.81	Q|V			
8+ 5	1.5645	4.05	Q |V			
8+10	1.5754	1.59	Q |V			
8+15	1.5815	0.88	Q |V			
8+20	1.5858	0.63	Q |V			
8+25	1.5899	0.59	Q |V			
8+30	1.5939	0.58	Q |V			
8+35	1.5985	0.68	Q |V			
8+40	1.6051	0.96	Q |V			
8+45	1.6125	1.07	Q |V			
8+50	1.6208	1.21	Q |V			
8+55	1.6311	1.50	Q |V			
9+ 0	1.6422	1.61	Q |V			
9+ 5	1.6547	1.83	Q | V			
9+10	1.6711	2.37	Q | V			



9+15	1.6887	2.56	Q	V			
9+20	1.7075	2.73	Q	V			
9+25	1.7283	3.03	Q	V			
9+30	1.7499	3.14	Q	V			
9+35	1.7725	3.28	Q	V			
9+40	1.7971	3.57	Q	V			
9+45	1.8224	3.68	Q	V			
9+50	1.8487	3.82	Q	V			
9+55	1.8770	4.11	Q	V			
10+ 0	1.9060	4.22	Q	V			
10+ 5	1.9315	3.70	Q	V			
10+10	1.9450	1.95	Q	V			
10+15	1.9550	1.45	Q	V			
10+20	1.9638	1.28	Q	V			
10+25	1.9724	1.25	Q	V			
10+30	1.9810	1.25	Q	V			
10+35	1.9926	1.68	Q	V			
10+40	2.0131	2.98	Q	V			
10+45	2.0364	3.39	Q	V			
10+50	2.0609	3.56	Q	V			
10+55	2.0859	3.62	Q	V			
11+ 0	2.1112	3.67	Q	V			
11+ 5	2.1361	3.62	Q	V			
11+10	2.1595	3.39	Q	V			
11+15	2.1825	3.34	Q	V			
11+20	2.2055	3.34	Q	V			
11+25	2.2286	3.36	Q	V			
11+30	2.2519	3.38	Q	V			
11+35	2.2742	3.24	Q	V			
11+40	2.2932	2.76	Q	V			
11+45	2.3113	2.63	Q	V			
11+50	2.3298	2.68	Q	V			
11+55	2.3501	2.95	Q	V			
12+ 0	2.3711	3.04	Q	V			
12+ 5	2.3963	3.66	Q	V			
12+10	2.4340	5.48	Q	V			
12+15	2.4756	6.05	Q	V			
12+20	2.5194	6.35	Q	V			
12+25	2.5654	6.69	Q	V			
12+30	2.6123	6.81	Q	V			
12+35	2.6608	7.04	Q	V			
12+40	2.7130	7.58	Q	V			
12+45	2.7665	7.76	Q	V			
12+50	2.8211	7.93	Q	V			
12+55	2.8777	8.22	Q	V			
13+ 0	2.9350	8.33	Q	V			
13+ 5	2.9956	8.79	Q	V			
13+10	3.0651	10.10	Q	V			
13+15	3.1375	10.51	Q	V			
13+20	3.2110	10.68	Q	V			
13+25	3.2850	10.74	Q	V			
13+30	3.3592	10.78	Q	V			
13+35	3.4275	9.92	Q	V			
13+40	3.4767	7.14	Q	V			
13+45	3.5202	6.32	Q	V			
13+50	3.5617	6.03	Q	V			
13+55	3.6027	5.97	Q	V			
14+ 0	3.6437	5.95	Q	V			
14+ 5	3.6870	6.28	Q	V			
14+10	3.7374	7.32	Q	V			
14+15	3.7901	7.65	Q	V			
14+20	3.8432	7.71	Q	V			
14+25	3.8949	7.51	Q	V			
14+30	3.9463	7.47	Q	V			
14+35	3.9978	7.47	Q	V			
14+40	4.0493	7.48	Q	V			
14+45	4.1009	7.50	Q	V			
14+50	4.1522	7.44	Q	V			
14+55	4.2018	7.21	Q	V			
15+ 0	4.2511	7.15	Q	V			
15+ 5	4.2997	7.06	Q	V			
15+10	4.3467	6.82	Q	V			
15+15	4.3933	6.76	Q	V			
15+20	4.4392	6.67	Q	V			
15+25	4.4835	6.43	Q	V			

15+30	4.5274	6.37	|		| Q	|		| V	|
15+35	4.5690	6.04	|		| Q	|		| V	|
15+40	4.6037	5.03	|		Q	|		| V	|
15+45	4.6364	4.74	|		Q|	|		| V	|
15+50	4.6684	4.65	|		Q|	|		| V	|
15+55	4.7003	4.64	|		Q|	|		| V	|
16+ 0	4.7323	4.65	|		Q|	|		| V	|
16+ 5	4.7605	4.09	|		Q |	|		| V	|
16+10	4.7764	2.31	|	Q	|	|		| V	|
16+15	4.7886	1.78	|	Q	|	|		| V	|
16+20	4.7995	1.58	|	Q	|	|		| V	|
16+25	4.8100	1.52	|	Q	|	|		| V	|
16+30	4.8203	1.50	| Q		|	|		| V	|
16+35	4.8301	1.42	| Q		|	|		| V	|
16+40	4.8385	1.21	| Q		|	|		| V	|
16+45	4.8464	1.15	| Q		|	|		| V	|
16+50	4.8542	1.13	| Q		|	|		| V	|
16+55	4.8619	1.12	| Q		|	|		| V	|
17+ 0	4.8696	1.12	| Q		|	|		| V	|
17+ 5	4.8782	1.25	| Q		|	|		| V	|
17+10	4.8897	1.67	|	Q	|	|		| V	|
17+15	4.9021	1.79	|	Q	|	|		| V	|
17+20	4.9147	1.84	|	Q	|	|		| V	|
17+25	4.9275	1.85	|	Q	|	|		| V	|
17+30	4.9403	1.86	|	Q	|	|		| V	|
17+35	4.9531	1.86	|	Q	|	|		| V	|
17+40	4.9659	1.86	|	Q	|	|		| V	|
17+45	4.9788	1.86	|	Q	|	|		| V	|
17+50	4.9911	1.79	|	Q	|	|		| V	|
17+55	5.0020	1.59	|	Q	|	|		| V	|
18+ 0	5.0125	1.52	|	Q	|	|		| V	|
18+ 5	5.0229	1.50	| Q		|	|		| V	|
18+10	5.0331	1.49	| Q		|	|		| V	|
18+15	5.0434	1.49	| Q		|	|		| V	|
18+20	5.0537	1.49	| Q		|	|		| V	|
18+25	5.0639	1.49	| Q		|	|		| V	|
18+30	5.0742	1.49	| Q		|	|		| V	|
18+35	5.0840	1.42	| Q		|	|		| V	|
18+40	5.0923	1.21	| Q		|	|		| V	|
18+45	5.1003	1.15	| Q		|	|		| V	|
18+50	5.1076	1.06	| Q		|	|		| V	|
18+55	5.1134	0.85	|Q		|	|		| V	|
19+ 0	5.1188	0.78	|Q		|	|		| V	|
19+ 5	5.1244	0.82	|Q		|	|		| V	|
19+10	5.1315	1.02	| Q		|	|		| V	|
19+15	5.1389	1.08	| Q		|	|		| V	|
19+20	5.1470	1.17	| Q		|	|		| V	|
19+25	5.1566	1.39	| Q		|	|		| V	|
19+30	5.1666	1.45	| Q		|	|		| V	|
19+35	5.1763	1.41	| Q		|	|		| V	|
19+40	5.1847	1.21	| Q		|	|		| V	|
19+45	5.1926	1.15	| Q		|	|		| V	|
19+50	5.1999	1.06	| Q		|	|		| V	|
19+55	5.2057	0.85	|Q		|	|		| V	|
20+ 0	5.2111	0.78	|Q		|	|		| V	|
20+ 5	5.2167	0.82	|Q		|	|		| V	|
20+10	5.2238	1.02	| Q		|	|		| V	|
20+15	5.2312	1.08	| Q		|	|		| V	|
20+20	5.2389	1.11	| Q		|	|		| V	|
20+25	5.2465	1.11	| Q		|	|		| V	|
20+30	5.2542	1.12	| Q		|	|		| V	|
20+35	5.2619	1.12	| Q		|	|		| V	|
20+40	5.2696	1.12	| Q		|	|		| V	|
20+45	5.2773	1.12	| Q		|	|		| V	|
20+50	5.2845	1.05	| Q		|	|		| V	|
20+55	5.2903	0.84	|Q		|	|		| V	|
21+ 0	5.2957	0.78	|Q		|	|		| V	|
21+ 5	5.3013	0.82	|Q		|	|		| V	|
21+10	5.3084	1.02	| Q		|	|		| V	|
21+15	5.3159	1.08	| Q		|	|		| V	|
21+20	5.3230	1.04	| Q		|	|		| V	|
21+25	5.3288	0.84	|Q		|	|		| V	|
21+30	5.3341	0.78	|Q		|	|		| V	|
21+35	5.3398	0.82	|Q		|	|		| V	|
21+40	5.3469	1.02	| Q		|	|		| V	|

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  21+45       5.3543      1.08  | Q       |         |         |       V |
  21+50       5.3615      1.04  | Q       |         |         |       V |
  21+55       5.3673      0.84  |Q        |         |         |       V |
  22+ 0       5.3726      0.78  |Q        |         |         |        V|
  22+ 5       5.3783      0.82  |Q        |         |         |        V|
  22+10       5.3853      1.02  | Q       |         |         |        V|
  22+15       5.3928      1.08  | Q       |         |         |        V|
  22+20       5.3999      1.04  | Q       |         |         |        V|
  22+25       5.4057      0.84  |Q        |         |         |        V|
  22+30       5.4111      0.78  |Q        |         |         |        V|
  22+35       5.4163      0.75  |Q        |         |         |        V|
  22+40       5.4214      0.75  |Q        |         |         |        V|
  22+45       5.4266      0.75  |Q        |         |         |        V|
  22+50       5.4317      0.74  |Q        |         |         |        V|
  22+55       5.4368      0.74  |Q        |         |         |        V|
  23+ 0       5.4419      0.74  |Q        |         |         |        V|
  23+ 5       5.4471      0.74  |Q        |         |         |        V|
  23+10       5.4522      0.74  |Q        |         |         |        V|
  23+15       5.4573      0.74  |Q        |         |         |        V|
  23+20       5.4625      0.74  |Q        |         |         |        V|
  23+25       5.4676      0.74  |Q        |         |         |        V|
  23+30       5.4727      0.74  |Q        |         |         |        V|
  23+35       5.4778      0.74  |Q        |         |         |        V|
  23+40       5.4830      0.74  |Q        |         |         |        V|
  23+45       5.4881      0.74  |Q        |         |         |        V|
  23+50       5.4932      0.74  |Q        |         |         |        V|
  23+55       5.4984      0.74  |Q        |         |         |        V|
  24+ 0       5.5035      0.74  |Q        |         |         |        V|
  24+ 5       5.5077      0.61  |Q        |         |         |        V|
  24+10       5.5090      0.19  Q         |         |         |        V|
  24+15       5.5095      0.07  Q         |         |         |        V|
  24+20       5.5096      0.02  Q         |         |         |        V|
  24+25       5.5097      0.01  Q         |         |         |        V|
  24+30       5.5097      0.00  Q         |         |         |         V
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BASIN ROUTING
DMA A
PROPOSED CONDITIONS
2-YEAR 24-HOUR

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2005
Study date: 10/22/14

14-0213 SHOPOFF
BASIN ROUTING
DMA A
2-YEAR 24-HOUR

Program License Serial Number 4010

******************** HYDROGRAPH INFORMATION **********************

From study/file name: APROP242.rte
****************************HYDROGRAPH DATA****************************
Number of intervals = 294
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 10.780 (CFS)
Total volume = 5.510 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 294
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.100	0.003	0.001	0.003	0.003
1.000	0.163	0.342	0.162	0.164
2.000	0.741	0.497	0.739	0.743
3.000	1.753	0.614	1.751	1.755
3.400	2.222	0.656	2.220	2.224
4.000	2.978	2.841	2.968	2.988
4.400	3.517	3.817	3.504	3.530
5.000	4.378	12.529	4.335	4.421
5.200	4.679	15.300	4.626	4.732
5.500	5.144	23.007	5.065	5.223
6.000	5.955	42.225	5.810	6.100
6.500	6.811	66.515	6.582	7.040
7.000	7.713	94.837	7.386	8.040
7.500	8.662	126.640	8.226	9.098
8.000	9.656	161.558	9.100	10.212
8.500	10.697	199.324	10.011	11.383
9.000	11.786	239.733	10.960	12.612
9.500	12.922	282.618	11.949	13.895

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	2.7	5.39	8.08	10.78	Depth (Ft.)
0.083	0.13	0.00	0.000	O	|	|	|	|	0.02
0.167	0.55	0.00	0.003	OI	|	|	|	|	0.09
0.250	0.68	0.01	0.007	O I	|	|	|	|	0.12
0.333	0.79	0.02	0.012	O I	|	|	|	|	0.15
0.417	1.01	0.03	0.018	O I	|	|	|	|	0.18
0.500	1.08	0.05	0.025	O I	|	|	|	|	0.22
0.583	1.11	0.06	0.032	O I	|	|	|	|	0.26
0.667	1.11	0.08	0.039	O I	|	|	|	|	0.30
0.750	1.12	0.09	0.046	O I	|	|	|	|	0.34
0.833	1.18	0.11	0.054	O I	|	|	|	|	0.38
0.917	1.39	0.13	0.062	O I	|	|	|	|	0.43
1.000	1.46	0.14	0.070	O I	|	|	|	|	0.48
1.083	1.41	0.16	0.079	O I	|	|	|	|	0.53
1.167	1.21	0.18	0.087	O I	|	|	|	|	0.57
1.250	1.15	0.19	0.094	O I	|	|	|	|	0.61
1.333	1.13	0.21	0.100	O I	|	|	|	|	0.65
1.417	1.12	0.22	0.107	O I	|	|	|	|	0.68
1.500	1.12	0.24	0.113	O I	|	|	|	|	0.72
1.583	1.12	0.25	0.119	O I	|	|	|	|	0.75
1.667	1.12	0.26	0.125	O I	|	|	|	|	0.78
1.750	1.12	0.27	0.131	O I	|	|	|	|	0.82
1.833	1.18	0.29	0.137	O I	|	|	|	|	0.85
1.917	1.39	0.30	0.143	O I	|	|	|	|	0.89
2.000	1.46	0.32	0.151	O I	|	|	|	|	0.93
2.083	1.48	0.33	0.159	O I	|	|	|	|	0.98
2.167	1.49	0.34	0.167	|O I	|	|	|	|	1.01
2.250	1.49	0.35	0.175	|O I	|	|	|	|	1.02
2.333	1.49	0.35	0.183	|O I	|	|	|	|	1.03
2.417	1.49	0.35	0.190	|O I	|	|	|	|	1.05
2.500	1.49	0.35	0.198	|O I	|	|	|	|	1.06
2.583	1.56	0.35	0.206	|O I	|	|	|	|	1.08
2.667	1.76	0.36	0.215	|O I	|	|	|	|	1.09
2.750	1.83	0.36	0.225	|O I	|	|	|	|	1.11
2.833	1.85	0.36	0.235	|O I	|	|	|	|	1.13
2.917	1.86	0.36	0.246	|O I	|	|	|	|	1.14
3.000	1.86	0.37	0.256	|O I	|	|	|	|	1.16
3.083	1.86	0.37	0.266	|O I	|	|	|	|	1.18
3.167	1.86	0.37	0.277	|O I	|	|	|	|	1.20
3.250	1.86	0.38	0.287	|O I	|	|	|	|	1.21
3.333	1.86	0.38	0.297	|O I	|	|	|	|	1.23
3.417	1.86	0.38	0.307	|O I	|	|	|	|	1.25
3.500	1.86	0.38	0.317	|O I	|	|	|	|	1.27
3.583	1.86	0.39	0.328	|O I	|	|	|	|	1.28
3.667	1.86	0.39	0.338	|O I	|	|	|	|	1.30
3.750	1.86	0.39	0.348	|O I	|	|	|	|	1.32
3.833	1.93	0.39	0.358	|O I	|	|	|	|	1.34
3.917	2.14	0.40	0.370	|O I	|	|	|	|	1.36
4.000	2.20	0.40	0.382	|O I	|	|	|	|	1.38
4.083	2.22	0.40	0.394	|O I	|	|	|	|	1.40
4.167	2.23	0.41	0.407	|O I	|	|	|	|	1.42
4.250	2.23	0.41	0.419	|O I	|	|	|	|	1.44
4.333	2.30	0.41	0.432	|O I	|	|	|	|	1.47
4.417	2.51	0.42	0.446	|O I|	|	|	|	|	1.49
4.500	2.57	0.42	0.460	|O I|	|	|	|	|	1.51
4.583	2.60	0.43	0.475	|O I|	|	|	|	|	1.54
4.667	2.60	0.43	0.490	|O I|	|	|	|	|	1.57
4.750	2.60	0.43	0.505	|O I|	|	|	|	|	1.59
4.833	2.67	0.44	0.520	|O I|	|	|	|	|	1.62
4.917	2.88	0.44	0.536	|O I	|	|	|	|	1.65
5.000	2.94	0.45	0.553	|O I	|	|	|	|	1.68
5.083	2.83	0.45	0.570	|O I	|	|	|	|	1.70
5.167	2.42	0.46	0.585	|O I|	|	|	|	|	1.73
5.250	2.30	0.46	0.598	|O I |	|	|	|	|	1.75
5.333	2.32	0.46	0.611	|O I |	|	|	|	|	1.78
5.417	2.52	0.47	0.625	|O I|	|	|	|	|	1.80
5.500	2.57	0.47	0.639	|O I|	|	|	|	|	1.82
5.583	2.66	0.47	0.654	|O I|	|	|	|	|	1.85

5.667	2.88	0.48	0.669	O	I			1.88
5.750	2.94	0.48	0.686	O	I			1.91
5.833	2.97	0.49	0.703	O	I			1.93
5.917	2.97	0.49	0.720	O	I			1.96
6.000	2.98	0.50	0.737	O	I			1.99
6.083	3.05	0.50	0.755	O	I			2.01
6.167	3.25	0.50	0.773	O	I			2.03
6.250	3.32	0.50	0.792	O	I			2.05
6.333	3.34	0.51	0.812	O	I			2.07
6.417	3.35	0.51	0.831	O	I			2.09
6.500	3.35	0.51	0.851	O	I			2.11
6.583	3.42	0.51	0.870	O	I			2.13
6.667	3.63	0.51	0.891	O	I			2.15
6.750	3.69	0.52	0.913	O	I			2.17
6.833	3.71	0.52	0.935	O	I			2.19
6.917	3.72	0.52	0.957	O	I			2.21
7.000	3.72	0.52	0.979	O	I			2.23
7.083	3.72	0.53	1.001	O	I			2.26
7.167	3.72	0.53	1.023	O	I			2.28
7.250	3.72	0.53	1.045	O	I			2.30
7.333	3.79	0.53	1.067	O	I			2.32
7.417	4.00	0.54	1.090	O	I			2.34
7.500	4.06	0.54	1.114	O	I			2.37
7.583	4.15	0.54	1.139	O	I			2.39
7.667	4.37	0.55	1.164	O	I			2.42
7.750	4.43	0.55	1.191	O	I			2.44
7.833	4.52	0.55	1.218	O	I			2.47
7.917	4.74	0.56	1.246	O	I			2.50
8.000	4.81	0.56	1.275	O	I			2.53
8.083	4.05	0.56	1.302	O	I			2.55
8.167	1.59	0.56	1.317	O I				2.57
8.250	0.88	0.56	1.322	OI				2.57
8.333	0.63	0.56	1.323	O				2.58
8.417	0.59	0.56	1.323	O				2.58
8.500	0.58	0.56	1.324	O				2.58
8.583	0.68	0.56	1.324	OI				2.58
8.667	0.96	0.56	1.326	OI				2.58
8.750	1.07	0.56	1.329	O I				2.58
8.833	1.21	0.57	1.333	O I				2.58
8.917	1.50	0.57	1.338	O I				2.59
9.000	1.61	0.57	1.345	O I				2.60
9.083	1.83	0.57	1.353	O I				2.60
9.167	2.37	0.57	1.363	O	I			2.62
9.250	2.56	0.57	1.376	O	I			2.63
9.333	2.73	0.57	1.391	O	I			2.64
9.417	3.03	0.57	1.407	O	I			2.66
9.500	3.14	0.58	1.424	O	I			2.67
9.583	3.28	0.58	1.442	O	I			2.69
9.667	3.57	0.58	1.462	O	I			2.71
9.750	3.68	0.58	1.482	O	I			2.73
9.833	3.82	0.59	1.504	O	I			2.75
9.917	4.11	0.59	1.528	O	I			2.78
10.000	4.22	0.59	1.552	O	I			2.80
10.083	3.70	0.59	1.575	O	I			2.82
10.167	1.95	0.60	1.591	O I				2.84
10.250	1.45	0.60	1.598	O I				2.85
10.333	1.28	0.60	1.604	O I				2.85
10.417	1.25	0.60	1.608	O I				2.86
10.500	1.25	0.60	1.613	O I				2.86
10.583	1.68	0.60	1.619	O I				2.87
10.667	2.98	0.60	1.631	O	I			2.88
10.750	3.39	0.60	1.648	O	I			2.90
10.833	3.56	0.60	1.668	O	I			2.92
10.917	3.62	0.61	1.689	O	I			2.94
11.000	3.67	0.61	1.710	O	I			2.96
11.083	3.62	0.61	1.731	O	I			2.98
11.167	3.39	0.61	1.750	O	I			3.00
11.250	3.34	0.62	1.769	O	I			3.01
11.333	3.34	0.62	1.788	O	I			3.03
11.417	3.36	0.62	1.807	O	I			3.05
11.500	3.38	0.62	1.826	O	I			3.06
11.583	3.24	0.62	1.844	O	I			3.08
11.667	2.76	0.62	1.861	O	I			3.09
11.750	2.63	0.62	1.875	O	I			3.10
11.833	2.68	0.63	1.889	O	I			3.12

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11.917    2.95    0.63      1.904  |O      I       |       |       |     3.13
12.000    3.04    0.63      1.920  |O      |I      |       |       |     3.14
12.083    3.66    0.63      1.939  |O      | I     |       |       |     3.16
12.167    5.48    0.63      1.966  |O      |       I       |       |     3.18
12.250    6.05    0.64      2.002  |O      |       |I      |       |     3.21
12.333    6.35    0.64      2.040  |O      |       | I     |       |     3.24
12.417    6.69    0.64      2.080  |O      |       |  I    |       |     3.28
12.500    6.81    0.65      2.122  |O      |       |   I   |       |     3.32
12.583    7.04    0.65      2.166  |O      |       |   I   |       |     3.35
12.667    7.58    0.66      2.212  |O      |       |     I |       |     3.39
12.750    7.76    0.76      2.259  | O     |       |      I|       |     3.43
12.833    7.93    0.90      2.308  | O     |       |      I|       |     3.47
12.917    8.22    1.05      2.357  |  O    |       |       I       |     3.51
13.000    8.33    1.19      2.406  |  O    |       |       I       |     3.55
13.083    8.79    1.33      2.456  |  O    |       |       | I     |     3.59
13.167   10.10    1.49      2.512  |   O   |       |       |    I  |     3.63
13.250   10.51    1.67      2.572  |   O   |       |       |      I|     3.68
13.333   10.68    1.84      2.632  |    O  |       |       |      I|     3.73
13.417   10.74    2.02      2.693  |    O  |       |       |      I|     3.77
13.500   10.78    2.19      2.753  |     O |       |       |       I     3.82
13.583    9.92    2.35      2.808  |     O |       |       |    I  |     3.87
13.667    7.14    2.47      2.850  |      O|       |    I  |       |     3.90
13.750    6.32    2.56      2.879  |      O|       | I     |       |     3.92
13.833    6.03    2.63      2.904  |      O|       |I      |       |     3.94
13.917    5.97    2.69      2.927  |      O|       |I      |       |     3.96
14.000    5.95    2.76      2.949  |       O       |I      |       |     3.98
14.083    6.28    2.82      2.972  |       O       | I     |       |     4.00
14.167    7.32    2.88      2.999  |       O       |    I  |       |     4.02
14.250    7.65    2.94      3.031  |       O       |     I |       |     4.04
14.333    7.71    3.00      3.063  |       O       |     I |       |     4.06
14.417    7.51    3.05      3.095  |       |O      |     I |       |     4.09
14.500    7.47    3.11      3.125  |       |O      |     I |       |     4.11
14.583    7.47    3.16      3.155  |       |O      |     I |       |     4.13
14.667    7.48    3.22      3.185  |       |O      |     I |       |     4.15
14.750    7.50    3.27      3.214  |       |O      |     I |       |     4.18
14.833    7.44    3.32      3.243  |       |O      |     I |       |     4.20
14.917    7.21    3.37      3.270  |       | O     |    I  |       |     4.22
15.000    7.15    3.42      3.296  |       | O     |    I  |       |     4.24
15.083    7.06    3.46      3.321  |       | O     |   I   |       |     4.25
15.167    6.82    3.51      3.345  |       | O     |   I   |       |     4.27
15.250    6.76    3.55      3.368  |       | O     |   I   |       |     4.29
15.333    6.67    3.59      3.389  |       | O     |  I    |       |     4.31
15.417    6.43    3.62      3.410  |       | O     |  I    |       |     4.32
15.500    6.37    3.66      3.429  |       | O     | I     |       |     4.33
15.583    6.04    3.69      3.446  |       | O     |I      |       |     4.35
15.667    5.03    3.71      3.459  |       |  O  I |       |       |     4.36
15.750    4.74    3.73      3.467  |       |  O  I |       |       |     4.36
15.833    4.65    3.74      3.473  |       |  O I  |       |       |     4.37
15.917    4.64    3.75      3.480  |       |  O I  |       |       |     4.37
16.000    4.65    3.76      3.486  |       |  O I  |       |       |     4.38
16.083    4.09    3.77      3.490  |       |  OI   |       |       |     4.38
16.167    2.31    3.76      3.486  |     I |  O    |       |       |     4.38
16.250    1.78    3.74      3.474  |    I  |  O    |       |       |     4.37
16.333    1.58    3.71      3.460  |   I   |  O    |       |       |     4.36
16.417    1.52    3.69      3.445  |   I   | O     |       |       |     4.35
16.500    1.50    3.66      3.430  |   I   | O     |       |       |     4.34
16.583    1.42    3.63      3.415  |   I   | O     |       |       |     4.32
16.667    1.21    3.60      3.400  |  I    | O     |       |       |     4.31
16.750    1.15    3.57      3.383  |  I    | O     |       |       |     4.30
16.833    1.13    3.54      3.366  |  I    | O     |       |       |     4.29
16.917    1.12    3.51      3.350  |  I    | O     |       |       |     4.28
17.000    1.12    3.48      3.333  |  I    | O     |       |       |     4.26
17.083    1.25    3.46      3.318  |  I    | O     |       |       |     4.25
17.167    1.67    3.43      3.304  |   I   | O     |       |       |     4.24
17.250    1.79    3.41      3.292  |    I  | O     |       |       |     4.23
17.333    1.84    3.39      3.281  |    I  | O     |       |       |     4.23
17.417    1.85    3.37      3.271  |    I  | O     |       |       |     4.22
17.500    1.86    3.35      3.261  |    I  |O      |       |       |     4.21
17.583    1.86    3.33      3.250  |    I  |O      |       |       |     4.20
17.667    1.86    3.32      3.240  |    I  |O      |       |       |     4.19
17.750    1.86    3.30      3.230  |    I  |O      |       |       |     4.19
17.833    1.79    3.28      3.220  |    I  |O      |       |       |     4.18
17.917    1.59    3.26      3.209  |   I   |O      |       |       |     4.17
18.000    1.52    3.24      3.198  |   I   |O      |       |       |     4.16
18.083    1.50    3.22      3.186  |   I   |O      |       |       |     4.15
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18.167	1.49	3.20	3.174	| I |O | | |				4.15
18.250	1.49	3.17	3.162	| I |O | | |				4.14
18.333	1.49	3.15	3.151	| I |O | | |				4.13
18.417	1.49	3.13	3.139	| I |O | | |				4.12
18.500	1.49	3.11	3.128	| I |O | | |				4.11
18.583	1.42	3.09	3.117	| I |O | | |				4.10
18.667	1.21	3.07	3.105	| I |O | | |				4.09
18.750	1.15	3.05	3.092	| I |O | | |				4.08
18.833	1.06	3.02	3.079	| I O | | |				4.07
18.917	0.85	3.00	3.064	| I O | | |				4.06
19.000	0.78	2.97	3.049	| I O | | |				4.05
19.083	0.82	2.94	3.035	| I O | | |				4.04
19.167	1.02	2.92	3.021	| I O | | |				4.03
19.250	1.08	2.90	3.008	| I O | | |				4.02
19.333	1.17	2.87	2.996	| I O | | |				4.01
19.417	1.39	2.85	2.985	| I O | | |				4.01
19.500	1.45	2.83	2.975	| I O | | |				4.00
19.583	1.41	2.81	2.966	| I O | | |				3.99
19.667	1.21	2.78	2.955	| I O | | |				3.98
19.750	1.15	2.74	2.945	| I O | | |				3.97
19.833	1.06	2.71	2.933	| I O | | |				3.96
19.917	0.85	2.68	2.921	| I O| | |				3.96
20.000	0.78	2.64	2.909	| I O| | |				3.94
20.083	0.82	2.60	2.896	| I O| | |				3.94
20.167	1.02	2.57	2.885	| I O| | |				3.93
20.250	1.08	2.54	2.874	| I O| | |				3.92
20.333	1.11	2.51	2.864	| I O| | |				3.91
20.417	1.11	2.49	2.855	| I O| | |				3.90
20.500	1.12	2.46	2.846	| I O| | |				3.89
20.583	1.12	2.43	2.836	| I O| | |				3.89
20.667	1.12	2.41	2.827	| I O| | |				3.88
20.750	1.12	2.38	2.819	| I O| | |				3.87
20.833	1.05	2.35	2.810	| I O | | |				3.87
20.917	0.84	2.33	2.800	| I O | | |				3.86
21.000	0.78	2.30	2.790	| I O | | |				3.85
21.083	0.82	2.27	2.780	| I O | | |				3.84
21.167	1.02	2.24	2.770	| I O | | |				3.84
21.250	1.08	2.22	2.762	| I O | | |				3.83
21.333	1.04	2.19	2.754	| I O | | |				3.82
21.417	0.84	2.17	2.746	| I O | | |				3.82
21.500	0.78	2.14	2.737	| I O | | |				3.81
21.583	0.82	2.12	2.727	| I O | | |				3.80
21.667	1.02	2.09	2.719	| I O | | |				3.79
21.750	1.08	2.07	2.712	| I O | | |				3.79
21.833	1.04	2.05	2.705	| I O | | |				3.78
21.917	0.84	2.03	2.698	| I O | | |				3.78
22.000	0.78	2.01	2.689	| I O | | |				3.77
22.083	0.82	1.98	2.681	| I O | | |				3.76
22.167	1.02	1.96	2.674	| I O | | |				3.76
22.250	1.08	1.94	2.668	| I O | | |				3.75
22.333	1.04	1.93	2.662	| I O | | |				3.75
22.417	0.84	1.91	2.655	| I O | | |				3.74
22.500	0.78	1.89	2.647	| I O | | |				3.74
22.583	0.75	1.86	2.640	| I O | | |				3.73
22.667	0.75	1.84	2.632	| I O | | |				3.73
22.750	0.75	1.82	2.625	| I O | | |				3.72
22.833	0.74	1.80	2.617	| I O | | |				3.71
22.917	0.74	1.78	2.610	| I O | | |				3.71
23.000	0.74	1.76	2.603	| I O | | |				3.70
23.083	0.74	1.74	2.596	| I O | | |				3.70
23.167	0.74	1.72	2.590	| I O | | |				3.69
23.250	0.74	1.70	2.583	| I O | | |				3.69
23.333	0.74	1.68	2.576	| I O | | |				3.68
23.417	0.74	1.66	2.570	| I O | | |				3.68
23.500	0.74	1.64	2.564	| I O | | |				3.67
23.583	0.74	1.63	2.558	| I O | | |				3.67
23.667	0.74	1.61	2.552	| I O | | |				3.66
23.750	0.74	1.59	2.546	| I O | | |				3.66
23.833	0.74	1.57	2.540	| I O | | |				3.65
23.917	0.74	1.56	2.534	| I O | | |				3.65
24.000	0.74	1.54	2.529	| I O | | |				3.64
24.083	0.61	1.53	2.523	|I O | | |				3.64
24.167	0.19	1.50	2.515	I O | | |				3.63
24.250	0.07	1.48	2.506	I O | | |				3.63
24.333	0.02	1.45	2.496	I O | | |				3.62

24.417	0.01	1.42	2.486	I O	|	|	|	3.61
24.500	0.00	1.39	2.477	I O	|	|	|	3.60
24.583	0.00	1.36	2.467	I O	|	|	|	3.59
24.667	0.00	1.34	2.458	I O	|	|	|	3.59
24.750	0.00	1.31	2.449	I O	|	|	|	3.58
24.833	0.00	1.29	2.440	I O	|	|	|	3.57
24.917	0.00	1.26	2.431	I O	|	|	|	3.57
25.000	0.00	1.24	2.422	I O	|	|	|	3.56
25.083	0.00	1.21	2.414	I O	|	|	|	3.55
25.167	0.00	1.19	2.406	I O	|	|	|	3.55
25.250	0.00	1.16	2.398	I O	|	|	|	3.54
25.333	0.00	1.14	2.390	I O	|	|	|	3.53
25.417	0.00	1.12	2.382	I O	|	|	|	3.53
25.500	0.00	1.10	2.374	I O	|	|	|	3.52
25.583	0.00	1.07	2.367	I O	|	|	|	3.51
25.667	0.00	1.05	2.360	I O	|	|	|	3.51
25.750	0.00	1.03	2.352	I O	|	|	|	3.50
25.833	0.00	1.01	2.345	I O	|	|	|	3.50
25.917	0.00	0.99	2.338	I O	|	|	|	3.49
26.000	0.00	0.97	2.332	I O	|	|	|	3.49
26.083	0.00	0.95	2.325	I O	|	|	|	3.48
26.167	0.00	0.93	2.318	I O	|	|	|	3.48
26.250	0.00	0.92	2.312	I O	|	|	|	3.47
26.333	0.00	0.90	2.306	I O	|	|	|	3.47
26.417	0.00	0.88	2.300	I O	|	|	|	3.46
26.500	0.00	0.86	2.294	I O	|	|	|	3.46
26.583	0.00	0.85	2.288	I O	|	|	|	3.45
26.667	0.00	0.83	2.282	I O	|	|	|	3.45
26.750	0.00	0.81	2.276	I O	|	|	|	3.44
26.833	0.00	0.80	2.271	I O	|	|	|	3.44
26.917	0.00	0.78	2.265	I O	|	|	|	3.43
27.000	0.00	0.77	2.260	I O	|	|	|	3.43
27.083	0.00	0.75	2.255	I O	|	|	|	3.43
27.167	0.00	0.74	2.250	I O	|	|	|	3.42
27.250	0.00	0.72	2.245	I O	|	|	|	3.42
27.333	0.00	0.71	2.240	I O	|	|	|	3.41
27.417	0.00	0.69	2.235	I O	|	|	|	3.41
27.500	0.00	0.68	2.230	I O	|	|	|	3.41
27.583	0.00	0.67	2.226	IO	|	|	|	3.40
27.667	0.00	0.66	2.221	IO	|	|	|	3.40
27.750	0.00	0.66	2.217	IO	|	|	|	3.40
27.833	0.00	0.66	2.212	IO	|	|	|	3.39
27.917	0.00	0.65	2.208	IO	|	|	|	3.39
28.000	0.00	0.65	2.203	IO	|	|	|	3.38
28.083	0.00	0.65	2.199	IO	|	|	|	3.38
28.167	0.00	0.65	2.194	IO	|	|	|	3.38
28.250	0.00	0.65	2.190	IO	|	|	|	3.37
28.333	0.00	0.65	2.185	IO	|	|	|	3.37
28.417	0.00	0.65	2.181	IO	|	|	|	3.36
28.500	0.00	0.65	2.176	IO	|	|	|	3.36
28.583	0.00	0.65	2.172	IO	|	|	|	3.36
28.667	0.00	0.65	2.167	IO	|	|	|	3.35
28.750	0.00	0.65	2.163	IO	|	|	|	3.35
28.833	0.00	0.65	2.158	IO	|	|	|	3.35
28.917	0.00	0.65	2.154	IO	|	|	|	3.34
29.000	0.00	0.65	2.149	IO	|	|	|	3.34
29.083	0.00	0.65	2.145	IO	|	|	|	3.33
29.167	0.00	0.65	2.140	IO	|	|	|	3.33
29.250	0.00	0.65	2.136	IO	|	|	|	3.33
29.333	0.00	0.65	2.131	IO	|	|	|	3.32
29.417	0.00	0.65	2.127	IO	|	|	|	3.32
29.500	0.00	0.65	2.122	IO	|	|	|	3.32
29.583	0.00	0.65	2.118	IO	|	|	|	3.31
29.667	0.00	0.65	2.113	IO	|	|	|	3.31
29.750	0.00	0.65	2.109	IO	|	|	|	3.30
29.833	0.00	0.65	2.105	IO	|	|	|	3.30
29.917	0.00	0.65	2.100	IO	|	|	|	3.30
30.000	0.00	0.64	2.096	IO	|	|	|	3.29
30.083	0.00	0.64	2.091	IO	|	|	|	3.29
30.167	0.00	0.64	2.087	IO	|	|	|	3.28
30.250	0.00	0.64	2.082	IO	|	|	|	3.28
30.333	0.00	0.64	2.078	IO	|	|	|	3.28
30.417	0.00	0.64	2.073	IO	|	|	|	3.27
30.500	0.00	0.64	2.069	IO	|	|	|	3.27
30.583	0.00	0.64	2.065	IO	|	|	|	3.27

30.667	0.00	0.64	2.060	IO					3.26
30.750	0.00	0.64	2.056	IO					3.26
30.833	0.00	0.64	2.051	IO					3.25
30.917	0.00	0.64	2.047	IO					3.25
31.000	0.00	0.64	2.043	IO					3.25
31.083	0.00	0.64	2.038	IO					3.24
31.167	0.00	0.64	2.034	IO					3.24
31.250	0.00	0.64	2.029	IO					3.24
31.333	0.00	0.64	2.025	IO					3.23
31.417	0.00	0.64	2.021	IO					3.23
31.500	0.00	0.64	2.016	IO					3.22
31.583	0.00	0.64	2.012	IO					3.22
31.667	0.00	0.64	2.007	IO					3.22
31.750	0.00	0.64	2.003	IO					3.21
31.833	0.00	0.64	1.999	IO					3.21
31.917	0.00	0.64	1.994	IO					3.21
32.000	0.00	0.64	1.990	IO					3.20
32.083	0.00	0.63	1.986	IO					3.20
32.167	0.00	0.63	1.981	IO					3.19
32.250	0.00	0.63	1.977	IO					3.19
32.333	0.00	0.63	1.972	IO					3.19
32.417	0.00	0.63	1.968	IO					3.18
32.500	0.00	0.63	1.964	IO					3.18
32.583	0.00	0.63	1.959	IO					3.18
32.667	0.00	0.63	1.955	IO					3.17
32.750	0.00	0.63	1.951	IO					3.17
32.833	0.00	0.63	1.946	IO					3.16
32.917	0.00	0.63	1.942	IO					3.16
33.000	0.00	0.63	1.938	IO					3.16
33.083	0.00	0.63	1.933	IO					3.15
33.167	0.00	0.63	1.929	IO					3.15
33.250	0.00	0.63	1.925	IO					3.15
33.333	0.00	0.63	1.920	IO					3.14
33.417	0.00	0.63	1.916	IO					3.14
33.500	0.00	0.63	1.912	IO					3.14
33.583	0.00	0.63	1.907	IO					3.13
33.667	0.00	0.63	1.903	IO					3.13
33.750	0.00	0.63	1.899	IO					3.12
33.833	0.00	0.63	1.894	IO					3.12
33.917	0.00	0.63	1.890	IO					3.12
34.000	0.00	0.63	1.886	IO					3.11
34.083	0.00	0.63	1.881	IO					3.11
34.167	0.00	0.63	1.877	IO					3.11
34.250	0.00	0.62	1.873	IO					3.10
34.333	0.00	0.62	1.868	IO					3.10
34.417	0.00	0.62	1.864	IO					3.09
34.500	0.00	0.62	1.860	IO					3.09
34.583	0.00	0.62	1.856	IO					3.09
34.667	0.00	0.62	1.851	IO					3.08
34.750	0.00	0.62	1.847	IO					3.08
34.833	0.00	0.62	1.843	IO					3.08
34.917	0.00	0.62	1.838	IO					3.07
35.000	0.00	0.62	1.834	IO					3.07
35.083	0.00	0.62	1.830	IO					3.07
35.167	0.00	0.62	1.826	IO					3.06
35.250	0.00	0.62	1.821	IO					3.06
35.333	0.00	0.62	1.817	IO					3.05
35.417	0.00	0.62	1.813	IO					3.05
35.500	0.00	0.62	1.809	IO					3.05
35.583	0.00	0.62	1.804	IO					3.04
35.667	0.00	0.62	1.800	IO					3.04
35.750	0.00	0.62	1.796	IO					3.04
35.833	0.00	0.62	1.791	IO					3.03
35.917	0.00	0.62	1.787	IO					3.03
36.000	0.00	0.62	1.783	IO					3.03
36.083	0.00	0.62	1.779	IO					3.02
36.167	0.00	0.62	1.774	IO					3.02
36.250	0.00	0.62	1.770	IO					3.01
36.333	0.00	0.62	1.766	IO					3.01
36.417	0.00	0.61	1.762	IO					3.01
36.500	0.00	0.61	1.758	IO					3.00
36.583	0.00	0.61	1.753	IO					3.00
36.667	0.00	0.61	1.749	IO					3.00
36.750	0.00	0.61	1.745	IO					2.99
36.833	0.00	0.61	1.741	IO					2.99

36.917	0.00	0.61	1.736	IO				2.98
37.000	0.00	0.61	1.732	IO				2.98
37.083	0.00	0.61	1.728	IO				2.98
37.167	0.00	0.61	1.724	IO				2.97
37.250	0.00	0.61	1.720	IO				2.97
37.333	0.00	0.61	1.715	IO				2.96
37.417	0.00	0.61	1.711	IO				2.96
37.500	0.00	0.61	1.707	IO				2.95
37.583	0.00	0.61	1.703	IO				2.95
37.667	0.00	0.61	1.699	IO				2.95
37.750	0.00	0.61	1.694	IO				2.94
37.833	0.00	0.61	1.690	IO				2.94
37.917	0.00	0.61	1.686	IO				2.93
38.000	0.00	0.61	1.682	IO				2.93
38.083	0.00	0.61	1.678	IO				2.93
38.167	0.00	0.60	1.674	IO				2.92
38.250	0.00	0.60	1.669	IO				2.92
38.333	0.00	0.60	1.665	IO				2.91
38.417	0.00	0.60	1.661	IO				2.91
38.500	0.00	0.60	1.657	IO				2.91
38.583	0.00	0.60	1.653	IO				2.90
38.667	0.00	0.60	1.649	IO				2.90
38.750	0.00	0.60	1.644	IO				2.89
38.833	0.00	0.60	1.640	IO				2.89
38.917	0.00	0.60	1.636	IO				2.88
39.000	0.00	0.60	1.632	IO				2.88
39.083	0.00	0.60	1.628	IO				2.88
39.167	0.00	0.60	1.624	IO				2.87
39.250	0.00	0.60	1.620	IO				2.87
39.333	0.00	0.60	1.616	IO				2.86
39.417	0.00	0.60	1.611	IO				2.86
39.500	0.00	0.60	1.607	IO				2.86
39.583	0.00	0.60	1.603	IO				2.85
39.667	0.00	0.60	1.599	IO				2.85
39.750	0.00	0.60	1.595	IO				2.84
39.833	0.00	0.60	1.591	IO				2.84
39.917	0.00	0.59	1.587	IO				2.84
40.000	0.00	0.59	1.583	IO				2.83
40.083	0.00	0.59	1.579	IO				2.83
40.167	0.00	0.59	1.575	IO				2.82
40.250	0.00	0.59	1.570	IO				2.82
40.333	0.00	0.59	1.566	IO				2.82
40.417	0.00	0.59	1.562	IO				2.81
40.500	0.00	0.59	1.558	IO				2.81
40.583	0.00	0.59	1.554	IO				2.80
40.667	0.00	0.59	1.550	IO				2.80
40.750	0.00	0.59	1.546	IO				2.80
40.833	0.00	0.59	1.542	IO				2.79
40.917	0.00	0.59	1.538	IO				2.79
41.000	0.00	0.59	1.534	IO				2.78
41.083	0.00	0.59	1.530	IO				2.78
41.167	0.00	0.59	1.526	IO				2.78
41.250	0.00	0.59	1.522	IO				2.77
41.333	0.00	0.59	1.518	IO				2.77
41.417	0.00	0.59	1.514	IO				2.76
41.500	0.00	0.59	1.510	IO				2.76
41.583	0.00	0.59	1.506	IO				2.76
41.667	0.00	0.58	1.502	IO				2.75
41.750	0.00	0.58	1.497	IO				2.75
41.833	0.00	0.58	1.493	IO				2.74
41.917	0.00	0.58	1.489	IO				2.74
42.000	0.00	0.58	1.485	IO				2.74
42.083	0.00	0.58	1.481	IO				2.73
42.167	0.00	0.58	1.477	IO				2.73
42.250	0.00	0.58	1.473	IO				2.72
42.333	0.00	0.58	1.469	IO				2.72
42.417	0.00	0.58	1.465	IO				2.72
42.500	0.00	0.58	1.461	IO				2.71
42.583	0.00	0.58	1.457	IO				2.71
42.667	0.00	0.58	1.453	IO				2.70
42.750	0.00	0.58	1.449	IO				2.70
42.833	0.00	0.58	1.445	IO				2.70
42.917	0.00	0.58	1.441	IO				2.69
43.000	0.00	0.58	1.437	IO				2.69
43.083	0.00	0.58	1.433	IO				2.68

43.167	0.00	0.58	1.430	IO				2.68
43.250	0.00	0.58	1.426	IO				2.68
43.333	0.00	0.58	1.422	IO				2.67
43.417	0.00	0.58	1.418	IO				2.67
43.500	0.00	0.57	1.414	IO				2.66
43.583	0.00	0.57	1.410	IO				2.66
43.667	0.00	0.57	1.406	IO				2.66
43.750	0.00	0.57	1.402	IO				2.65
43.833	0.00	0.57	1.398	IO				2.65
43.917	0.00	0.57	1.394	IO				2.65
44.000	0.00	0.57	1.390	IO				2.64
44.083	0.00	0.57	1.386	IO				2.64
44.167	0.00	0.57	1.382	IO				2.63
44.250	0.00	0.57	1.378	IO				2.63
44.333	0.00	0.57	1.374	IO				2.63
44.417	0.00	0.57	1.370	IO				2.62
44.500	0.00	0.57	1.366	IO				2.62
44.583	0.00	0.57	1.362	IO				2.61
44.667	0.00	0.57	1.359	IO				2.61
44.750	0.00	0.57	1.355	IO				2.61
44.833	0.00	0.57	1.351	IO				2.60
44.917	0.00	0.57	1.347	IO				2.60
45.000	0.00	0.57	1.343	IO				2.59
45.083	0.00	0.57	1.339	IO				2.59
45.167	0.00	0.57	1.335	IO				2.59
45.250	0.00	0.57	1.331	IO				2.58
45.333	0.00	0.56	1.327	IO				2.58
45.417	0.00	0.56	1.323	IO				2.58
45.500	0.00	0.56	1.320	IO				2.57
45.583	0.00	0.56	1.316	IO				2.57
45.667	0.00	0.56	1.312	IO				2.56
45.750	0.00	0.56	1.308	IO				2.56
45.833	0.00	0.56	1.304	IO				2.56
45.917	0.00	0.56	1.300	IO				2.55
46.000	0.00	0.56	1.296	IO				2.55
46.083	0.00	0.56	1.292	IO				2.54
46.167	0.00	0.56	1.289	IO				2.54
46.250	0.00	0.56	1.285	IO				2.54
46.333	0.00	0.56	1.281	IO				2.53
46.417	0.00	0.56	1.277	IO				2.53
46.500	0.00	0.56	1.273	IO				2.53
46.583	0.00	0.56	1.269	IO				2.52
46.667	0.00	0.56	1.265	IO				2.52
46.750	0.00	0.56	1.262	IO				2.51
46.833	0.00	0.56	1.258	IO				2.51
46.917	0.00	0.56	1.254	IO				2.51
47.000	0.00	0.56	1.250	IO				2.50
47.083	0.00	0.56	1.246	IO				2.50
47.167	0.00	0.55	1.243	IO				2.50
47.250	0.00	0.55	1.239	IO				2.49
47.333	0.00	0.55	1.235	IO				2.49
47.417	0.00	0.55	1.231	IO				2.48
47.500	0.00	0.55	1.227	IO				2.48
47.583	0.00	0.55	1.223	IO				2.48
47.667	0.00	0.55	1.220	IO				2.47
47.750	0.00	0.55	1.216	IO				2.47
47.833	0.00	0.55	1.212	IO				2.47
47.917	0.00	0.55	1.208	IO				2.46
48.000	0.00	0.55	1.204	IO				2.46
48.083	0.00	0.55	1.201	IO				2.45
48.167	0.00	0.55	1.197	IO				2.45
48.250	0.00	0.55	1.193	IO				2.45
48.333	0.00	0.55	1.189	IO				2.44
48.417	0.00	0.55	1.186	IO				2.44
48.500	0.00	0.55	1.182	IO				2.44
48.583	0.00	0.55	1.178	IO				2.43
48.667	0.00	0.55	1.174	IO				2.43
48.750	0.00	0.55	1.170	IO				2.42
48.833	0.00	0.55	1.167	IO				2.42
48.917	0.00	0.55	1.163	IO				2.42
49.000	0.00	0.55	1.159	IO				2.41
49.083	0.00	0.54	1.155	IO				2.41
49.167	0.00	0.54	1.152	IO				2.41
49.250	0.00	0.54	1.148	IO				2.40
49.333	0.00	0.54	1.144	IO				2.40

49.417	0.00	0.54	1.140	IO					2.39
49.500	0.00	0.54	1.137	IO					2.39
49.583	0.00	0.54	1.133	IO					2.39
49.667	0.00	0.54	1.129	IO					2.38
49.750	0.00	0.54	1.125	IO					2.38
49.833	0.00	0.54	1.122	IO					2.38
49.917	0.00	0.54	1.118	IO					2.37
50.000	0.00	0.54	1.114	IO					2.37
50.083	0.00	0.54	1.111	IO					2.37
50.167	0.00	0.54	1.107	IO					2.36
50.250	0.00	0.54	1.103	IO					2.36
50.333	0.00	0.54	1.099	IO					2.35
50.417	0.00	0.54	1.096	IO					2.35
50.500	0.00	0.54	1.092	IO					2.35
50.583	0.00	0.54	1.088	IO					2.34
50.667	0.00	0.54	1.085	IO					2.34
50.750	0.00	0.54	1.081	IO					2.34
50.833	0.00	0.54	1.077	IO					2.33
50.917	0.00	0.54	1.074	IO					2.33
51.000	0.00	0.54	1.070	IO					2.32
51.083	0.00	0.53	1.066	IO					2.32
51.167	0.00	0.53	1.063	IO					2.32
51.250	0.00	0.53	1.059	IO					2.31
51.333	0.00	0.53	1.055	IO					2.31
51.417	0.00	0.53	1.051	IO					2.31
51.500	0.00	0.53	1.048	IO					2.30
51.583	0.00	0.53	1.044	IO					2.30
51.667	0.00	0.53	1.040	IO					2.30
51.750	0.00	0.53	1.037	IO					2.29
51.833	0.00	0.53	1.033	IO					2.29
51.917	0.00	0.53	1.030	IO					2.29
52.000	0.00	0.53	1.026	IO					2.28
52.083	0.00	0.53	1.022	IO					2.28
52.167	0.00	0.53	1.019	IO					2.27
52.250	0.00	0.53	1.015	IO					2.27
52.333	0.00	0.53	1.011	IO					2.27
52.417	0.00	0.53	1.008	IO					2.26
52.500	0.00	0.53	1.004	IO					2.26
52.583	0.00	0.53	1.000	IO					2.26
52.667	0.00	0.53	0.997	IO					2.25
52.750	0.00	0.53	0.993	IO					2.25
52.833	0.00	0.53	0.990	IO					2.25
52.917	0.00	0.53	0.986	IO					2.24
53.000	0.00	0.52	0.982	IO					2.24
53.083	0.00	0.52	0.979	IO					2.23
53.167	0.00	0.52	0.975	IO					2.23
53.250	0.00	0.52	0.971	IO					2.23
53.333	0.00	0.52	0.968	IO					2.22
53.417	0.00	0.52	0.964	IO					2.22
53.500	0.00	0.52	0.961	IO					2.22
53.583	0.00	0.52	0.957	IO					2.21
53.667	0.00	0.52	0.953	IO					2.21
53.750	0.00	0.52	0.950	IO					2.21
53.833	0.00	0.52	0.946	IO					2.20
53.917	0.00	0.52	0.943	IO					2.20
54.000	0.00	0.52	0.939	IO					2.20
54.083	0.00	0.52	0.936	IO					2.19
54.167	0.00	0.52	0.932	IO					2.19
54.250	0.00	0.52	0.928	IO					2.19
54.333	0.00	0.52	0.925	IO					2.18
54.417	0.00	0.52	0.921	IO					2.18
54.500	0.00	0.52	0.918	IO					2.17
54.583	0.00	0.52	0.914	IO					2.17
54.667	0.00	0.52	0.911	IO					2.17
54.750	0.00	0.52	0.907	IO					2.16
54.833	0.00	0.52	0.903	IO					2.16
54.917	0.00	0.52	0.900	IO					2.16
55.000	0.00	0.51	0.896	IO					2.15
55.083	0.00	0.51	0.893	IO					2.15
55.167	0.00	0.51	0.889	IO					2.15
55.250	0.00	0.51	0.886	IO					2.14
55.333	0.00	0.51	0.882	IO					2.14
55.417	0.00	0.51	0.879	IO					2.14
55.500	0.00	0.51	0.875	IO					2.13
55.583	0.00	0.51	0.872	IO					2.13

55.667	0.00	0.51	0.868	IO				2.13
55.750	0.00	0.51	0.865	IO				2.12
55.833	0.00	0.51	0.861	IO				2.12
55.917	0.00	0.51	0.857	IO				2.12
56.000	0.00	0.51	0.854	IO				2.11
56.083	0.00	0.51	0.850	IO				2.11
56.167	0.00	0.51	0.847	IO				2.10
56.250	0.00	0.51	0.843	IO				2.10
56.333	0.00	0.51	0.840	IO				2.10
56.417	0.00	0.51	0.836	IO				2.09
56.500	0.00	0.51	0.833	IO				2.09
56.583	0.00	0.51	0.829	IO				2.09
56.667	0.00	0.51	0.826	IO				2.08
56.750	0.00	0.51	0.822	IO				2.08
56.833	0.00	0.51	0.819	IO				2.08
56.917	0.00	0.51	0.816	IO				2.07
57.000	0.00	0.51	0.812	IO				2.07
57.083	0.00	0.50	0.809	IO				2.07
57.167	0.00	0.50	0.805	IO				2.06
57.250	0.00	0.50	0.802	IO				2.06
57.333	0.00	0.50	0.798	IO				2.06
57.417	0.00	0.50	0.795	IO				2.05
57.500	0.00	0.50	0.791	IO				2.05
57.583	0.00	0.50	0.788	IO				2.05
57.667	0.00	0.50	0.784	IO				2.04
57.750	0.00	0.50	0.781	IO				2.04
57.833	0.00	0.50	0.777	IO				2.04
57.917	0.00	0.50	0.774	IO				2.03
58.000	0.00	0.50	0.770	IO				2.03
58.083	0.00	0.50	0.767	IO				2.03
58.167	0.00	0.50	0.764	IO				2.02
58.250	0.00	0.50	0.760	IO				2.02
58.333	0.00	0.50	0.757	IO				2.02
58.417	0.00	0.50	0.753	IO				2.01
58.500	0.00	0.50	0.750	IO				2.01
58.583	0.00	0.50	0.746	IO				2.01
58.667	0.00	0.50	0.743	IO				2.00
58.750	0.00	0.50	0.740	IO				2.00
58.833	0.00	0.50	0.736	IO				1.99
58.917	0.00	0.49	0.733	IO				1.99
59.000	0.00	0.49	0.729	IO				1.98
59.083	0.00	0.49	0.726	IO				1.97
59.167	0.00	0.49	0.723	IO				1.97
59.250	0.00	0.49	0.719	IO				1.96
59.333	0.00	0.49	0.716	IO				1.96
59.417	0.00	0.49	0.712	IO				1.95
59.500	0.00	0.49	0.709	IO				1.94
59.583	0.00	0.49	0.706	IO				1.94
59.667	0.00	0.49	0.702	IO				1.93
59.750	0.00	0.49	0.699	IO				1.93
59.833	0.00	0.48	0.696	IO				1.92
59.917	0.00	0.48	0.692	IO				1.92
60.000	0.00	0.48	0.689	IO				1.91
60.083	0.00	0.48	0.686	IO				1.90
60.167	0.00	0.48	0.682	IO				1.90
60.250	0.00	0.48	0.679	IO				1.89
60.333	0.00	0.48	0.676	IO				1.89
60.417	0.00	0.48	0.672	IO				1.88
60.500	0.00	0.48	0.669	IO				1.88
60.583	0.00	0.48	0.666	IO				1.87
60.667	0.00	0.48	0.663	IO				1.86
60.750	0.00	0.48	0.659	IO				1.86
60.833	0.00	0.47	0.656	IO				1.85
60.917	0.00	0.47	0.653	IO				1.85
61.000	0.00	0.47	0.649	IO				1.84
61.083	0.00	0.47	0.646	IO				1.84
61.167	0.00	0.47	0.643	IO				1.83
61.250	0.00	0.47	0.640	IO				1.82
61.333	0.00	0.47	0.637	IO				1.82
61.417	0.00	0.47	0.633	IO				1.81
61.500	0.00	0.47	0.630	IO				1.81
61.583	0.00	0.47	0.627	IO				1.80
61.667	0.00	0.47	0.624	IO				1.80
61.750	0.00	0.46	0.620	IO				1.79
61.833	0.00	0.46	0.617	IO				1.79

61.917	0.00	0.46	0.614	IO				1.78
62.000	0.00	0.46	0.611	IO				1.77
62.083	0.00	0.46	0.608	IO				1.77
62.167	0.00	0.46	0.605	IO				1.76
62.250	0.00	0.46	0.601	IO				1.76
62.333	0.00	0.46	0.598	IO				1.75
62.417	0.00	0.46	0.595	IO				1.75
62.500	0.00	0.46	0.592	IO				1.74
62.583	0.00	0.46	0.589	IO				1.74
62.667	0.00	0.46	0.586	IO				1.73
62.750	0.00	0.45	0.582	IO				1.73
62.833	0.00	0.45	0.579	IO				1.72
62.917	0.00	0.45	0.576	IO				1.71
63.000	0.00	0.45	0.573	IO				1.71
63.083	0.00	0.45	0.570	IO				1.70
63.167	0.00	0.45	0.567	IO				1.70
63.250	0.00	0.45	0.564	IO				1.69
63.333	0.00	0.45	0.561	IO				1.69
63.417	0.00	0.45	0.558	IO				1.68
63.500	0.00	0.45	0.555	IO				1.68
63.583	0.00	0.45	0.551	IO				1.67
63.667	0.00	0.45	0.548	IO				1.67
63.750	0.00	0.44	0.545	IO				1.66
63.833	0.00	0.44	0.542	IO				1.66
63.917	0.00	0.44	0.539	IO				1.65
64.000	0.00	0.44	0.536	IO				1.65
64.083	0.00	0.44	0.533	IO				1.64
64.167	0.00	0.44	0.530	IO				1.64
64.250	0.00	0.44	0.527	IO				1.63
64.333	0.00	0.44	0.524	IO				1.62
64.417	0.00	0.44	0.521	IO				1.62
64.500	0.00	0.44	0.518	IO				1.61
64.583	0.00	0.44	0.515	IO				1.61
64.667	0.00	0.44	0.512	IO				1.60
64.750	0.00	0.43	0.509	IO				1.60
64.833	0.00	0.43	0.506	IO				1.59
64.917	0.00	0.43	0.503	IO				1.59
65.000	0.00	0.43	0.500	IO				1.58
65.083	0.00	0.43	0.497	IO				1.58
65.167	0.00	0.43	0.494	IO				1.57
65.250	0.00	0.43	0.491	IO				1.57
65.333	0.00	0.43	0.488	IO				1.56
65.417	0.00	0.43	0.485	IO				1.56
65.500	0.00	0.43	0.482	IO				1.55
65.583	0.00	0.43	0.479	IO				1.55
65.667	0.00	0.43	0.476	IO				1.54
65.750	0.00	0.43	0.473	IO				1.54
65.833	0.00	0.42	0.471	IO				1.53
65.917	0.00	0.42	0.468	IO				1.53
66.000	0.00	0.42	0.465	IO				1.52
66.083	0.00	0.42	0.462	IO				1.52
66.167	0.00	0.42	0.459	IO				1.51
66.250	0.00	0.42	0.456	IO				1.51
66.333	0.00	0.42	0.453	IO				1.50
66.417	0.00	0.42	0.450	IO				1.50
66.500	0.00	0.42	0.447	IO				1.49
66.583	0.00	0.42	0.444	IO				1.49
66.667	0.00	0.42	0.442	IO				1.48
66.750	0.00	0.42	0.439	IO				1.48
66.833	0.00	0.42	0.436	IO				1.47
66.917	0.00	0.41	0.433	IO				1.47
67.000	0.00	0.41	0.430	IO				1.46
67.083	0.00	0.41	0.427	IO				1.46
67.167	0.00	0.41	0.424	IO				1.45
67.250	0.00	0.41	0.422	IO				1.45
67.333	0.00	0.41	0.419	IO				1.44
67.417	0.00	0.41	0.416	IO				1.44
67.500	0.00	0.41	0.413	IO				1.43
67.583	0.00	0.41	0.410	IO				1.43
67.667	0.00	0.41	0.407	IO				1.42
67.750	0.00	0.41	0.405	IO				1.42
67.833	0.00	0.41	0.402	IO				1.41
67.917	0.00	0.41	0.399	IO				1.41
68.000	0.00	0.40	0.396	IO				1.40
68.083	0.00	0.40	0.394	IO				1.40

68.167	0.00	0.40	0.391	IO				1.39
68.250	0.00	0.40	0.388	IO				1.39
68.333	0.00	0.40	0.385	IO				1.38
68.417	0.00	0.40	0.382	IO				1.38
68.500	0.00	0.40	0.380	IO				1.37
68.583	0.00	0.40	0.377	IO				1.37
68.667	0.00	0.40	0.374	IO				1.37
68.750	0.00	0.40	0.371	IO				1.36
68.833	0.00	0.40	0.369	IO				1.36
68.917	0.00	0.40	0.366	IO				1.35
69.000	0.00	0.40	0.363	IO				1.35
69.083	0.00	0.39	0.361	IO				1.34
69.167	0.00	0.39	0.358	IO				1.34
69.250	0.00	0.39	0.355	IO				1.33
69.333	0.00	0.39	0.352	IO				1.33
69.417	0.00	0.39	0.350	IO				1.32
69.500	0.00	0.39	0.347	IO				1.32
69.583	0.00	0.39	0.344	IO				1.31
69.667	0.00	0.39	0.342	IO				1.31
69.750	0.00	0.39	0.339	IO				1.30
69.833	0.00	0.39	0.336	IO				1.30
69.917	0.00	0.39	0.334	IO				1.30
70.000	0.00	0.39	0.331	IO				1.29
70.083	0.00	0.39	0.328	IO				1.29
70.167	0.00	0.39	0.326	IO				1.28
70.250	0.00	0.38	0.323	IO				1.28
70.333	0.00	0.38	0.320	IO				1.27
70.417	0.00	0.38	0.318	IO				1.27
70.500	0.00	0.38	0.315	IO				1.26
70.583	0.00	0.38	0.312	IO				1.26
70.667	0.00	0.38	0.310	IO				1.25
70.750	0.00	0.38	0.307	IO				1.25
70.833	0.00	0.38	0.304	IO				1.24
70.917	0.00	0.38	0.302	IO				1.24
71.000	0.00	0.38	0.299	IO				1.24
71.083	0.00	0.38	0.297	IO				1.23
71.167	0.00	0.38	0.294	IO				1.23
71.250	0.00	0.38	0.291	IO				1.22
71.333	0.00	0.38	0.289	IO				1.22
71.417	0.00	0.38	0.286	IO				1.21
71.500	0.00	0.37	0.284	IO				1.21
71.583	0.00	0.37	0.281	IO				1.20
71.667	0.00	0.37	0.279	IO				1.20
71.750	0.00	0.37	0.276	IO				1.20
71.833	0.00	0.37	0.273	IO				1.19
71.917	0.00	0.37	0.271	IO				1.19
72.000	0.00	0.37	0.268	IO				1.18
72.083	0.00	0.37	0.266	IO				1.18
72.167	0.00	0.37	0.263	IO				1.17
72.250	0.00	0.37	0.261	IO				1.17
72.333	0.00	0.37	0.258	IO				1.16
72.417	0.00	0.37	0.256	IO				1.16
72.500	0.00	0.37	0.253	IO				1.16
72.583	0.00	0.37	0.251	IO				1.15
72.667	0.00	0.36	0.248	IO				1.15
72.750	0.00	0.36	0.246	IO				1.14
72.833	0.00	0.36	0.243	IO				1.14
72.917	0.00	0.36	0.241	IO				1.13
73.000	0.00	0.36	0.238	IO				1.13
73.083	0.00	0.36	0.236	IO				1.13
73.167	0.00	0.36	0.233	IO				1.12
73.250	0.00	0.36	0.231	IO				1.12
73.333	0.00	0.36	0.228	IO				1.11
73.417	0.00	0.36	0.226	IO				1.11
73.500	0.00	0.36	0.223	IO				1.10
73.583	0.00	0.36	0.221	IO				1.10
73.667	0.00	0.36	0.218	IO				1.10
73.750	0.00	0.36	0.216	IO				1.09
73.833	0.00	0.36	0.213	IO				1.09
73.917	0.00	0.35	0.211	IO				1.08
74.000	0.00	0.35	0.208	IO				1.08
74.083	0.00	0.35	0.206	IO				1.07
74.167	0.00	0.35	0.204	IO				1.07
74.250	0.00	0.35	0.201	IO				1.07
74.333	0.00	0.35	0.199	IO				1.06

74.417	0.00	0.35	0.196	IO					1.06
74.500	0.00	0.35	0.194	IO					1.05
74.583	0.00	0.35	0.191	IO					1.05
74.667	0.00	0.35	0.189	IO					1.05
74.750	0.00	0.35	0.187	IO					1.04
74.833	0.00	0.35	0.184	IO					1.04
74.917	0.00	0.35	0.182	IO					1.03
75.000	0.00	0.35	0.180	IO					1.03
75.083	0.00	0.35	0.177	IO					1.02
75.167	0.00	0.35	0.175	IO					1.02
75.250	0.00	0.34	0.172	IO					1.02
75.333	0.00	0.34	0.170	IO					1.01
75.417	0.00	0.34	0.168	IO					1.01
75.500	0.00	0.34	0.165	IO					1.00
75.583	0.00	0.34	0.163	IO					1.00
75.667	0.00	0.34	0.161	O					0.99
75.750	0.00	0.33	0.158	O					0.97
75.833	0.00	0.33	0.156	O					0.96
75.917	0.00	0.32	0.154	O					0.95
76.000	0.00	0.32	0.152	O					0.94
76.083	0.00	0.31	0.149	O					0.92
76.167	0.00	0.31	0.147	O					0.91
76.250	0.00	0.30	0.145	O					0.90
76.333	0.00	0.30	0.143	O					0.89
76.417	0.00	0.30	0.141	O					0.88
76.500	0.00	0.29	0.139	O					0.87
76.583	0.00	0.29	0.137	O					0.85
76.667	0.00	0.28	0.135	O					0.84
76.750	0.00	0.28	0.133	O					0.83
76.833	0.00	0.27	0.131	O					0.82
76.917	0.00	0.27	0.129	O					0.81
77.000	0.00	0.27	0.128	O					0.80
77.083	0.00	0.26	0.126	O					0.79
77.167	0.00	0.26	0.124	O					0.78
77.250	0.00	0.25	0.122	O					0.77
77.333	0.00	0.25	0.120	O					0.76
77.417	0.00	0.25	0.119	O					0.75
77.500	0.00	0.24	0.117	O					0.74
77.583	0.00	0.24	0.115	O					0.73
77.667	0.00	0.24	0.114	O					0.72
77.750	0.00	0.23	0.112	O					0.71
77.833	0.00	0.23	0.110	O					0.70
77.917	0.00	0.23	0.109	O					0.70
78.000	0.00	0.22	0.107	O					0.69
78.083	0.00	0.22	0.106	O					0.68
78.167	0.00	0.22	0.104	O					0.67
78.250	0.00	0.21	0.103	O					0.66
78.333	0.00	0.21	0.101	O					0.65
78.417	0.00	0.21	0.100	O					0.65
78.500	0.00	0.20	0.098	O					0.64
78.583	0.00	0.20	0.097	O					0.63
78.667	0.00	0.20	0.096	O					0.62
78.750	0.00	0.20	0.094	O					0.61
78.833	0.00	0.19	0.093	O					0.61
78.917	0.00	0.19	0.092	O					0.60
79.000	0.00	0.19	0.090	O					0.59
79.083	0.00	0.18	0.089	O					0.58
79.167	0.00	0.18	0.088	O					0.58
79.250	0.00	0.18	0.087	O					0.57
79.333	0.00	0.18	0.085	O					0.56
79.417	0.00	0.17	0.084	O					0.56
79.500	0.00	0.17	0.083	O					0.55
79.583	0.00	0.17	0.082	O					0.54
79.667	0.00	0.17	0.081	O					0.54
79.750	0.00	0.16	0.080	O					0.53
79.833	0.00	0.16	0.078	O					0.52
79.917	0.00	0.16	0.077	O					0.52
80.000	0.00	0.16	0.076	O					0.51
80.083	0.00	0.15	0.075	O					0.51
80.167	0.00	0.15	0.074	O					0.50
80.250	0.00	0.15	0.073	O					0.49
80.333	0.00	0.15	0.072	O					0.49
80.417	0.00	0.15	0.071	O					0.48
80.500	0.00	0.14	0.070	O					0.48
80.583	0.00	0.14	0.069	O					0.47

80.667	0.00	0.14	0.068	O					0.47
80.750	0.00	0.14	0.067	O					0.46
80.833	0.00	0.14	0.066	O					0.46
80.917	0.00	0.13	0.065	O					0.45
81.000	0.00	0.13	0.064	O					0.44
81.083	0.00	0.13	0.063	O					0.44
81.167	0.00	0.13	0.063	O					0.43
81.250	0.00	0.13	0.062	O					0.43
81.333	0.00	0.12	0.061	O					0.43
81.417	0.00	0.12	0.060	O					0.42
81.500	0.00	0.12	0.059	O					0.42
81.583	0.00	0.12	0.058	O					0.41
81.667	0.00	0.12	0.057	O					0.41
81.750	0.00	0.12	0.057	O					0.40
81.833	0.00	0.11	0.056	O					0.40
81.917	0.00	0.11	0.055	O					0.39
82.000	0.00	0.11	0.054	O					0.39
82.083	0.00	0.11	0.054	O					0.38
82.167	0.00	0.11	0.053	O					0.38
82.250	0.00	0.11	0.052	O					0.38
82.333	0.00	0.10	0.051	O					0.37
82.417	0.00	0.10	0.051	O					0.37
82.500	0.00	0.10	0.050	O					0.36
82.583	0.00	0.10	0.049	O					0.36
82.667	0.00	0.10	0.049	O					0.36
82.750	0.00	0.10	0.048	O					0.35
82.833	0.00	0.10	0.047	O					0.35
82.917	0.00	0.09	0.047	O					0.35
83.000	0.00	0.09	0.046	O					0.34
83.083	0.00	0.09	0.045	O					0.34
83.167	0.00	0.09	0.045	O					0.33
83.250	0.00	0.09	0.044	O					0.33
83.333	0.00	0.09	0.043	O					0.33
83.417	0.00	0.09	0.043	O					0.32
83.500	0.00	0.08	0.042	O					0.32
83.583	0.00	0.08	0.042	O					0.32
83.667	0.00	0.08	0.041	O					0.31
83.750	0.00	0.08	0.041	O					0.31
83.833	0.00	0.08	0.040	O					0.31
83.917	0.00	0.08	0.039	O					0.31
84.000	0.00	0.08	0.039	O					0.30
84.083	0.00	0.08	0.038	O					0.30
84.167	0.00	0.08	0.038	O					0.30
84.250	0.00	0.07	0.037	O					0.29
84.333	0.00	0.07	0.037	O					0.29
84.417	0.00	0.07	0.036	O					0.29
84.500	0.00	0.07	0.036	O					0.28
84.583	0.00	0.07	0.035	O					0.28
84.667	0.00	0.07	0.035	O					0.28
84.750	0.00	0.07	0.034	O					0.28
84.833	0.00	0.07	0.034	O					0.27
84.917	0.00	0.07	0.034	O					0.27
85.000	0.00	0.07	0.033	O					0.27
85.083	0.00	0.06	0.033	O					0.27
85.167	0.00	0.06	0.032	O					0.26
85.250	0.00	0.06	0.032	O					0.26
85.333	0.00	0.06	0.031	O					0.26
85.417	0.00	0.06	0.031	O					0.26
85.500	0.00	0.06	0.030	O					0.25
85.583	0.00	0.06	0.030	O					0.25
85.667	0.00	0.06	0.030	O					0.25
85.750	0.00	0.06	0.029	O					0.25
85.833	0.00	0.06	0.029	O					0.25
85.917	0.00	0.06	0.029	O					0.24
86.000	0.00	0.05	0.028	O					0.24
86.083	0.00	0.05	0.028	O					0.24
86.167	0.00	0.05	0.027	O					0.24
86.250	0.00	0.05	0.027	O					0.24
86.333	0.00	0.05	0.027	O					0.23
86.417	0.00	0.05	0.026	O					0.23
86.500	0.00	0.05	0.026	O					0.23
86.583	0.00	0.05	0.026	O					0.23
86.667	0.00	0.05	0.025	O					0.23
86.750	0.00	0.05	0.025	O					0.22
86.833	0.00	0.05	0.025	O					0.22

86.917	0.00	0.05	0.024	O	|	|	|	|	0.22
87.000	0.00	0.05	0.024	O	|	|	|	|	0.22
87.083	0.00	0.05	0.024	O	|	|	|	|	0.22
87.167	0.00	0.04	0.023	O	|	|	|	|	0.21
87.250	0.00	0.04	0.023	O	|	|	|	|	0.21
87.333	0.00	0.04	0.023	O	|	|	|	|	0.21
87.417	0.00	0.04	0.022	O	|	|	|	|	0.21
87.500	0.00	0.04	0.022	O	|	|	|	|	0.21
87.583	0.00	0.04	0.022	O	|	|	|	|	0.21
87.667	0.00	0.04	0.022	O	|	|	|	|	0.20
87.750	0.00	0.04	0.021	O	|	|	|	|	0.20
87.833	0.00	0.04	0.021	O	|	|	|	|	0.20
87.917	0.00	0.04	0.021	O	|	|	|	|	0.20
88.000	0.00	0.04	0.021	O	|	|	|	|	0.20
88.083	0.00	0.04	0.020	O	|	|	|	|	0.20
88.167	0.00	0.04	0.020	O	|	|	|	|	0.20
88.250	0.00	0.04	0.020	O	|	|	|	|	0.19
88.333	0.00	0.04	0.020	O	|	|	|	|	0.19
88.417	0.00	0.04	0.019	O	|	|	|	|	0.19
88.500	0.00	0.04	0.019	O	|	|	|	|	0.19
88.583	0.00	0.03	0.019	O	|	|	|	|	0.19
88.667	0.00	0.03	0.019	O	|	|	|	|	0.19
88.750	0.00	0.03	0.018	O	|	|	|	|	0.19
88.833	0.00	0.03	0.018	O	|	|	|	|	0.18
88.917	0.00	0.03	0.018	O	|	|	|	|	0.18
89.000	0.00	0.03	0.018	O	|	|	|	|	0.18
89.083	0.00	0.03	0.017	O	|	|	|	|	0.18
89.167	0.00	0.03	0.017	O	|	|	|	|	0.18
89.250	0.00	0.03	0.017	O	|	|	|	|	0.18
89.333	0.00	0.03	0.017	O	|	|	|	|	0.18
89.417	0.00	0.03	0.017	O	|	|	|	|	0.18
89.500	0.00	0.03	0.016	O	|	|	|	|	0.18
89.583	0.00	0.03	0.016	O	|	|	|	|	0.17
89.667	0.00	0.03	0.016	O	|	|	|	|	0.17
89.750	0.00	0.03	0.016	O	|	|	|	|	0.17
89.833	0.00	0.03	0.016	O	|	|	|	|	0.17
89.917	0.00	0.03	0.015	O	|	|	|	|	0.17
90.000	0.00	0.03	0.015	O	|	|	|	|	0.17
90.083	0.00	0.03	0.015	O	|	|	|	|	0.17
90.167	0.00	0.03	0.015	O	|	|	|	|	0.17
90.250	0.00	0.03	0.015	O	|	|	|	|	0.17
90.333	0.00	0.03	0.014	O	|	|	|	|	0.16
90.417	0.00	0.03	0.014	O	|	|	|	|	0.16
90.500	0.00	0.02	0.014	O	|	|	|	|	0.16
90.583	0.00	0.02	0.014	O	|	|	|	|	0.16
90.667	0.00	0.02	0.014	O	|	|	|	|	0.16
90.750	0.00	0.02	0.014	O	|	|	|	|	0.16
90.833	0.00	0.02	0.013	O	|	|	|	|	0.16
90.917	0.00	0.02	0.013	O	|	|	|	|	0.16
91.000	0.00	0.02	0.013	O	|	|	|	|	0.16
91.083	0.00	0.02	0.013	O	|	|	|	|	0.16
91.167	0.00	0.02	0.013	O	|	|	|	|	0.16
91.250	0.00	0.02	0.013	O	|	|	|	|	0.15
91.333	0.00	0.02	0.013	O	|	|	|	|	0.15
91.417	0.00	0.02	0.012	O	|	|	|	|	0.15
91.500	0.00	0.02	0.012	O	|	|	|	|	0.15
91.583	0.00	0.02	0.012	O	|	|	|	|	0.15
91.667	0.00	0.02	0.012	O	|	|	|	|	0.15
91.750	0.00	0.02	0.012	O	|	|	|	|	0.15
91.833	0.00	0.02	0.012	O	|	|	|	|	0.15
91.917	0.00	0.02	0.012	O	|	|	|	|	0.15
92.000	0.00	0.02	0.011	O	|	|	|	|	0.15
92.083	0.00	0.02	0.011	O	|	|	|	|	0.15
92.167	0.00	0.02	0.011	O	|	|	|	|	0.15
92.250	0.00	0.02	0.011	O	|	|	|	|	0.15
92.333	0.00	0.02	0.011	O	|	|	|	|	0.14
92.417	0.00	0.02	0.011	O	|	|	|	|	0.14
92.500	0.00	0.02	0.011	O	|	|	|	|	0.14
92.583	0.00	0.02	0.011	O	|	|	|	|	0.14
92.667	0.00	0.02	0.010	O	|	|	|	|	0.14
92.750	0.00	0.02	0.010	O	|	|	|	|	0.14
92.833	0.00	0.02	0.010	O	|	|	|	|	0.14
92.917	0.00	0.02	0.010	O	|	|	|	|	0.14
93.000	0.00	0.02	0.010	O	|	|	|	|	0.14
93.083	0.00	0.02	0.010	O	|	|	|	|	0.14

93.167	0.00	0.02	0.010	O	|	|	|	|	0.14
93.250	0.00	0.02	0.010	O	|	|	|	|	0.14
93.333	0.00	0.01	0.010	O	|	|	|	|	0.14
93.417	0.00	0.01	0.009	O	|	|	|	|	0.14
93.500	0.00	0.01	0.009	O	|	|	|	|	0.14
93.583	0.00	0.01	0.009	O	|	|	|	|	0.14
93.667	0.00	0.01	0.009	O	|	|	|	|	0.13
93.750	0.00	0.01	0.009	O	|	|	|	|	0.13
93.833	0.00	0.01	0.009	O	|	|	|	|	0.13
93.917	0.00	0.01	0.009	O	|	|	|	|	0.13
94.000	0.00	0.01	0.009	O	|	|	|	|	0.13
94.083	0.00	0.01	0.009	O	|	|	|	|	0.13
94.167	0.00	0.01	0.009	O	|	|	|	|	0.13
94.250	0.00	0.01	0.009	O	|	|	|	|	0.13
94.333	0.00	0.01	0.008	O	|	|	|	|	0.13
94.417	0.00	0.01	0.008	O	|	|	|	|	0.13
94.500	0.00	0.01	0.008	O	|	|	|	|	0.13
94.583	0.00	0.01	0.008	O	|	|	|	|	0.13
94.667	0.00	0.01	0.008	O	|	|	|	|	0.13
94.750	0.00	0.01	0.008	O	|	|	|	|	0.13
94.833	0.00	0.01	0.008	O	|	|	|	|	0.13
94.917	0.00	0.01	0.008	O	|	|	|	|	0.13
95.000	0.00	0.01	0.008	O	|	|	|	|	0.13
95.083	0.00	0.01	0.008	O	|	|	|	|	0.13
95.167	0.00	0.01	0.008	O	|	|	|	|	0.13
95.250	0.00	0.01	0.008	O	|	|	|	|	0.13
95.333	0.00	0.01	0.007	O	|	|	|	|	0.13
95.417	0.00	0.01	0.007	O	|	|	|	|	0.12
95.500	0.00	0.01	0.007	O	|	|	|	|	0.12
95.583	0.00	0.01	0.007	O	|	|	|	|	0.12
95.667	0.00	0.01	0.007	O	|	|	|	|	0.12
95.750	0.00	0.01	0.007	O	|	|	|	|	0.12
95.833	0.00	0.01	0.007	O	|	|	|	|	0.12
95.917	0.00	0.01	0.007	O	|	|	|	|	0.12
96.000	0.00	0.01	0.007	O	|	|	|	|	0.12
96.083	0.00	0.01	0.007	O	|	|	|	|	0.12
96.167	0.00	0.01	0.007	O	|	|	|	|	0.12
96.250	0.00	0.01	0.007	O	|	|	|	|	0.12
96.333	0.00	0.01	0.007	O	|	|	|	|	0.12
96.417	0.00	0.01	0.007	O	|	|	|	|	0.12
96.500	0.00	0.01	0.007	O	|	|	|	|	0.12
96.583	0.00	0.01	0.007	O	|	|	|	|	0.12
96.667	0.00	0.01	0.006	O	|	|	|	|	0.12
96.750	0.00	0.01	0.006	O	|	|	|	|	0.12
96.833	0.00	0.01	0.006	O	|	|	|	|	0.12
96.917	0.00	0.01	0.006	O	|	|	|	|	0.12
97.000	0.00	0.01	0.006	O	|	|	|	|	0.12
97.083	0.00	0.01	0.006	O	|	|	|	|	0.12
97.167	0.00	0.01	0.006	O	|	|	|	|	0.12
97.250	0.00	0.01	0.006	O	|	|	|	|	0.12
97.333	0.00	0.01	0.006	O	|	|	|	|	0.12
97.417	0.00	0.01	0.006	O	|	|	|	|	0.12
97.500	0.00	0.01	0.006	O	|	|	|	|	0.12
97.583	0.00	0.01	0.006	O	|	|	|	|	0.12
97.667	0.00	0.01	0.006	O	|	|	|	|	0.12
97.750	0.00	0.01	0.006	O	|	|	|	|	0.12
97.833	0.00	0.01	0.006	O	|	|	|	|	0.12
97.917	0.00	0.01	0.006	O	|	|	|	|	0.12
98.000	0.00	0.01	0.006	O	|	|	|	|	0.11
98.083	0.00	0.01	0.006	O	|	|	|	|	0.11
98.167	0.00	0.01	0.006	O	|	|	|	|	0.11
98.250	0.00	0.01	0.005	O	|	|	|	|	0.11
98.333	0.00	0.01	0.005	O	|	|	|	|	0.11
98.417	0.00	0.01	0.005	O	|	|	|	|	0.11
98.500	0.00	0.01	0.005	O	|	|	|	|	0.11
98.583	0.00	0.01	0.005	O	|	|	|	|	0.11
98.667	0.00	0.01	0.005	O	|	|	|	|	0.11
98.750	0.00	0.01	0.005	O	|	|	|	|	0.11
98.833	0.00	0.01	0.005	O	|	|	|	|	0.11
98.917	0.00	0.01	0.005	O	|	|	|	|	0.11
99.000	0.00	0.01	0.005	O	|	|	|	|	0.11
99.083	0.00	0.01	0.005	O	|	|	|	|	0.11
99.167	0.00	0.01	0.005	O	|	|	|	|	0.11
99.250	0.00	0.01	0.005	O	|	|	|	|	0.11
99.333	0.00	0.01	0.005	O	|	|	|	|	0.11

99.417	0.00	0.01	0.005	O	|	|	|	|	0.11
99.500	0.00	0.01	0.005	O	|	|	|	|	0.11
99.583	0.00	0.00	0.005	O	|	|	|	|	0.11
99.667	0.00	0.00	0.005	O	|	|	|	|	0.11
99.750	0.00	0.00	0.005	O	|	|	|	|	0.11
99.833	0.00	0.00	0.005	O	|	|	|	|	0.11
99.917	0.00	0.00	0.005	O	|	|	|	|	0.11
100.000	0.00	0.00	0.005	O	|	|	|	|	0.11
100.083	0.00	0.00	0.005	O	|	|	|	|	0.11
100.167	0.00	0.00	0.005	O	|	|	|	|	0.11
100.250	0.00	0.00	0.005	O	|	|	|	|	0.11
100.333	0.00	0.00	0.005	O	|	|	|	|	0.11
100.417	0.00	0.00	0.005	O	|	|	|	|	0.11
100.500	0.00	0.00	0.005	O	|	|	|	|	0.11
100.583	0.00	0.00	0.004	O	|	|	|	|	0.11
100.667	0.00	0.00	0.004	O	|	|	|	|	0.11
100.750	0.00	0.00	0.004	O	|	|	|	|	0.11
100.833	0.00	0.00	0.004	O	|	|	|	|	0.11
100.917	0.00	0.00	0.004	O	|	|	|	|	0.11
101.000	0.00	0.00	0.004	O	|	|	|	|	0.11
101.083	0.00	0.00	0.004	O	|	|	|	|	0.11
101.167	0.00	0.00	0.004	O	|	|	|	|	0.11
101.250	0.00	0.00	0.004	O	|	|	|	|	0.11
101.333	0.00	0.00	0.004	O	|	|	|	|	0.11
101.417	0.00	0.00	0.004	O	|	|	|	|	0.11
101.500	0.00	0.00	0.004	O	|	|	|	|	0.11
101.583	0.00	0.00	0.004	O	|	|	|	|	0.11
101.667	0.00	0.00	0.004	O	|	|	|	|	0.11
101.750	0.00	0.00	0.004	O	|	|	|	|	0.11
101.833	0.00	0.00	0.004	O	|	|	|	|	0.11
101.917	0.00	0.00	0.004	O	|	|	|	|	0.11
102.000	0.00	0.00	0.004	O	|	|	|	|	0.11
102.083	0.00	0.00	0.004	O	|	|	|	|	0.11
102.167	0.00	0.00	0.004	O	|	|	|	|	0.11
102.250	0.00	0.00	0.004	O	|	|	|	|	0.11
102.333	0.00	0.00	0.004	O	|	|	|	|	0.11
102.417	0.00	0.00	0.004	O	|	|	|	|	0.11
102.500	0.00	0.00	0.004	O	|	|	|	|	0.11
102.583	0.00	0.00	0.004	O	|	|	|	|	0.11
102.667	0.00	0.00	0.004	O	|	|	|	|	0.11
102.750	0.00	0.00	0.004	O	|	|	|	|	0.10
102.833	0.00	0.00	0.004	O	|	|	|	|	0.10
102.917	0.00	0.00	0.004	O	|	|	|	|	0.10
103.000	0.00	0.00	0.004	O	|	|	|	|	0.10
103.083	0.00	0.00	0.004	O	|	|	|	|	0.10
103.167	0.00	0.00	0.004	O	|	|	|	|	0.10
103.250	0.00	0.00	0.004	O	|	|	|	|	0.10
103.333	0.00	0.00	0.004	O	|	|	|	|	0.10
103.417	0.00	0.00	0.004	O	|	|	|	|	0.10
103.500	0.00	0.00	0.004	O	|	|	|	|	0.10
103.583	0.00	0.00	0.004	O	|	|	|	|	0.10
103.667	0.00	0.00	0.004	O	|	|	|	|	0.10
103.750	0.00	0.00	0.004	O	|	|	|	|	0.10
103.833	0.00	0.00	0.004	O	|	|	|	|	0.10
103.917	0.00	0.00	0.004	O	|	|	|	|	0.10
104.000	0.00	0.00	0.004	O	|	|	|	|	0.10
104.083	0.00	0.00	0.004	O	|	|	|	|	0.10
104.167	0.00	0.00	0.004	O	|	|	|	|	0.10
104.250	0.00	0.00	0.004	O	|	|	|	|	0.10
104.333	0.00	0.00	0.004	O	|	|	|	|	0.10
104.417	0.00	0.00	0.004	O	|	|	|	|	0.10
104.500	0.00	0.00	0.004	O	|	|	|	|	0.10
104.583	0.00	0.00	0.004	O	|	|	|	|	0.10
104.667	0.00	0.00	0.003	O	|	|	|	|	0.10
104.750	0.00	0.00	0.003	O	|	|	|	|	0.10
104.833	0.00	0.00	0.003	O	|	|	|	|	0.10
104.917	0.00	0.00	0.003	O	|	|	|	|	0.10
105.000	0.00	0.00	0.003	O	|	|	|	|	0.10
105.083	0.00	0.00	0.003	O	|	|	|	|	0.10
105.167	0.00	0.00	0.003	O	|	|	|	|	0.10
105.250	0.00	0.00	0.003	O	|	|	|	|	0.10
105.333	0.00	0.00	0.003	O	|	|	|	|	0.10
105.417	0.00	0.00	0.003	O	|	|	|	|	0.10
105.500	0.00	0.00	0.003	O	|	|	|	|	0.10
105.583	0.00	0.00	0.003	O	|	|	|	|	0.10

105.667	0.00	0.00	0.003	O	|	|	|	|	0.10
105.750	0.00	0.00	0.003	O	|	|	|	|	0.10
105.833	0.00	0.00	0.003	O	|	|	|	|	0.10
105.917	0.00	0.00	0.003	O	|	|	|	|	0.10
106.000	0.00	0.00	0.003	O	|	|	|	|	0.10
106.083	0.00	0.00	0.003	O	|	|	|	|	0.10
106.167	0.00	0.00	0.003	O	|	|	|	|	0.10
106.250	0.00	0.00	0.003	O	|	|	|	|	0.10
106.333	0.00	0.00	0.003	O	|	|	|	|	0.10
106.417	0.00	0.00	0.003	O	|	|	|	|	0.10
106.500	0.00	0.00	0.003	O	|	|	|	|	0.10
106.583	0.00	0.00	0.003	O	|	|	|	|	0.10
106.667	0.00	0.00	0.003	O	|	|	|	|	0.10
106.750	0.00	0.00	0.003	O	|	|	|	|	0.10
106.833	0.00	0.00	0.003	O	|	|	|	|	0.10
106.917	0.00	0.00	0.003	O	|	|	|	|	0.10
107.000	0.00	0.00	0.003	O	|	|	|	|	0.10
107.083	0.00	0.00	0.003	O	|	|	|	|	0.10
107.167	0.00	0.00	0.003	O	|	|	|	|	0.10
107.250	0.00	0.00	0.003	O	|	|	|	|	0.10
107.333	0.00	0.00	0.003	O	|	|	|	|	0.10
107.417	0.00	0.00	0.003	O	|	|	|	|	0.10
107.500	0.00	0.00	0.003	O	|	|	|	|	0.10
107.583	0.00	0.00	0.003	O	|	|	|	|	0.10
107.667	0.00	0.00	0.003	O	|	|	|	|	0.10
107.750	0.00	0.00	0.003	O	|	|	|	|	0.10
107.833	0.00	0.00	0.003	O	|	|	|	|	0.10
107.917	0.00	0.00	0.003	O	|	|	|	|	0.10
108.000	0.00	0.00	0.003	O	|	|	|	|	0.10
108.083	0.00	0.00	0.003	O	|	|	|	|	0.10
108.167	0.00	0.00	0.003	O	|	|	|	|	0.10
108.250	0.00	0.00	0.003	O	|	|	|	|	0.10
108.333	0.00	0.00	0.003	O	|	|	|	|	0.10
108.417	0.00	0.00	0.003	O	|	|	|	|	0.10
108.500	0.00	0.00	0.003	O	|	|	|	|	0.10
108.583	0.00	0.00	0.003	O	|	|	|	|	0.10
108.667	0.00	0.00	0.003	O	|	|	|	|	0.10
108.750	0.00	0.00	0.003	O	|	|	|	|	0.10

Remaining water in basin = 0.00 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1305
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 3.768 (CFS)
Total volume = 5.507 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

DMA B

UNIT HYDROGRAPH EXHIBIT
DMA B

LEGEND

- DRAINAGE BOUNDARY
- DRAINAGE PATH
- SOIL TYPE BOUNDARY
- CENTROID

DMA B
60.7 ACRES
L=2985 FT
LC=1550 FT
ELEV Δ=161 FT

1
2582

2
2421

N
W WEBB E
S

100' 0 100'

COUNTY OF RIVERSIDE
SAN GORGONIO CROSSINGS

HYDROLOGY MAP
UNIT HYDROGRAPH
EXISTING CONDITIONS
DMA B

SCALE: N/A	ALBERT A. WEBB ASSOCIATES ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE, CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	W.O. WO
DATE: DATE		SHEET DMA B
DESIGNED: DESIGNER		OF # SHEETS
CHECKED: CHECKER		DWG. NO.
PLN CK REF: REF		
F.B. F.B.		

CVAR_10285

PROPERTY BOUNDARY

DMA B
60.7 ACRES
L=37120 FT
LC=20000 FT
ELEV Δ=105 FT

SHERRY VALLEY AVENUE

2
2438

1
2543

LEGEND

- DRAINAGE BOUNDARY
- DRAINAGE PATH
- SOIL TYPE BOUNDARY
- CENTROID

N
W E
S
WEBB

100' 0 100'

COUNTY OF RIVERSIDE
SHOPOFF REALTY - SAN GORGONIO CROSSINGS

HYDROLOGY MAP
UNIT HYDROGRAPH
PROPOSED CONDITIONS
DMA B

SCALE: N/A	ALBERT A. WEBB ASSOCIATES	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	W.O. WO
DATE: DATE			SHEET DMA B
DESIGNED: DESIGNER			OF # SHEETS
CHECKED: CHECKER			
PLN CK REF: REF			DWG. NO.
F.B. F.B.			

CVAR_10286

UNIT HYDROGRAPH INPUT DATA
DMA B

14-0213 Date 10/21/2014
SHOPOFF

UNIT HYDROGRAPH INPUT DATA - BASIN B

	EXISTING		DEVELOPED	
TOTAL AREA	60.70		60.70	
L (ft)	2985.00		3720.00	
Lc (ft)	1550.00		2000.00	
DIFFERENCE IN ELEV. (ft)	161.00		105.00	
AVERAGE "N"	0.040		0.015	
LOW LOSS RATE	0.85 (2YR)-0.9 (10YR)		0.18	
AMC	1(2YR) 2 (10YR)			
AMC II SOIL GROUP BREAKDOWN (Plate C-1.18)				
A				
B	0.58		0.58	
C				
D	0.42		0.42	
% IMPERVIOUS	0		90	
RI	89	*	64	**
FOOTHILL				

* Barren (Rockland, eroded, graded land) (Plate D-5.5 Runoff Index Numbers)

A	78
B	86
C	91
D	93

** Urban Residential Landscaping (Plate D-5.5 Runoff Index Numbers)

A	32
B	56
C	69
D	75

2-YR 1-HR	0.57
100-YR 1-HR	3.00
2-YR 3-HR	1.00
100-YR 3-HR	2.20
2-YR 6-HR	1.40
100-YR 6-HR	3.20
2-YR 24-HR	2.60
100-YR 24-HR	7.00

HYDROLOGY RESULTS SUMMARY
DMA B

UNIT HYDROGRAPH/ROUTING SUMMARY

14-0213 SHOPOFF

ON-SITE CONDITIONS

DMA B

Treated Area:	60.7	AC
Vbmp:	116,126	CF
Vbmp Depth:	1.9	FT

		EXISTING CONDITIONS		PROPOSED CONDITIONS		PROPOSED CONDITIONS		
		Unit Hydrograph		Unit Hydrograph		Basin Routing		
STORM YEAR	DURATION HOUR	Peak Flow CFS	Total Volume Ac-Ft	Peak Flow CFS	Total Volume Ac-Ft	Routed Peak CFS	Basin Volume Ac.Ft.	Basin Depth Ft.
2	24	6.1	2.0	15.3	7.9	5.5	5.0	2.4

UNIT HYDROGRAPH
DMA B
EXISTING CONDITIONS
2-YEAR 24-HOUR

U n i t H y d r o g r a p h A n a l y s i s

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Study date 10/21/14 File: BEX242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

14-0213 SHOPOFF
UNIT HYDROGRAPH
DMA B
EXISTING CONDITIONS
2-YEAR 24-HOUR

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 60.70(Ac.) = 0.095 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 60.70(Ac.) = 0.095 Sq. Mi.
Length along longest watercourse = 2985.00(Ft.)
Length along longest watercourse measured to centroid = 1550.00(Ft.)
Length along longest watercourse = 0.565 Mi.
Length along longest watercourse measured to centroid = 0.294 Mi.
Difference in elevation = 161.00(Ft.)
Slope along watercourse = 284.7839 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.166 Hr.
Lag time = 9.95 Min.
25% of lag time = 2.49 Min.
40% of lag time = 3.98 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
60.70	2.60	157.82

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
60.70	7.00	424.90

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 2.600(In)
Area Averaged 100-Year Rainfall = 7.000(In)

Point rain (area averaged) = 2.600(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 2.600(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
60.700	89.00	0.000

Total Area Entered = 60.70(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F

AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
89.0	76.4	0.286	0.000	0.286	1.000	0.286
					Sum (F) =	0.286

Area averaged mean soil loss (F) (In/Hr) = 0.286
Minimum soil loss rate ((In/Hr)) = 0.143
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.850

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	50.269	4.313	2.638
2	0.167	100.538	20.593	12.598
3	0.250	150.808	38.182	23.358
4	0.333	201.077	14.582	8.921
5	0.417	251.346	8.338	5.101
6	0.500	301.615	5.421	3.316
7	0.583	351.885	3.568	2.183
8	0.667	402.154	2.195	1.343
9	0.750	452.423	1.035	0.633
10	0.833	502.692	0.548	0.335
11	0.917	552.962	0.392	0.240
12	1.000	603.231	0.357	0.219
13	1.083	653.500	0.289	0.177
14	1.167	703.769	0.187	0.114
			Sum = 100.000 Sum=	61.174

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.021	0.508	0.018	0.00
2	0.17	0.07	0.021	0.506	0.018	0.00
3	0.25	0.07	0.021	0.504	0.018	0.00
4	0.33	0.10	0.031	0.502	0.027	0.00
5	0.42	0.10	0.031	0.500	0.027	0.00
6	0.50	0.10	0.031	0.498	0.027	0.00
7	0.58	0.10	0.031	0.496	0.027	0.00
8	0.67	0.10	0.031	0.494	0.027	0.00
9	0.75	0.10	0.031	0.492	0.027	0.00
10	0.83	0.13	0.042	0.490	0.035	0.01
11	0.92	0.13	0.042	0.488	0.035	0.01
12	1.00	0.13	0.042	0.486	0.035	0.01
13	1.08	0.10	0.031	0.485	0.027	0.00
14	1.17	0.10	0.031	0.483	0.027	0.00
15	1.25	0.10	0.031	0.481	0.027	0.00
16	1.33	0.10	0.031	0.479	0.027	0.00
17	1.42	0.10	0.031	0.477	0.027	0.00
18	1.50	0.10	0.031	0.475	0.027	0.00
19	1.58	0.10	0.031	0.473	0.027	0.00
20	1.67	0.10	0.031	0.471	0.027	0.00
21	1.75	0.10	0.031	0.469	0.027	0.00
22	1.83	0.13	0.042	0.467	0.035	0.01
23	1.92	0.13	0.042	0.466	0.035	0.01
24	2.00	0.13	0.042	0.464	0.035	0.01
25	2.08	0.13	0.042	0.462	0.035	0.01
26	2.17	0.13	0.042	0.460	0.035	0.01
27	2.25	0.13	0.042	0.458	0.035	0.01
28	2.33	0.13	0.042	0.456	0.035	0.01
29	2.42	0.13	0.042	0.454	0.035	0.01
30	2.50	0.13	0.042	0.452	0.035	0.01
31	2.58	0.17	0.052	0.451	0.044	0.01
32	2.67	0.17	0.052	0.449	0.044	0.01
33	2.75	0.17	0.052	0.447	0.044	0.01
34	2.83	0.17	0.052	0.445	0.044	0.01
35	2.92	0.17	0.052	0.443	0.044	0.01
36	3.00	0.17	0.052	0.441	0.044	0.01
37	3.08	0.17	0.052	0.440	0.044	0.01
38	3.17	0.17	0.052	0.438	0.044	0.01

39	3.25	0.17	0.052	0.436	0.044	0.01
40	3.33	0.17	0.052	0.434	0.044	0.01
41	3.42	0.17	0.052	0.432	0.044	0.01
42	3.50	0.17	0.052	0.430	0.044	0.01
43	3.58	0.17	0.052	0.429	0.044	0.01
44	3.67	0.17	0.052	0.427	0.044	0.01
45	3.75	0.17	0.052	0.425	0.044	0.01
46	3.83	0.20	0.062	0.423	0.053	0.01
47	3.92	0.20	0.062	0.422	0.053	0.01
48	4.00	0.20	0.062	0.420	0.053	0.01
49	4.08	0.20	0.062	0.418	0.053	0.01
50	4.17	0.20	0.062	0.416	0.053	0.01
51	4.25	0.20	0.062	0.414	0.053	0.01
52	4.33	0.23	0.073	0.413	0.062	0.01
53	4.42	0.23	0.073	0.411	0.062	0.01
54	4.50	0.23	0.073	0.409	0.062	0.01
55	4.58	0.23	0.073	0.407	0.062	0.01
56	4.67	0.23	0.073	0.406	0.062	0.01
57	4.75	0.23	0.073	0.404	0.062	0.01
58	4.83	0.27	0.083	0.402	0.071	0.01
59	4.92	0.27	0.083	0.400	0.071	0.01
60	5.00	0.27	0.083	0.399	0.071	0.01
61	5.08	0.20	0.062	0.397	0.053	0.01
62	5.17	0.20	0.062	0.395	0.053	0.01
63	5.25	0.20	0.062	0.393	0.053	0.01
64	5.33	0.23	0.073	0.392	0.062	0.01
65	5.42	0.23	0.073	0.390	0.062	0.01
66	5.50	0.23	0.073	0.388	0.062	0.01
67	5.58	0.27	0.083	0.387	0.071	0.01
68	5.67	0.27	0.083	0.385	0.071	0.01
69	5.75	0.27	0.083	0.383	0.071	0.01
70	5.83	0.27	0.083	0.382	0.071	0.01
71	5.92	0.27	0.083	0.380	0.071	0.01
72	6.00	0.27	0.083	0.378	0.071	0.01
73	6.08	0.30	0.094	0.376	0.080	0.01
74	6.17	0.30	0.094	0.375	0.080	0.01
75	6.25	0.30	0.094	0.373	0.080	0.01
76	6.33	0.30	0.094	0.371	0.080	0.01
77	6.42	0.30	0.094	0.370	0.080	0.01
78	6.50	0.30	0.094	0.368	0.080	0.01
79	6.58	0.33	0.104	0.366	0.088	0.02
80	6.67	0.33	0.104	0.365	0.088	0.02
81	6.75	0.33	0.104	0.363	0.088	0.02
82	6.83	0.33	0.104	0.362	0.088	0.02
83	6.92	0.33	0.104	0.360	0.088	0.02
84	7.00	0.33	0.104	0.358	0.088	0.02
85	7.08	0.33	0.104	0.357	0.088	0.02
86	7.17	0.33	0.104	0.355	0.088	0.02
87	7.25	0.33	0.104	0.353	0.088	0.02
88	7.33	0.37	0.114	0.352	0.097	0.02
89	7.42	0.37	0.114	0.350	0.097	0.02
90	7.50	0.37	0.114	0.349	0.097	0.02
91	7.58	0.40	0.125	0.347	0.106	0.02
92	7.67	0.40	0.125	0.345	0.106	0.02
93	7.75	0.40	0.125	0.344	0.106	0.02
94	7.83	0.43	0.135	0.342	0.115	0.02
95	7.92	0.43	0.135	0.341	0.115	0.02
96	8.00	0.43	0.135	0.339	0.115	0.02
97	8.08	0.50	0.156	0.337	0.133	0.02
98	8.17	0.50	0.156	0.336	0.133	0.02
99	8.25	0.50	0.156	0.334	0.133	0.02
100	8.33	0.50	0.156	0.333	0.133	0.02
101	8.42	0.50	0.156	0.331	0.133	0.02
102	8.50	0.50	0.156	0.330	0.133	0.02
103	8.58	0.53	0.166	0.328	0.141	0.02
104	8.67	0.53	0.166	0.327	0.141	0.02
105	8.75	0.53	0.166	0.325	0.141	0.02
106	8.83	0.57	0.177	0.323	0.150	0.03
107	8.92	0.57	0.177	0.322	0.150	0.03
108	9.00	0.57	0.177	0.320	0.150	0.03
109	9.08	0.63	0.198	0.319	0.168	0.03
110	9.17	0.63	0.198	0.317	0.168	0.03
111	9.25	0.63	0.198	0.316	0.168	0.03
112	9.33	0.67	0.208	0.314	0.177	0.03
113	9.42	0.67	0.208	0.313	0.177	0.03

114	9.50	0.67	0.208	0.311	0.177	0.03
115	9.58	0.70	0.218	0.310	0.186	0.03
116	9.67	0.70	0.218	0.308	0.186	0.03
117	9.75	0.70	0.218	0.307	0.186	0.03
118	9.83	0.73	0.229	0.305	0.194	0.03
119	9.92	0.73	0.229	0.304	0.194	0.03
120	10.00	0.73	0.229	0.303	0.194	0.03
121	10.08	0.50	0.156	0.301	0.133	0.02
122	10.17	0.50	0.156	0.300	0.133	0.02
123	10.25	0.50	0.156	0.298	0.133	0.02
124	10.33	0.50	0.156	0.297	0.133	0.02
125	10.42	0.50	0.156	0.295	0.133	0.02
126	10.50	0.50	0.156	0.294	0.133	0.02
127	10.58	0.67	0.208	0.292	0.177	0.03
128	10.67	0.67	0.208	0.291	0.177	0.03
129	10.75	0.67	0.208	0.290	0.177	0.03
130	10.83	0.67	0.208	0.288	0.177	0.03
131	10.92	0.67	0.208	0.287	0.177	0.03
132	11.00	0.67	0.208	0.285	0.177	0.03
133	11.08	0.63	0.198	0.284	0.168	0.03
134	11.17	0.63	0.198	0.282	0.168	0.03
135	11.25	0.63	0.198	0.281	0.168	0.03
136	11.33	0.63	0.198	0.280	0.168	0.03
137	11.42	0.63	0.198	0.278	0.168	0.03
138	11.50	0.63	0.198	0.277	0.168	0.03
139	11.58	0.57	0.177	0.276	0.150	0.03
140	11.67	0.57	0.177	0.274	0.150	0.03
141	11.75	0.57	0.177	0.273	0.150	0.03
142	11.83	0.60	0.187	0.271	0.159	0.03
143	11.92	0.60	0.187	0.270	0.159	0.03
144	12.00	0.60	0.187	0.269	0.159	0.03
145	12.08	0.83	0.260	0.267	0.221	0.04
146	12.17	0.83	0.260	0.266	0.221	0.04
147	12.25	0.83	0.260	0.265	0.221	0.04
148	12.33	0.87	0.270	0.263	---	0.01
149	12.42	0.87	0.270	0.262	---	0.01
150	12.50	0.87	0.270	0.261	---	0.01
151	12.58	0.93	0.291	0.259	---	0.03
152	12.67	0.93	0.291	0.258	---	0.03
153	12.75	0.93	0.291	0.257	---	0.03
154	12.83	0.97	0.302	0.256	---	0.05
155	12.92	0.97	0.302	0.254	---	0.05
156	13.00	0.97	0.302	0.253	---	0.05
157	13.08	1.13	0.354	0.252	---	0.10
158	13.17	1.13	0.354	0.250	---	0.10
159	13.25	1.13	0.354	0.249	---	0.10
160	13.33	1.13	0.354	0.248	---	0.11
161	13.42	1.13	0.354	0.247	---	0.11
162	13.50	1.13	0.354	0.245	---	0.11
163	13.58	0.77	0.239	0.244	0.203	0.04
164	13.67	0.77	0.239	0.243	0.203	0.04
165	13.75	0.77	0.239	0.242	0.203	0.04
166	13.83	0.77	0.239	0.240	0.203	0.04
167	13.92	0.77	0.239	0.239	0.203	0.04
168	14.00	0.77	0.239	0.238	---	0.00
169	14.08	0.90	0.281	0.237	---	0.04
170	14.17	0.90	0.281	0.236	---	0.05
171	14.25	0.90	0.281	0.234	---	0.05
172	14.33	0.87	0.270	0.233	---	0.04
173	14.42	0.87	0.270	0.232	---	0.04
174	14.50	0.87	0.270	0.231	---	0.04
175	14.58	0.87	0.270	0.230	---	0.04
176	14.67	0.87	0.270	0.228	---	0.04
177	14.75	0.87	0.270	0.227	---	0.04
178	14.83	0.83	0.260	0.226	---	0.03
179	14.92	0.83	0.260	0.225	---	0.04
180	15.00	0.83	0.260	0.224	---	0.04
181	15.08	0.80	0.250	0.223	---	0.03
182	15.17	0.80	0.250	0.221	---	0.03
183	15.25	0.80	0.250	0.220	---	0.03
184	15.33	0.77	0.239	0.219	---	0.02
185	15.42	0.77	0.239	0.218	---	0.02
186	15.50	0.77	0.239	0.217	---	0.02
187	15.58	0.63	0.198	0.216	0.168	0.03
188	15.67	0.63	0.198	0.215	0.168	0.03

189	15.75	0.63	0.198	0.214	0.168	0.03
190	15.83	0.63	0.198	0.213	0.168	0.03
191	15.92	0.63	0.198	0.211	0.168	0.03
192	16.00	0.63	0.198	0.210	0.168	0.03
193	16.08	0.13	0.042	0.209	0.035	0.01
194	16.17	0.13	0.042	0.208	0.035	0.01
195	16.25	0.13	0.042	0.207	0.035	0.01
196	16.33	0.13	0.042	0.206	0.035	0.01
197	16.42	0.13	0.042	0.205	0.035	0.01
198	16.50	0.13	0.042	0.204	0.035	0.01
199	16.58	0.10	0.031	0.203	0.027	0.00
200	16.67	0.10	0.031	0.202	0.027	0.00
201	16.75	0.10	0.031	0.201	0.027	0.00
202	16.83	0.10	0.031	0.200	0.027	0.00
203	16.92	0.10	0.031	0.199	0.027	0.00
204	17.00	0.10	0.031	0.198	0.027	0.00
205	17.08	0.17	0.052	0.197	0.044	0.01
206	17.17	0.17	0.052	0.196	0.044	0.01
207	17.25	0.17	0.052	0.195	0.044	0.01
208	17.33	0.17	0.052	0.194	0.044	0.01
209	17.42	0.17	0.052	0.193	0.044	0.01
210	17.50	0.17	0.052	0.192	0.044	0.01
211	17.58	0.17	0.052	0.191	0.044	0.01
212	17.67	0.17	0.052	0.190	0.044	0.01
213	17.75	0.17	0.052	0.189	0.044	0.01
214	17.83	0.13	0.042	0.188	0.035	0.01
215	17.92	0.13	0.042	0.187	0.035	0.01
216	18.00	0.13	0.042	0.186	0.035	0.01
217	18.08	0.13	0.042	0.185	0.035	0.01
218	18.17	0.13	0.042	0.185	0.035	0.01
219	18.25	0.13	0.042	0.184	0.035	0.01
220	18.33	0.13	0.042	0.183	0.035	0.01
221	18.42	0.13	0.042	0.182	0.035	0.01
222	18.50	0.13	0.042	0.181	0.035	0.01
223	18.58	0.10	0.031	0.180	0.027	0.00
224	18.67	0.10	0.031	0.179	0.027	0.00
225	18.75	0.10	0.031	0.178	0.027	0.00
226	18.83	0.07	0.021	0.177	0.018	0.00
227	18.92	0.07	0.021	0.177	0.018	0.00
228	19.00	0.07	0.021	0.176	0.018	0.00
229	19.08	0.10	0.031	0.175	0.027	0.00
230	19.17	0.10	0.031	0.174	0.027	0.00
231	19.25	0.10	0.031	0.173	0.027	0.00
232	19.33	0.13	0.042	0.173	0.035	0.01
233	19.42	0.13	0.042	0.172	0.035	0.01
234	19.50	0.13	0.042	0.171	0.035	0.01
235	19.58	0.10	0.031	0.170	0.027	0.00
236	19.67	0.10	0.031	0.169	0.027	0.00
237	19.75	0.10	0.031	0.169	0.027	0.00
238	19.83	0.07	0.021	0.168	0.018	0.00
239	19.92	0.07	0.021	0.167	0.018	0.00
240	20.00	0.07	0.021	0.166	0.018	0.00
241	20.08	0.10	0.031	0.166	0.027	0.00
242	20.17	0.10	0.031	0.165	0.027	0.00
243	20.25	0.10	0.031	0.164	0.027	0.00
244	20.33	0.10	0.031	0.163	0.027	0.00
245	20.42	0.10	0.031	0.163	0.027	0.00
246	20.50	0.10	0.031	0.162	0.027	0.00
247	20.58	0.10	0.031	0.161	0.027	0.00
248	20.67	0.10	0.031	0.161	0.027	0.00
249	20.75	0.10	0.031	0.160	0.027	0.00
250	20.83	0.07	0.021	0.159	0.018	0.00
251	20.92	0.07	0.021	0.159	0.018	0.00
252	21.00	0.07	0.021	0.158	0.018	0.00
253	21.08	0.10	0.031	0.157	0.027	0.00
254	21.17	0.10	0.031	0.157	0.027	0.00
255	21.25	0.10	0.031	0.156	0.027	0.00
256	21.33	0.07	0.021	0.156	0.018	0.00
257	21.42	0.07	0.021	0.155	0.018	0.00
258	21.50	0.07	0.021	0.155	0.018	0.00
259	21.58	0.10	0.031	0.154	0.027	0.00
260	21.67	0.10	0.031	0.153	0.027	0.00
261	21.75	0.10	0.031	0.153	0.027	0.00
262	21.83	0.07	0.021	0.152	0.018	0.00
263	21.92	0.07	0.021	0.152	0.018	0.00

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264  22.00     0.07      0.021         0.151     0.018         0.00
265  22.08     0.10      0.031         0.151     0.027         0.00
266  22.17     0.10      0.031         0.150     0.027         0.00
267  22.25     0.10      0.031         0.150     0.027         0.00
268  22.33     0.07      0.021         0.149     0.018         0.00
269  22.42     0.07      0.021         0.149     0.018         0.00
270  22.50     0.07      0.021         0.148     0.018         0.00
271  22.58     0.07      0.021         0.148     0.018         0.00
272  22.67     0.07      0.021         0.148     0.018         0.00
273  22.75     0.07      0.021         0.147     0.018         0.00
274  22.83     0.07      0.021         0.147     0.018         0.00
275  22.92     0.07      0.021         0.146     0.018         0.00
276  23.00     0.07      0.021         0.146     0.018         0.00
277  23.08     0.07      0.021         0.146     0.018         0.00
278  23.17     0.07      0.021         0.145     0.018         0.00
279  23.25     0.07      0.021         0.145     0.018         0.00
280  23.33     0.07      0.021         0.145     0.018         0.00
281  23.42     0.07      0.021         0.145     0.018         0.00
282  23.50     0.07      0.021         0.144     0.018         0.00
283  23.58     0.07      0.021         0.144     0.018         0.00
284  23.67     0.07      0.021         0.144     0.018         0.00
285  23.75     0.07      0.021         0.144     0.018         0.00
286  23.83     0.07      0.021         0.143     0.018         0.00
287  23.92     0.07      0.021         0.143     0.018         0.00
288  24.00     0.07      0.021         0.143     0.018         0.00
    Sum =     100.0                                 Sum =      4.8
      Flood volume = Effective rainfall      0.40(In)
       times area      60.7(Ac.)/[(In)/(Ft.)] =       2.0(Ac.Ft)
      Total soil loss =      2.20(In)
      Total soil loss =    11.145(Ac.Ft)
      Total rainfall =      2.60(In)
      Flood volume =       87348.5 Cubic Feet
      Total soil loss =      485470.2 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      6.130(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ----------------------------------------------------------------------------
   0+ 5       0.0001      0.01  Q         |         |         |         |
   0+10       0.0004      0.05  Q         |         |         |         |
   0+15       0.0012      0.12  Q         |         |         |         |
   0+20       0.0023      0.15  Q         |         |         |         |
   0+25       0.0036      0.19  Q         |         |         |         |
   0+30       0.0052      0.23  Q         |         |         |         |
   0+35       0.0069      0.26  VQ        |         |         |         |
   0+40       0.0088      0.27  VQ        |         |         |         |
   0+45       0.0107      0.27  VQ        |         |         |         |
   0+50       0.0126      0.28  VQ        |         |         |         |
   0+55       0.0147      0.31  VQ        |         |         |         |
   1+ 0       0.0171      0.34  VQ        |         |         |         |
   1+ 5       0.0195      0.35  VQ        |         |         |         |
   1+10       0.0219      0.34  VQ        |         |         |         |
   1+15       0.0241      0.31  VQ        |         |         |         |
   1+20       0.0262      0.30  VQ        |         |         |         |
   1+25       0.0282      0.30  VQ        |         |         |         |
   1+30       0.0302      0.29  VQ        |         |         |         |
   1+35       0.0322      0.29  VQ        |         |         |         |
   1+40       0.0342      0.29  VQ        |         |         |         |
   1+45       0.0362      0.29  VQ        |         |         |         |
   1+50       0.0382      0.29  VQ        |         |         |         |
   1+55       0.0403      0.31  VQ        |         |         |         |
   2+ 0       0.0427      0.35  VQ        |         |         |         |
   2+ 5       0.0452      0.36  VQ        |         |         |         |
   2+10       0.0477      0.37  VQ        |         |         |         |
   2+15       0.0503      0.37  |Q        |         |         |         |
   2+20       0.0529      0.38  |Q        |         |         |         |
   2+25       0.0555      0.38  |Q        |         |         |         |
   2+30       0.0581      0.38  |Q        |         |         |         |
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2+35	0.0608	0.38	|Q	|	|	|	|
2+40	0.0636	0.40	|Q	|	|	|	|
2+45	0.0666	0.44	|Q	|	|	|	|
2+50	0.0698	0.46	|Q	|	|	|	|
2+55	0.0730	0.46	|Q	|	|	|	|
3+ 0	0.0762	0.47	|Q	|	|	|	|
3+ 5	0.0794	0.47	|Q	|	|	|	|
3+10	0.0827	0.47	|Q	|	|	|	|
3+15	0.0860	0.48	|Q	|	|	|	|
3+20	0.0893	0.48	|Q	|	|	|	|
3+25	0.0926	0.48	|Q	|	|	|	|
3+30	0.0958	0.48	|Q	|	|	|	|
3+35	0.0991	0.48	|Q	|	|	|	|
3+40	0.1024	0.48	|QV	|	|	|	|
3+45	0.1057	0.48	|QV	|	|	|	|
3+50	0.1090	0.48	|QV	|	|	|	|
3+55	0.1125	0.50	| Q	|	|	|	|
4+ 0	0.1162	0.54	| Q	|	|	|	|
4+ 5	0.1200	0.55	| Q	|	|	|	|
4+10	0.1238	0.56	| Q	|	|	|	|
4+15	0.1277	0.56	| Q	|	|	|	|
4+20	0.1316	0.57	| Q	|	|	|	|
4+25	0.1357	0.59	| Q	|	|	|	|
4+30	0.1401	0.63	| Q	|	|	|	|
4+35	0.1445	0.65	| Q	|	|	|	|
4+40	0.1490	0.65	| Q	|	|	|	|
4+45	0.1536	0.66	| QV	|	|	|	|
4+50	0.1582	0.67	| QV	|	|	|	|
4+55	0.1629	0.69	| QV	|	|	|	|
5+ 0	0.1679	0.73	| QV	|	|	|	|
5+ 5	0.1730	0.73	| QV	|	|	|	|
5+10	0.1778	0.70	| QV	|	|	|	|
5+15	0.1822	0.63	| QV	|	|	|	|
5+20	0.1864	0.61	| QV	|	|	|	|
5+25	0.1907	0.62	| QV	|	|	|	|
5+30	0.1952	0.65	| QV	|	|	|	|
5+35	0.1997	0.66	| QV	|	|	|	|
5+40	0.2044	0.68	| Q V	|	|	|	|
5+45	0.2094	0.72	| Q V	|	|	|	|
5+50	0.2145	0.74	| Q V	|	|	|	|
5+55	0.2196	0.75	| Q V	|	|	|	|
6+ 0	0.2248	0.75	| QV	|	|	|	|
6+ 5	0.2301	0.76	| QV	|	|	|	|
6+10	0.2355	0.78	| QV	|	|	|	|
6+15	0.2411	0.82	| QV	|	|	|	|
6+20	0.2469	0.84	| QV	|	|	|	|
6+25	0.2527	0.85	| Q V	|	|	|	|
6+30	0.2586	0.85	| Q V	|	|	|	|
6+35	0.2645	0.86	| Q V	|	|	|	|
6+40	0.2706	0.88	| Q V	|	|	|	|
6+45	0.2769	0.92	| Q V	|	|	|	|
6+50	0.2833	0.93	| Q V	|	|	|	|
6+55	0.2898	0.94	| Q V	|	|	|	|
7+ 0	0.2963	0.95	| Q V	|	|	|	|
7+ 5	0.3028	0.95	| Q V	|	|	|	|
7+10	0.3094	0.95	| Q V	|	|	|	|
7+15	0.3160	0.95	| Q V	|	|	|	|
7+20	0.3226	0.96	| Q V	|	|	|	|
7+25	0.3293	0.98	| Q V	|	|	|	|
7+30	0.3363	1.01	| Q V	|	|	|	|
7+35	0.3434	1.03	| Q V	|	|	|	|
7+40	0.3507	1.06	| Q V	|	|	|	|
7+45	0.3583	1.10	| Q V	|	|	|	|
7+50	0.3660	1.12	| Q V	|	|	|	|
7+55	0.3740	1.15	| Q V	|	|	|	|
8+ 0	0.3822	1.20	| Q V	|	|	|	|
8+ 5	0.3906	1.22	| Q V	|	|	|	|
8+10	0.3994	1.27	| Q V	|	|	|	|
8+15	0.4087	1.35	| Q V	|	|	|	|
8+20	0.4182	1.38	| Q V	|	|	|	|
8+25	0.4279	1.40	| Q V	|	|	|	|
8+30	0.4376	1.41	| Q V	|	|	|	|
8+35	0.4474	1.43	| Q V	|	|	|	|
8+40	0.4574	1.45	| Q V|	|	|	|	|
8+45	0.4676	1.49	| Q V|	|	|	|	|

8+50	0.4780	1.51	| Q V|	|	|	|
8+55	0.4886	1.54	| Q V|	|	|	|
9+ 0	0.4995	1.58	| Q V|	|	|	|
9+ 5	0.5105	1.60	| Q V	|	|	|
9+10	0.5219	1.65	| Q V	|	|	|
9+15	0.5339	1.73	| Q V	|	|	|
9+20	0.5461	1.77	| Q V	|	|	|
9+25	0.5585	1.81	| Q |V	|	|	|
9+30	0.5713	1.86	| Q |V	|	|	|
9+35	0.5842	1.88	| Q |V	|	|	|
9+40	0.5974	1.91	| Q |V	|	|	|
9+45	0.6109	1.96	| Q | V	|	|	|
9+50	0.6245	1.98	| Q | V	|	|	|
9+55	0.6384	2.01	| Q | V	|	|	|
10+ 0	0.6525	2.05	| Q | V	|	|	|
10+ 5	0.6666	2.04	| Q | V	|	|	|
10+10	0.6798	1.92	| Q | V	|	|	|
10+15	0.6913	1.67	| Q | V	|	|	|
10+20	0.7022	1.58	| Q | V	|	|	|
10+25	0.7126	1.52	| Q | V	|	|	|
10+30	0.7229	1.49	| Q | V	|	|	|
10+35	0.7331	1.48	| Q | V	|	|	|
10+40	0.7439	1.57	| Q | V	|	|	|
10+45	0.7559	1.74	| Q | V	|	|	|
10+50	0.7684	1.81	| Q | V	|	|	|
10+55	0.7811	1.85	| Q | V	|	|	|
11+ 0	0.7940	1.87	| Q | V	|	|	|
11+ 5	0.8070	1.88	| Q | V	|	|	|
11+10	0.8199	1.87	| Q | V	|	|	|
11+15	0.8326	1.84	| Q | V	|	|	|
11+20	0.8452	1.83	| Q | V	|	|	|
11+25	0.8577	1.82	| Q | V	|	|	|
11+30	0.8702	1.82	| Q | V	|	|	|
11+35	0.8827	1.81	| Q | V	|	|	|
11+40	0.8949	1.77	| Q | V	|	|	|
11+45	0.9066	1.70	| Q | V	|	|	|
11+50	0.9181	1.67	| Q | V	|	|	|
11+55	0.9296	1.67	| Q | V	|	|	|
12+ 0	0.9413	1.70	| Q | V	|	|	|
12+ 5	0.9533	1.74	| Q | V|	|	|	|
12+10	0.9662	1.88	| Q | V|	|	|	|
12+15	0.9809	2.14	| Q | V|	|	|	|
12+20	0.9957	2.15	| Q | V|	|	|	|
12+25	1.0082	1.81	| Q | V	|	|	|
12+30	1.0158	1.11	| Q | V	|	|	|
12+35	1.0224	0.96	| Q | V	|	|	|
12+40	1.0302	1.13	| Q | V	|	|	|
12+45	1.0412	1.59	| Q | V	|	|	|
12+50	1.0537	1.81	| Q | |V	|	|	|
12+55	1.0680	2.08	| Q | |V	|	|	|
13+ 0	1.0849	2.45	| Q| |V	|	|	|
13+ 5	1.1042	2.80	| |Q | V	|	|	|
13+10	1.1290	3.61	| | Q | V	|	|	|
13+15	1.1631	4.94	| | Q| V	|	|	|
13+20	1.2010	5.51	| | | QV	|	|	|
13+25	1.2414	5.87	| | | QV	|	|	|
13+30	1.2836	6.13	| | | QV	|	|	|
13+35	1.3258	6.13	| | | Q V	|	|	|
13+40	1.3627	5.35	| | |Q V	|	|	|
13+45	1.3883	3.73	| | Q | V	|	|	|
13+50	1.4098	3.12	| | Q | V	|	|	|
13+55	1.4289	2.77	| |Q | V	|	|	|
14+ 0	1.4458	2.46	| Q| | V	|	|	|
14+ 5	1.4595	1.99	| Q | | V	|	|	|
14+10	1.4708	1.63	| Q | | V	|	|	|
14+15	1.4866	2.30	| Q| | V	|	|	|
14+20	1.5038	2.50	| Q| | V	|	|	|
14+25	1.5211	2.51	| Q | V	|	|	|
14+30	1.5375	2.38	| Q| | V	|	|	|
14+35	1.5540	2.39	| Q| | V	|	|	|
14+40	1.5708	2.44	| Q| | V	|	|	|
14+45	1.5879	2.49	| Q| | V	|	|	|
14+50	1.6052	2.51	| Q | V	|	|	|
14+55	1.6220	2.44	| Q| | V	|	|	|
15+ 0	1.6377	2.27	| Q| | V	|	|	|

15+ 5	1.6529	2.22	| Q |	|	|	V |
15+10	1.6674	2.11	| Q |	|	|	V |
15+15	1.6805	1.90	| Q |	|	|	V |
15+20	1.6930	1.82	| Q |	|	|	V |
15+25	1.7047	1.69	| Q |	|	|	V |
15+30	1.7149	1.48	| Q |	|	|	V |
15+35	1.7248	1.44	| Q |	|	|	V |
15+40	1.7353	1.52	| Q |	|	|	V |
15+45	1.7468	1.68	| Q |	|	|	V |
15+50	1.7587	1.73	| Q |	|	|	V |
15+55	1.7709	1.76	| Q |	|	|	V |
16+ 0	1.7831	1.78	| Q |	|	|	V |
16+ 5	1.7951	1.73	| Q |	|	|	V |
16+10	1.8050	1.45	| Q |	|	|	V |
16+15	1.8113	0.90	| Q |	|	|	V |
16+20	1.8160	0.70	| Q |	|	|	V |
16+25	1.8200	0.58	| Q |	|	|	V |
16+30	1.8235	0.50	| Q |	|	|	V |
16+35	1.8266	0.45	| Q |	|	|	V |
16+40	1.8293	0.40	| Q |	|	|	V |
16+45	1.8317	0.35	| Q |	|	|	V |
16+50	1.8340	0.33	| Q |	|	|	V |
16+55	1.8361	0.31	| Q |	|	|	V |
17+ 0	1.8382	0.30	| Q |	|	|	V |
17+ 5	1.8403	0.30	| Q |	|	|	V |
17+10	1.8426	0.34	| Q |	|	|	V |
17+15	1.8454	0.41	| Q |	|	|	V |
17+20	1.8484	0.44	| Q |	|	|	V |
17+25	1.8515	0.45	| Q |	|	|	V |
17+30	1.8547	0.46	| Q |	|	|	V |
17+35	1.8579	0.47	| Q |	|	|	V |
17+40	1.8611	0.47	| Q |	|	|	V |
17+45	1.8644	0.47	| Q |	|	|	V |
17+50	1.8677	0.47	| Q |	|	|	V |
17+55	1.8708	0.45	| Q |	|	|	V |
18+ 0	1.8736	0.42	| Q |	|	|	V |
18+ 5	1.8764	0.40	| Q |	|	|	V |
18+10	1.8791	0.40	| Q |	|	|	V |
18+15	1.8818	0.39	| Q |	|	|	V |
18+20	1.8845	0.39	| Q |	|	|	V |
18+25	1.8871	0.38	| Q |	|	|	V |
18+30	1.8898	0.38	| Q |	|	|	V |
18+35	1.8924	0.38	| Q |	|	|	V |
18+40	1.8949	0.36	| Q |	|	|	V |
18+45	1.8971	0.32	| Q |	|	|	V |
18+50	1.8992	0.30	| Q |	|	|	V |
18+55	1.9011	0.28	| Q |	|	|	V |
19+ 0	1.9027	0.23	| Q |	|	|	V |
19+ 5	1.9042	0.22	| Q |	|	|	V |
19+10	1.9058	0.23	| Q |	|	|	V |
19+15	1.9076	0.26	| Q |	|	|	V |
19+20	1.9095	0.28	| Q |	|	|	V |
19+25	1.9116	0.30	| Q |	|	|	V |
19+30	1.9139	0.34	| Q |	|	|	V |
19+35	1.9163	0.35	| Q |	|	|	V |
19+40	1.9187	0.34	| Q |	|	|	V |
19+45	1.9208	0.31	| Q |	|	|	V |
19+50	1.9229	0.30	| Q |	|	|	V |
19+55	1.9248	0.27	| Q |	|	|	V |
20+ 0	1.9264	0.23	| Q |	|	|	V |
20+ 5	1.9279	0.22	| Q |	|	|	V |
20+10	1.9295	0.23	| Q |	|	|	V |
20+15	1.9313	0.26	| Q |	|	|	V |
20+20	1.9331	0.27	| Q |	|	|	V |
20+25	1.9350	0.28	| Q |	|	|	V |
20+30	1.9370	0.28	| Q |	|	|	V |
20+35	1.9389	0.28	| Q |	|	|	V |
20+40	1.9409	0.28	| Q |	|	|	V |
20+45	1.9428	0.29	| Q |	|	|	V |
20+50	1.9448	0.28	| Q |	|	|	V |
20+55	1.9466	0.26	| Q |	|	|	V |
21+ 0	1.9481	0.23	| Q |	|	|	V |
21+ 5	1.9496	0.22	| Q |	|	|	V |
21+10	1.9512	0.23	| Q |	|	|	V |
21+15	1.9530	0.26	| Q |	|	|	V |

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   21+20       1.9548      0.27  |Q        |         |         |       V |
   21+25       1.9565      0.25  |Q        |         |         |        V|
   21+30       1.9581      0.22  Q         |         |         |        V|
   21+35       1.9595      0.21  Q         |         |         |        V|
   21+40       1.9611      0.23  Q         |         |         |        V|
   21+45       1.9629      0.26  |Q        |         |         |        V|
   21+50       1.9647      0.26  |Q        |         |         |        V|
   21+55       1.9664      0.25  |Q        |         |         |        V|
   22+ 0       1.9679      0.22  Q         |         |         |        V|
   22+ 5       1.9694      0.21  Q         |         |         |        V|
   22+10       1.9709      0.23  Q         |         |         |        V|
   22+15       1.9727      0.26  |Q        |         |         |        V|
   22+20       1.9745      0.26  |Q        |         |         |        V|
   22+25       1.9763      0.25  |Q        |         |         |        V|
   22+30       1.9778      0.22  Q         |         |         |        V|
   22+35       1.9792      0.21  Q         |         |         |        V|
   22+40       1.9806      0.20  Q         |         |         |        V|
   22+45       1.9820      0.20  Q         |         |         |        V|
   22+50       1.9833      0.19  Q         |         |         |        V|
   22+55       1.9846      0.19  Q         |         |         |        V|
   23+ 0       1.9860      0.19  Q         |         |         |        V|
   23+ 5       1.9873      0.19  Q         |         |         |        V|
   23+10       1.9886      0.19  Q         |         |         |        V|
   23+15       1.9899      0.19  Q         |         |         |        V|
   23+20       1.9912      0.19  Q         |         |         |        V|
   23+25       1.9926      0.19  Q         |         |         |        V|
   23+30       1.9939      0.19  Q         |         |         |        V|
   23+35       1.9952      0.19  Q         |         |         |        V|
   23+40       1.9965      0.19  Q         |         |         |        V|
   23+45       1.9978      0.19  Q         |         |         |        V|
   23+50       1.9991      0.19  Q         |         |         |        V|
   23+55       2.0004      0.19  Q         |         |         |        V|
   24+ 0       2.0018      0.19  Q         |         |         |        V|
   24+ 5       2.0030      0.18  Q         |         |         |        V|
   24+10       2.0040      0.14  Q         |         |         |        V|
   24+15       2.0045      0.07  Q         |         |         |        V|
   24+20       2.0048      0.04  Q         |         |         |        V|
   24+25       2.0050      0.03  Q         |         |         |        V|
   24+30       2.0051      0.02  Q         |         |         |        V|
   24+35       2.0051      0.01  Q         |         |         |        V|
   24+40       2.0052      0.01  Q         |         |         |        V|
   24+45       2.0052      0.00  Q         |         |         |        V|
   24+50       2.0052      0.00  Q         |         |         |        V|
   24+55       2.0052      0.00  Q         |         |         |        V|
   25+ 0       2.0052      0.00  Q         |         |         |        V|
   25+ 5       2.0052      0.00  Q         |         |         |         V
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UNIT HYDROGRAPH
DMA B
PROPOSED CONDITIONS
2-YEAR 24-HOUR

U n i t H y d r o g r a p h A n a l y s i s

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Study date 10/21/14 File: BPROP242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

14-0213 SHOPOFF
UNIT HYDROGRAPH
DMA B
PROPOSED CONDITIONS
2-YEAR 24-HOUR

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 60.70(Ac.) = 0.095 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 60.70(Ac.) = 0.095 Sq. Mi.
Length along longest watercourse = 3720.00(Ft.)
Length along longest watercourse measured to centroid = 2000.00(Ft.)
Length along longest watercourse = 0.705 Mi.
Length along longest watercourse measured to centroid = 0.379 Mi.
Difference in elevation = 105.00(Ft.)
Slope along watercourse = 149.0323 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.084 Hr.
Lag time = 5.05 Min.
25% of lag time = 1.26 Min.
40% of lag time = 2.02 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
60.70	2.60	157.82

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
60.70	7.00	424.90

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 2.600(In)
Area Averaged 100-Year Rainfall = 7.000(In)

Point rain (area averaged) = 2.600(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 2.600(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
60.700	64.00	0.900

Total Area Entered = 60.70(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F

AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
64.0	44.0	0.631	0.900	0.120	1.000	0.120
					Sum (F) =	0.120

Area averaged mean soil loss (F) (In/Hr) = 0.120
Minimum soil loss rate ((In/Hr)) = 0.060
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	98.956	14.050	8.595
2	0.167	197.913	55.616	34.023
3	0.250	296.869	18.626	11.395
4	0.333	395.825	7.557	4.623
5	0.417	494.782	2.573	1.574
6	0.500	593.738	0.862	0.528
7	0.583	692.694	0.569	0.348
8	0.667	791.651	0.146	0.090
			Sum = 100.000	Sum= 61.174

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.021	0.212	0.004	0.02
2	0.17	0.07	0.021	0.212	0.004	0.02
3	0.25	0.07	0.021	0.211	0.004	0.02
4	0.33	0.10	0.031	0.210	0.006	0.03
5	0.42	0.10	0.031	0.209	0.006	0.03
6	0.50	0.10	0.031	0.208	0.006	0.03
7	0.58	0.10	0.031	0.208	0.006	0.03
8	0.67	0.10	0.031	0.207	0.006	0.03
9	0.75	0.10	0.031	0.206	0.006	0.03
10	0.83	0.13	0.042	0.205	0.007	0.03
11	0.92	0.13	0.042	0.204	0.007	0.03
12	1.00	0.13	0.042	0.204	0.007	0.03
13	1.08	0.10	0.031	0.203	0.006	0.03
14	1.17	0.10	0.031	0.202	0.006	0.03
15	1.25	0.10	0.031	0.201	0.006	0.03
16	1.33	0.10	0.031	0.200	0.006	0.03
17	1.42	0.10	0.031	0.200	0.006	0.03
18	1.50	0.10	0.031	0.199	0.006	0.03
19	1.58	0.10	0.031	0.198	0.006	0.03
20	1.67	0.10	0.031	0.197	0.006	0.03
21	1.75	0.10	0.031	0.196	0.006	0.03
22	1.83	0.13	0.042	0.196	0.007	0.03
23	1.92	0.13	0.042	0.195	0.007	0.03
24	2.00	0.13	0.042	0.194	0.007	0.03
25	2.08	0.13	0.042	0.193	0.007	0.03
26	2.17	0.13	0.042	0.192	0.007	0.03
27	2.25	0.13	0.042	0.192	0.007	0.03
28	2.33	0.13	0.042	0.191	0.007	0.03
29	2.42	0.13	0.042	0.190	0.007	0.03
30	2.50	0.13	0.042	0.189	0.007	0.03
31	2.58	0.17	0.052	0.189	0.009	0.04
32	2.67	0.17	0.052	0.188	0.009	0.04
33	2.75	0.17	0.052	0.187	0.009	0.04
34	2.83	0.17	0.052	0.186	0.009	0.04
35	2.92	0.17	0.052	0.185	0.009	0.04
36	3.00	0.17	0.052	0.185	0.009	0.04
37	3.08	0.17	0.052	0.184	0.009	0.04
38	3.17	0.17	0.052	0.183	0.009	0.04
39	3.25	0.17	0.052	0.182	0.009	0.04
40	3.33	0.17	0.052	0.182	0.009	0.04
41	3.42	0.17	0.052	0.181	0.009	0.04
42	3.50	0.17	0.052	0.180	0.009	0.04
43	3.58	0.17	0.052	0.179	0.009	0.04
44	3.67	0.17	0.052	0.179	0.009	0.04

45	3.75	0.17	0.052	0.178	0.009	0.04
46	3.83	0.20	0.062	0.177	0.011	0.05
47	3.92	0.20	0.062	0.176	0.011	0.05
48	4.00	0.20	0.062	0.176	0.011	0.05
49	4.08	0.20	0.062	0.175	0.011	0.05
50	4.17	0.20	0.062	0.174	0.011	0.05
51	4.25	0.20	0.062	0.173	0.011	0.05
52	4.33	0.23	0.073	0.173	0.013	0.06
53	4.42	0.23	0.073	0.172	0.013	0.06
54	4.50	0.23	0.073	0.171	0.013	0.06
55	4.58	0.23	0.073	0.170	0.013	0.06
56	4.67	0.23	0.073	0.170	0.013	0.06
57	4.75	0.23	0.073	0.169	0.013	0.06
58	4.83	0.27	0.083	0.168	0.015	0.07
59	4.92	0.27	0.083	0.167	0.015	0.07
60	5.00	0.27	0.083	0.167	0.015	0.07
61	5.08	0.20	0.062	0.166	0.011	0.05
62	5.17	0.20	0.062	0.165	0.011	0.05
63	5.25	0.20	0.062	0.165	0.011	0.05
64	5.33	0.23	0.073	0.164	0.013	0.06
65	5.42	0.23	0.073	0.163	0.013	0.06
66	5.50	0.23	0.073	0.162	0.013	0.06
67	5.58	0.27	0.083	0.162	0.015	0.07
68	5.67	0.27	0.083	0.161	0.015	0.07
69	5.75	0.27	0.083	0.160	0.015	0.07
70	5.83	0.27	0.083	0.160	0.015	0.07
71	5.92	0.27	0.083	0.159	0.015	0.07
72	6.00	0.27	0.083	0.158	0.015	0.07
73	6.08	0.30	0.094	0.157	0.017	0.08
74	6.17	0.30	0.094	0.157	0.017	0.08
75	6.25	0.30	0.094	0.156	0.017	0.08
76	6.33	0.30	0.094	0.155	0.017	0.08
77	6.42	0.30	0.094	0.155	0.017	0.08
78	6.50	0.30	0.094	0.154	0.017	0.08
79	6.58	0.33	0.104	0.153	0.019	0.09
80	6.67	0.33	0.104	0.153	0.019	0.09
81	6.75	0.33	0.104	0.152	0.019	0.09
82	6.83	0.33	0.104	0.151	0.019	0.09
83	6.92	0.33	0.104	0.151	0.019	0.09
84	7.00	0.33	0.104	0.150	0.019	0.09
85	7.08	0.33	0.104	0.149	0.019	0.09
86	7.17	0.33	0.104	0.149	0.019	0.09
87	7.25	0.33	0.104	0.148	0.019	0.09
88	7.33	0.37	0.114	0.147	0.021	0.09
89	7.42	0.37	0.114	0.147	0.021	0.09
90	7.50	0.37	0.114	0.146	0.021	0.09
91	7.58	0.40	0.125	0.145	0.022	0.10
92	7.67	0.40	0.125	0.144	0.022	0.10
93	7.75	0.40	0.125	0.144	0.022	0.10
94	7.83	0.43	0.135	0.143	0.024	0.11
95	7.92	0.43	0.135	0.143	0.024	0.11
96	8.00	0.43	0.135	0.142	0.024	0.11
97	8.08	0.50	0.156	0.141	---	0.01
98	8.17	0.50	0.156	0.141	---	0.02
99	8.25	0.50	0.156	0.140	---	0.02
100	8.33	0.50	0.156	0.139	---	0.02
101	8.42	0.50	0.156	0.139	---	0.02
102	8.50	0.50	0.156	0.138	---	0.02
103	8.58	0.53	0.166	0.137	---	0.03
104	8.67	0.53	0.166	0.137	---	0.03
105	8.75	0.53	0.166	0.136	---	0.03
106	8.83	0.57	0.177	0.135	---	0.04
107	8.92	0.57	0.177	0.135	---	0.04
108	9.00	0.57	0.177	0.134	---	0.04
109	9.08	0.63	0.198	0.133	---	0.06
110	9.17	0.63	0.198	0.133	---	0.06
111	9.25	0.63	0.198	0.132	---	0.07
112	9.33	0.67	0.208	0.132	---	0.08
113	9.42	0.67	0.208	0.131	---	0.08
114	9.50	0.67	0.208	0.130	---	0.08
115	9.58	0.70	0.218	0.130	---	0.09
116	9.67	0.70	0.218	0.129	---	0.09
117	9.75	0.70	0.218	0.128	---	0.09
118	9.83	0.73	0.229	0.128	---	0.10
119	9.92	0.73	0.229	0.127	---	0.10

120	10.00	0.73	0.229	0.127	---	0.10
121	10.08	0.50	0.156	0.126	---	0.03
122	10.17	0.50	0.156	0.125	---	0.03
123	10.25	0.50	0.156	0.125	---	0.03
124	10.33	0.50	0.156	0.124	---	0.03
125	10.42	0.50	0.156	0.124	---	0.03
126	10.50	0.50	0.156	0.123	---	0.03
127	10.58	0.67	0.208	0.122	---	0.09
128	10.67	0.67	0.208	0.122	---	0.09
129	10.75	0.67	0.208	0.121	---	0.09
130	10.83	0.67	0.208	0.121	---	0.09
131	10.92	0.67	0.208	0.120	---	0.09
132	11.00	0.67	0.208	0.119	---	0.09
133	11.08	0.63	0.198	0.119	---	0.08
134	11.17	0.63	0.198	0.118	---	0.08
135	11.25	0.63	0.198	0.118	---	0.08
136	11.33	0.63	0.198	0.117	---	0.08
137	11.42	0.63	0.198	0.116	---	0.08
138	11.50	0.63	0.198	0.116	---	0.08
139	11.58	0.57	0.177	0.115	---	0.06
140	11.67	0.57	0.177	0.115	---	0.06
141	11.75	0.57	0.177	0.114	---	0.06
142	11.83	0.60	0.187	0.114	---	0.07
143	11.92	0.60	0.187	0.113	---	0.07
144	12.00	0.60	0.187	0.112	---	0.07
145	12.08	0.83	0.260	0.112	---	0.15
146	12.17	0.83	0.260	0.111	---	0.15
147	12.25	0.83	0.260	0.111	---	0.15
148	12.33	0.87	0.270	0.110	---	0.16
149	12.42	0.87	0.270	0.110	---	0.16
150	12.50	0.87	0.270	0.109	---	0.16
151	12.58	0.93	0.291	0.109	---	0.18
152	12.67	0.93	0.291	0.108	---	0.18
153	12.75	0.93	0.291	0.107	---	0.18
154	12.83	0.97	0.302	0.107	---	0.19
155	12.92	0.97	0.302	0.106	---	0.20
156	13.00	0.97	0.302	0.106	---	0.20
157	13.08	1.13	0.354	0.105	---	0.25
158	13.17	1.13	0.354	0.105	---	0.25
159	13.25	1.13	0.354	0.104	---	0.25
160	13.33	1.13	0.354	0.104	---	0.25
161	13.42	1.13	0.354	0.103	---	0.25
162	13.50	1.13	0.354	0.103	---	0.25
163	13.58	0.77	0.239	0.102	---	0.14
164	13.67	0.77	0.239	0.102	---	0.14
165	13.75	0.77	0.239	0.101	---	0.14
166	13.83	0.77	0.239	0.101	---	0.14
167	13.92	0.77	0.239	0.100	---	0.14
168	14.00	0.77	0.239	0.100	---	0.14
169	14.08	0.90	0.281	0.099	---	0.18
170	14.17	0.90	0.281	0.099	---	0.18
171	14.25	0.90	0.281	0.098	---	0.18
172	14.33	0.87	0.270	0.098	---	0.17
173	14.42	0.87	0.270	0.097	---	0.17
174	14.50	0.87	0.270	0.097	---	0.17
175	14.58	0.87	0.270	0.096	---	0.17
176	14.67	0.87	0.270	0.096	---	0.17
177	14.75	0.87	0.270	0.095	---	0.18
178	14.83	0.83	0.260	0.095	---	0.17
179	14.92	0.83	0.260	0.094	---	0.17
180	15.00	0.83	0.260	0.094	---	0.17
181	15.08	0.80	0.250	0.093	---	0.16
182	15.17	0.80	0.250	0.093	---	0.16
183	15.25	0.80	0.250	0.092	---	0.16
184	15.33	0.77	0.239	0.092	---	0.15
185	15.42	0.77	0.239	0.091	---	0.15
186	15.50	0.77	0.239	0.091	---	0.15
187	15.58	0.63	0.198	0.090	---	0.11
188	15.67	0.63	0.198	0.090	---	0.11
189	15.75	0.63	0.198	0.089	---	0.11
190	15.83	0.63	0.198	0.089	---	0.11
191	15.92	0.63	0.198	0.088	---	0.11
192	16.00	0.63	0.198	0.088	---	0.11
193	16.08	0.13	0.042	0.088	0.007	0.03
194	16.17	0.13	0.042	0.087	0.007	0.03

195	16.25	0.13	0.042	0.087	0.007	0.03
196	16.33	0.13	0.042	0.086	0.007	0.03
197	16.42	0.13	0.042	0.086	0.007	0.03
198	16.50	0.13	0.042	0.085	0.007	0.03
199	16.58	0.10	0.031	0.085	0.006	0.03
200	16.67	0.10	0.031	0.084	0.006	0.03
201	16.75	0.10	0.031	0.084	0.006	0.03
202	16.83	0.10	0.031	0.084	0.006	0.03
203	16.92	0.10	0.031	0.083	0.006	0.03
204	17.00	0.10	0.031	0.083	0.006	0.03
205	17.08	0.17	0.052	0.082	0.009	0.04
206	17.17	0.17	0.052	0.082	0.009	0.04
207	17.25	0.17	0.052	0.082	0.009	0.04
208	17.33	0.17	0.052	0.081	0.009	0.04
209	17.42	0.17	0.052	0.081	0.009	0.04
210	17.50	0.17	0.052	0.080	0.009	0.04
211	17.58	0.17	0.052	0.080	0.009	0.04
212	17.67	0.17	0.052	0.080	0.009	0.04
213	17.75	0.17	0.052	0.079	0.009	0.04
214	17.83	0.13	0.042	0.079	0.007	0.03
215	17.92	0.13	0.042	0.078	0.007	0.03
216	18.00	0.13	0.042	0.078	0.007	0.03
217	18.08	0.13	0.042	0.078	0.007	0.03
218	18.17	0.13	0.042	0.077	0.007	0.03
219	18.25	0.13	0.042	0.077	0.007	0.03
220	18.33	0.13	0.042	0.076	0.007	0.03
221	18.42	0.13	0.042	0.076	0.007	0.03
222	18.50	0.13	0.042	0.076	0.007	0.03
223	18.58	0.10	0.031	0.075	0.006	0.03
224	18.67	0.10	0.031	0.075	0.006	0.03
225	18.75	0.10	0.031	0.075	0.006	0.03
226	18.83	0.07	0.021	0.074	0.004	0.02
227	18.92	0.07	0.021	0.074	0.004	0.02
228	19.00	0.07	0.021	0.074	0.004	0.02
229	19.08	0.10	0.031	0.073	0.006	0.03
230	19.17	0.10	0.031	0.073	0.006	0.03
231	19.25	0.10	0.031	0.073	0.006	0.03
232	19.33	0.13	0.042	0.072	0.007	0.03
233	19.42	0.13	0.042	0.072	0.007	0.03
234	19.50	0.13	0.042	0.072	0.007	0.03
235	19.58	0.10	0.031	0.071	0.006	0.03
236	19.67	0.10	0.031	0.071	0.006	0.03
237	19.75	0.10	0.031	0.071	0.006	0.03
238	19.83	0.07	0.021	0.070	0.004	0.02
239	19.92	0.07	0.021	0.070	0.004	0.02
240	20.00	0.07	0.021	0.070	0.004	0.02
241	20.08	0.10	0.031	0.069	0.006	0.03
242	20.17	0.10	0.031	0.069	0.006	0.03
243	20.25	0.10	0.031	0.069	0.006	0.03
244	20.33	0.10	0.031	0.068	0.006	0.03
245	20.42	0.10	0.031	0.068	0.006	0.03
246	20.50	0.10	0.031	0.068	0.006	0.03
247	20.58	0.10	0.031	0.068	0.006	0.03
248	20.67	0.10	0.031	0.067	0.006	0.03
249	20.75	0.10	0.031	0.067	0.006	0.03
250	20.83	0.07	0.021	0.067	0.004	0.02
251	20.92	0.07	0.021	0.066	0.004	0.02
252	21.00	0.07	0.021	0.066	0.004	0.02
253	21.08	0.10	0.031	0.066	0.006	0.03
254	21.17	0.10	0.031	0.066	0.006	0.03
255	21.25	0.10	0.031	0.065	0.006	0.03
256	21.33	0.07	0.021	0.065	0.004	0.02
257	21.42	0.07	0.021	0.065	0.004	0.02
258	21.50	0.07	0.021	0.065	0.004	0.02
259	21.58	0.10	0.031	0.064	0.006	0.03
260	21.67	0.10	0.031	0.064	0.006	0.03
261	21.75	0.10	0.031	0.064	0.006	0.03
262	21.83	0.07	0.021	0.064	0.004	0.02
263	21.92	0.07	0.021	0.063	0.004	0.02
264	22.00	0.07	0.021	0.063	0.004	0.02
265	22.08	0.10	0.031	0.063	0.006	0.03
266	22.17	0.10	0.031	0.063	0.006	0.03
267	22.25	0.10	0.031	0.063	0.006	0.03
268	22.33	0.07	0.021	0.062	0.004	0.02
269	22.42	0.07	0.021	0.062	0.004	0.02

270	22.50	0.07	0.021	0.062	0.004	0.02
271	22.58	0.07	0.021	0.062	0.004	0.02
272	22.67	0.07	0.021	0.062	0.004	0.02
273	22.75	0.07	0.021	0.062	0.004	0.02
274	22.83	0.07	0.021	0.061	0.004	0.02
275	22.92	0.07	0.021	0.061	0.004	0.02
276	23.00	0.07	0.021	0.061	0.004	0.02
277	23.08	0.07	0.021	0.061	0.004	0.02
278	23.17	0.07	0.021	0.061	0.004	0.02
279	23.25	0.07	0.021	0.061	0.004	0.02
280	23.33	0.07	0.021	0.061	0.004	0.02
281	23.42	0.07	0.021	0.060	0.004	0.02
282	23.50	0.07	0.021	0.060	0.004	0.02
283	23.58	0.07	0.021	0.060	0.004	0.02
284	23.67	0.07	0.021	0.060	0.004	0.02
285	23.75	0.07	0.021	0.060	0.004	0.02
286	23.83	0.07	0.021	0.060	0.004	0.02
287	23.92	0.07	0.021	0.060	0.004	0.02
288	24.00	0.07	0.021	0.060	0.004	0.02
Sum =		100.0			Sum =	18.7

Flood volume = Effective rainfall 1.55(In)
times area 60.7(Ac.)/[(In)/(Ft.)] = 7.9(Ac.Ft)
Total soil loss = 1.04(In)
Total soil loss = 5.285(Ac.Ft)
Total rainfall = 2.60(In)
Flood volume = 342617.2 Cubic Feet
Total soil loss = 230201.5 Cubic Feet

Peak flow rate of this hydrograph = 15.291(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0010	0.15	Q				
0+10	0.0060	0.73	VQ				
0+15	0.0124	0.92	VQ				
0+20	0.0198	1.07	V Q				
0+25	0.0293	1.39	V Q				
0+30	0.0397	1.50	V Q				
0+35	0.0503	1.54	V Q				
0+40	0.0610	1.56	V Q				
0+45	0.0718	1.56	V Q				
0+50	0.0830	1.64	V Q				
0+55	0.0963	1.93	V Q				
1+ 0	0.1103	2.03	V Q				
1+ 5	0.1240	1.99	V Q				
1+10	0.1358	1.72	V Q				
1+15	0.1470	1.62	V Q				
1+20	0.1579	1.59	V Q				
1+25	0.1688	1.57	V Q				
1+30	0.1796	1.57	V Q				
1+35	0.1904	1.57	V Q				
1+40	0.2011	1.57	|V Q				
1+45	0.2119	1.57	|V Q				
1+50	0.2232	1.64	|V Q				
1+55	0.2365	1.93	|V Q				
2+ 0	0.2505	2.03	|V Q				
2+ 5	0.2647	2.07	|V Q				
2+10	0.2790	2.08	|V Q				
2+15	0.2934	2.08	|V Q				
2+20	0.3077	2.09	|V Q				
2+25	0.3221	2.09	|V Q				
2+30	0.3365	2.09	|V Q				
2+35	0.3514	2.16	|V Q				
2+40	0.3683	2.45	|V Q				
2+45	0.3858	2.55	|V Q				
2+50	0.4036	2.59	| V Q				
2+55	0.4215	2.60	| V Q				
3+ 0	0.4395	2.61	| V Q				

3+ 5	0.4575	2.61	V Q			
3+10	0.4754	2.61	V Q			
3+15	0.4934	2.61	V Q			
3+20	0.5114	2.61	V Q			
3+25	0.5293	2.61	V Q			
3+30	0.5473	2.61	V Q			
3+35	0.5653	2.61	V Q			
3+40	0.5833	2.61	V Q			
3+45	0.6012	2.61	V Q			
3+50	0.6197	2.68	V Q			
3+55	0.6402	2.97	V Q			
4+ 0	0.6613	3.07	V Q			
4+ 5	0.6827	3.11	V Q			
4+10	0.7043	3.12	V Q			
4+15	0.7258	3.13	V Q			
4+20	0.7479	3.20	V Q			
4+25	0.7719	3.49	V Q			
4+30	0.7967	3.59	V Q			
4+35	0.8217	3.63	V Q			
4+40	0.8468	3.65	V Q			
4+45	0.8719	3.65	V Q			
4+50	0.8976	3.73	V Q			
4+55	0.9252	4.02	V Q			
5+ 0	0.9536	4.11	V Q			
5+ 5	0.9812	4.01	V Q			
5+10	1.0049	3.44	VQ			
5+15	1.0272	3.25	VQ			
5+20	1.0496	3.25	VQ			
5+25	1.0738	3.51	V Q			
5+30	1.0986	3.60	V Q			
5+35	1.1241	3.71	V Q			
5+40	1.1517	4.01	V Q			
5+45	1.1800	4.11	V Q			
5+50	1.2086	4.15	V Q			
5+55	1.2373	4.17	V Q			
6+ 0	1.2661	4.17	V Q			
6+ 5	1.2953	4.25	V Q			
6+10	1.3266	4.54	V Q			
6+15	1.3585	4.64	V Q			
6+20	1.3907	4.68	V Q			
6+25	1.4230	4.69	V Q			
6+30	1.4553	4.69	V Q			
6+35	1.4882	4.77	V Q			
6+40	1.5230	5.06	V Q			
6+45	1.5585	5.16	V Q			
6+50	1.5943	5.20	V Q			
6+55	1.6302	5.21	V Q			
7+ 0	1.6661	5.22	V Q			
7+ 5	1.7021	5.22	V Q			
7+10	1.7380	5.22	V Q			
7+15	1.7740	5.22	VQ			
7+20	1.8104	5.29	VQ			
7+25	1.8489	5.58	V|Q			
7+30	1.8880	5.68	V|Q			
7+35	1.9279	5.79	V|Q			
7+40	1.9699	6.10	V Q			
7+45	2.0125	6.20	V Q			
7+50	2.0560	6.31	V Q			
7+55	2.1016	6.62	V Q			
8+ 0	2.1479	6.72	V Q			
8+ 5	2.1888	5.94	|Q			
8+10	2.2073	2.69	Q |V			
8+15	2.2185	1.62	Q |V			
8+20	2.2268	1.22	Q |V			
8+25	2.2345	1.11	Q |V			
8+30	2.2420	1.09	Q |V			
8+35	2.2502	1.19	Q |V			
8+40	2.2610	1.57	Q |V			
8+45	2.2730	1.73	Q |V			
8+50	2.2861	1.91	Q |V			
8+55	2.3021	2.32	Q |V			
9+ 0	2.3192	2.48	Q |V			
9+ 5	2.3382	2.75	Q |V			
9+10	2.3624	3.52	Q | V			
9+15	2.3885	3.80	Q | V			

9+20	2.4163	4.03	| Q | V | | |
9+25	2.4469	4.45	| Q | V | | |
9+30	2.4788	4.62	| Q| V | | |
9+35	2.5118	4.80	| Q| V | | |
9+40	2.5477	5.21	| Q V | | |
9+45	2.5848	5.38	| Q V | | |
9+50	2.6230	5.56	| Q V | | |
9+55	2.6641	5.96	| Q V | | |
10+ 0	2.7063	6.13	| QV | | |
10+ 5	2.7448	5.59	| Q V | | |
10+10	2.7666	3.17	| Q | V | | |
10+15	2.7830	2.38	Q | V | | |
10+20	2.7973	2.08	Q | V | | |
10+25	2.8112	2.01	Q | V | | |
10+30	2.8250	2.01	Q | V | | |
10+35	2.8419	2.46	Q | V | | |
10+40	2.8713	4.26	| Q | V | | |
10+45	2.9050	4.89	| Q| V | | |
10+50	2.9406	5.17	| Q V | | |
10+55	2.9771	5.29	| Q V | | |
11+ 0	3.0139	5.35	| Q V | | |
11+ 5	3.0505	5.32	| Q V | | |
11+10	3.0850	5.00	| Q V | | |
11+15	3.1189	4.92	| Q| V | | |
11+20	3.1527	4.91	| Q| V | | |
11+25	3.1866	4.93	| Q| V | | |
11+30	3.2208	4.96	| Q| V | | |
11+35	3.2539	4.81	| Q| V | | |
11+40	3.2824	4.14	| Q | V | | |
11+45	3.3095	3.94	| Q | V | | |
11+50	3.3368	3.96	| Q | V | | |
11+55	3.3666	4.32	| Q | V | | |
12+ 0	3.3973	4.46	| Q | V | | |
12+ 5	3.4329	5.16	| Q V | | |
12+10	3.4858	7.69	| | Q V | | |
12+15	3.5448	8.56	| | QV | | |
12+20	3.6070	9.02	| | Q | | |
12+25	3.6726	9.53	| | VQ| | |
12+30	3.7395	9.72	| | Q| | |
12+35	3.8084	10.00	| | VQ | |
12+40	3.8826	10.77	| | V|Q | |
12+45	3.9586	11.05	| | V Q | |
12+50	4.0362	11.27	| | V Q | |
12+55	4.1167	11.69	| | V Q | |
13+ 0	4.1984	11.85	| | |V Q | |
13+ 5	4.2837	12.39	| | |V Q | |
13+10	4.3815	14.21	| | | V Q | |
13+15	4.4837	14.84	| | | V Q| |
13+20	4.5878	15.12	| | | V Q |
13+25	4.6927	15.23	| | | V Q |
13+30	4.7980	15.29	| | | V Q |
13+35	4.8969	14.36	| | | V Q | |
13+40	4.9692	10.50	| | |Q V | |
13+45	5.0328	9.23	| | Q | V | |
13+50	5.0929	8.73	| | Q | V | |
13+55	5.1520	8.58	| | Q | V | |
14+ 0	5.2109	8.55	| | Q | V | |
14+ 5	5.2722	8.90	| | Q | V | |
14+10	5.3434	10.34	| | Q V | |
14+15	5.4181	10.84	| | |Q V | |
14+20	5.4937	10.98	| | |Q V | |
14+25	5.5676	10.72	| | |Q V | |
14+30	5.6409	10.65	| | |Q V | |
14+35	5.7143	10.65	| | |Q V| |
14+40	5.7878	10.67	| | |Q V| |
14+45	5.8614	10.69	| | |Q V| |
14+50	5.9346	10.63	| | |Q V |
14+55	6.0056	10.31	| | Q V |
15+ 0	6.0760	10.22	| | Q V |
15+ 5	6.1456	10.11	| | Q |V |
15+10	6.2129	9.77	| | Q| |V |
15+15	6.2795	9.67	| | Q| |V |
15+20	6.3453	9.56	| | Q| | V |
15+25	6.4088	9.22	| | Q | | V |
15+30	6.4717	9.12	| | Q | | V |

15+35	6.5319	8.74	|	|	Q |	|	V |
15+40	6.5824	7.34	|	| Q	|	|	V |
15+45	6.6299	6.89	|	| Q	|	|	V |
15+50	6.6761	6.72	|	| Q	|	|	V |
15+55	6.7221	6.68	|	| Q	|	|	V |
16+ 0	6.7682	6.69	|	| Q	|	|	V |
16+ 5	6.8098	6.05	|	Q	|	|	V |
16+10	6.8338	3.48	|	Q	|	|	V |
16+15	6.8519	2.63	|	Q	|	|	V |
16+20	6.8676	2.28	|	Q	|	|	V |
16+25	6.8825	2.16	|	Q	|	|	V |
16+30	6.8971	2.12	|	Q	|	|	V |
16+35	6.9110	2.02	|	Q	|	|	V |
16+40	6.9229	1.72	| Q	|	|	|	V |
16+45	6.9341	1.63	| Q	|	|	|	V |
16+50	6.9450	1.59	| Q	|	|	|	V |
16+55	6.9559	1.57	| Q	|	|	|	V |
17+ 0	6.9667	1.57	| Q	|	|	|	V |
17+ 5	6.9785	1.71	| Q	|	|	|	V |
17+10	6.9943	2.29	|	Q	|	|	V |
17+15	7.0114	2.49	|	Q	|	|	V |
17+20	7.0291	2.57	|	Q	|	|	V |
17+25	7.0469	2.59	|	Q	|	|	V |
17+30	7.0648	2.60	|	Q	|	|	V |
17+35	7.0828	2.61	|	Q	|	|	V |
17+40	7.1008	2.61	|	Q	|	|	V |
17+45	7.1188	2.61	|	Q	|	|	V |
17+50	7.1362	2.54	|	Q	|	|	V |
17+55	7.1517	2.25	|	Q	|	|	V |
18+ 0	7.1665	2.15	|	Q	|	|	V |
18+ 5	7.1810	2.11	|	Q	|	|	V |
18+10	7.1954	2.10	|	Q	|	|	V |
18+15	7.2099	2.09	|	Q	|	|	V |
18+20	7.2242	2.09	|	Q	|	|	V |
18+25	7.2386	2.09	|	Q	|	|	V |
18+30	7.2530	2.09	|	Q	|	|	V |
18+35	7.2669	2.01	|	Q	|	|	V |
18+40	7.2787	1.72	| Q	|	|	|	V |
18+45	7.2899	1.63	| Q	|	|	|	V |
18+50	7.3004	1.51	| Q	|	|	|	V |
18+55	7.3087	1.21	| Q	|	|	|	V |
19+ 0	7.3163	1.11	| Q	|	|	|	V |
19+ 5	7.3242	1.14	| Q	|	|	|	V |
19+10	7.3339	1.42	| Q	|	|	|	V |
19+15	7.3443	1.51	| Q	|	|	|	V |
19+20	7.3555	1.62	| Q	|	|	|	V |
19+25	7.3687	1.92	| Q	|	|	|	V |
19+30	7.3826	2.02	|	Q	|	|	V |
19+35	7.3963	1.99	| Q	|	|	|	V |
19+40	7.4082	1.72	| Q	|	|	|	V |
19+45	7.4193	1.62	| Q	|	|	|	V |
19+50	7.4298	1.51	| Q	|	|	|	V |
19+55	7.4381	1.21	| Q	|	|	|	V |
20+ 0	7.4457	1.11	| Q	|	|	|	V |
20+ 5	7.4536	1.14	| Q	|	|	|	V |
20+10	7.4633	1.42	| Q	|	|	|	V |
20+15	7.4737	1.51	| Q	|	|	|	V |
20+20	7.4844	1.54	| Q	|	|	|	V |
20+25	7.4951	1.56	| Q	|	|	|	V |
20+30	7.5058	1.56	| Q	|	|	|	V |
20+35	7.5166	1.56	| Q	|	|	|	V |
20+40	7.5274	1.57	| Q	|	|	|	V |
20+45	7.5382	1.57	| Q	|	|	|	V |
20+50	7.5485	1.49	| Q	|	|	|	V |
20+55	7.5567	1.20	| Q	|	|	|	V |
21+ 0	7.5644	1.10	| Q	|	|	|	V |
21+ 5	7.5722	1.14	| Q	|	|	|	V |
21+10	7.5819	1.42	| Q	|	|	|	V |
21+15	7.5923	1.51	| Q	|	|	|	V |
21+20	7.6025	1.47	| Q	|	|	|	V |
21+25	7.6107	1.19	| Q	|	|	|	V |
21+30	7.6183	1.10	| Q	|	|	|	V |
21+35	7.6261	1.14	| Q	|	|	|	V |
21+40	7.6359	1.42	| Q	|	|	|	V |
21+45	7.6462	1.51	| Q	|	|	|	V |

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  21+50       7.6564      1.47  | Q       |         |         |       V |
  21+55       7.6646      1.19  | Q       |         |         |       V |
  22+ 0       7.6722      1.10  | Q       |         |         |        V|
  22+ 5       7.6800      1.14  | Q       |         |         |        V|
  22+10       7.6898      1.42  | Q       |         |         |        V|
  22+15       7.7002      1.51  |  Q      |         |         |        V|
  22+20       7.7103      1.47  | Q       |         |         |        V|
  22+25       7.7185      1.19  | Q       |         |         |        V|
  22+30       7.7261      1.10  | Q       |         |         |        V|
  22+35       7.7334      1.06  | Q       |         |         |        V|
  22+40       7.7407      1.05  | Q       |         |         |        V|
  22+45       7.7479      1.05  | Q       |         |         |        V|
  22+50       7.7551      1.04  | Q       |         |         |        V|
  22+55       7.7623      1.04  | Q       |         |         |        V|
  23+ 0       7.7695      1.04  | Q       |         |         |        V|
  23+ 5       7.7767      1.04  | Q       |         |         |        V|
  23+10       7.7838      1.04  | Q       |         |         |        V|
  23+15       7.7910      1.04  | Q       |         |         |        V|
  23+20       7.7982      1.04  | Q       |         |         |        V|
  23+25       7.8054      1.04  | Q       |         |         |        V|
  23+30       7.8126      1.04  | Q       |         |         |        V|
  23+35       7.8198      1.04  | Q       |         |         |        V|
  23+40       7.8270      1.04  | Q       |         |         |        V|
  23+45       7.8342      1.04  | Q       |         |         |        V|
  23+50       7.8414      1.04  | Q       |         |         |        V|
  23+55       7.8485      1.04  | Q       |         |         |        V|
  24+ 0       7.8557      1.04  | Q       |         |         |        V|
  24+ 5       7.8619      0.90  |Q        |         |         |        V|
  24+10       7.8641      0.32  Q         |         |         |        V|
  24+15       7.8649      0.12  Q         |         |         |        V|
  24+20       7.8652      0.04  Q         |         |         |        V|
  24+25       7.8653      0.02  Q         |         |         |        V|
  24+30       7.8654      0.01  Q         |         |         |        V|
  24+35       7.8654      0.00  Q         |         |         |         V
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BASIN ROUTING
DMA B
PROPOSED CONDITIONS
2-YEAR 24-HOUR

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2005
Study date: 10/22/14

14-0213 SHOPOFF
BASIN ROUTING
DMA B
2-YEAR 24-HOUR

Program License Serial Number 4010

********** HYDROGRAPH INFORMATION **********

From study/file name: BPROP242.rte
**********HYDROGRAPH DATA**********
Number of intervals = 295
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 15.291 (CFS)
Total volume = 7.865 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 295
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.100	0.001	0.010	0.001	0.001
0.500	0.053	0.421	0.052	0.054
1.000	0.430	0.654	0.428	0.432
1.500	1.478	0.824	1.475	1.481
1.900	2.842	0.937	2.839	2.845
2.000	3.240	0.964	3.237	3.243
2.400	4.909	5.372	4.891	4.927
2.500	5.335	6.288	5.313	5.357
3.000	7.513	19.930	7.444	7.582
3.100	7.959	22.013	7.883	8.035
3.500	9.773	35.542	9.651	9.895
4.000	12.116	58.286	11.915	12.317
4.500	14.544	85.412	14.250	14.838
5.000	17.059	116.189	16.659	17.459
5.500	19.662	150.189	19.145	20.179
6.000	22.356	187.115	21.712	23.000
6.200	23.460	202.653	22.762	24.158

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 3.8 7.65 11.47 15.29	Depth (Ft.)
0.083	0.15	0.00	0.000	O | | | |	0.05
0.167	0.73	0.03	0.003	OI | | | |	0.12
0.250	0.92	0.07	0.009	OI | | | |	0.16
0.333	1.07	0.12	0.015	O I | | | |	0.21
0.417	1.39	0.18	0.022	O I | | | |	0.26
0.500	1.50	0.25	0.031	O I | | | |	0.33
0.583	1.54	0.31	0.039	O I | | | |	0.40
0.667	1.56	0.38	0.048	O I | | | |	0.46
0.750	1.56	0.42	0.056	O I | | | |	0.50
0.833	1.64	0.43	0.064	O I | | | |	0.51
0.917	1.93	0.43	0.073	O I | | | |	0.53
1.000	2.03	0.44	0.084	O I | | | |	0.54
1.083	1.99	0.45	0.094	O I | | | |	0.56
1.167	1.72	0.45	0.104	O I | | | |	0.57
1.250	1.62	0.46	0.113	O I | | | |	0.58
1.333	1.59	0.46	0.120	O I | | | |	0.59
1.417	1.57	0.47	0.128	O I | | | |	0.60
1.500	1.57	0.47	0.136	O I | | | |	0.61
1.583	1.57	0.48	0.143	O I | | | |	0.62
1.667	1.57	0.48	0.151	|O I | | | |	0.63
1.750	1.57	0.49	0.158	|O I | | | |	0.64
1.833	1.64	0.49	0.166	|O I | | | |	0.65
1.917	1.93	0.50	0.175	|O I | | | |	0.66
2.000	2.03	0.50	0.185	|O I | | | |	0.67
2.083	2.07	0.51	0.196	|O I | | | |	0.69
2.167	2.08	0.52	0.206	|O I | | | |	0.70
2.250	2.08	0.52	0.217	|O I | | | |	0.72
2.333	2.09	0.53	0.228	|O I | | | |	0.73
2.417	2.09	0.54	0.238	|O I | | | |	0.75
2.500	2.09	0.54	0.249	|O I | | | |	0.76
2.583	2.16	0.55	0.260	|O I | | | |	0.77
2.667	2.45	0.56	0.272	|O I | | | |	0.79
2.750	2.55	0.56	0.285	|O I | | | |	0.81
2.833	2.59	0.57	0.299	|O I | | | |	0.83
2.917	2.60	0.58	0.313	|O I | | | |	0.84
3.000	2.61	0.59	0.327	|O I | | | |	0.86
3.083	2.61	0.60	0.341	|O I | | | |	0.88
3.167	2.61	0.61	0.355	|O I | | | |	0.90
3.250	2.61	0.62	0.368	|O I | | | |	0.92
3.333	2.61	0.62	0.382	|O I | | | |	0.94
3.417	2.61	0.63	0.396	|O I | | | |	0.95
3.500	2.61	0.64	0.409	|O I | | | |	0.97
3.583	2.61	0.65	0.423	|O I | | | |	0.99
3.667	2.61	0.66	0.436	|O I | | | |	1.00
3.750	2.61	0.66	0.450	|O I | | | |	1.01
3.833	2.68	0.66	0.463	|O I | | | |	1.02
3.917	2.97	0.66	0.478	|O I | | | |	1.02
4.000	3.07	0.66	0.495	|O I | | | |	1.03
4.083	3.11	0.67	0.511	|O I | | | |	1.04
4.167	3.12	0.67	0.528	|O I | | | |	1.05
4.250	3.13	0.67	0.545	|O I | | | |	1.05
4.333	3.20	0.68	0.562	|O I | | | |	1.06
4.417	3.49	0.68	0.581	|O I| | | |	1.07
4.500	3.59	0.68	0.600	|O I| | | |	1.08
4.583	3.63	0.68	0.621	|O I| | | |	1.09
4.667	3.65	0.69	0.641	|O I| | | |	1.10
4.750	3.65	0.69	0.661	|O I| | | |	1.11
4.833	3.73	0.69	0.682	|O I| | | |	1.12
4.917	4.02	0.70	0.704	|O I | | |	1.13
5.000	4.11	0.70	0.727	|O I | | |	1.14
5.083	4.01	0.71	0.750	|O I | | |	1.15
5.167	3.44	0.71	0.771	|O I| | | |	1.16
5.250	3.25	0.71	0.789	|O I | | | |	1.17
5.333	3.25	0.72	0.806	|O I | | | |	1.18
5.417	3.51	0.72	0.825	|O I| | | |	1.19
5.500	3.60	0.72	0.844	|O I| | | |	1.20
5.583	3.71	0.72	0.864	|O I| | | |	1.21

5.667	4.01	0.73	0.886	O	I			1.22
5.750	4.11	0.73	0.909	O	I			1.23
5.833	4.15	0.74	0.932	O	I			1.24
5.917	4.17	0.74	0.956	O	I			1.25
6.000	4.17	0.74	0.980	O	I			1.26
6.083	4.25	0.75	1.003	O	I			1.27
6.167	4.54	0.75	1.029	O	I			1.29
6.250	4.64	0.76	1.055	O	I			1.30
6.333	4.68	0.76	1.082	O	I			1.31
6.417	4.69	0.76	1.109	O	I			1.32
6.500	4.69	0.77	1.136	O	I			1.34
6.583	4.77	0.77	1.163	O	I			1.35
6.667	5.06	0.78	1.192	O	I			1.36
6.750	5.16	0.78	1.221	O	I			1.38
6.833	5.20	0.79	1.252	O	I			1.39
6.917	5.21	0.79	1.282	O	I			1.41
7.000	5.22	0.80	1.312	O	I			1.42
7.083	5.22	0.80	1.343	O	I			1.44
7.167	5.22	0.81	1.373	O	I			1.45
7.250	5.22	0.81	1.404	O	I			1.46
7.333	5.29	0.82	1.434	O	I			1.48
7.417	5.58	0.82	1.466	O	I			1.49
7.500	5.68	0.83	1.499	O	I			1.51
7.583	5.79	0.83	1.533	O	I			1.52
7.667	6.10	0.83	1.568	O	I			1.53
7.750	6.20	0.83	1.605	O	I			1.54
7.833	6.31	0.84	1.642	O	I			1.55
7.917	6.62	0.84	1.681	O	I			1.56
8.000	6.72	0.84	1.721	O	I			1.57
8.083	5.94	0.85	1.759	O	I			1.58
8.167	2.69	0.85	1.783	O	I			1.59
8.250	1.62	0.85	1.792	O	I			1.59
8.333	1.22	0.85	1.796	O	I			1.59
8.417	1.11	0.85	1.798	O	I			1.59
8.500	1.09	0.85	1.799	O	I			1.59
8.583	1.19	0.85	1.801	O	I			1.59
8.667	1.57	0.85	1.805	O	I			1.60
8.750	1.73	0.85	1.811	O	I			1.60
8.833	1.91	0.85	1.817	O	I			1.60
8.917	2.32	0.85	1.826	O	I			1.60
9.000	2.48	0.85	1.837	O	I			1.61
9.083	2.75	0.85	1.849	O	I			1.61
9.167	3.52	0.86	1.864	O	I			1.61
9.250	3.80	0.86	1.884	O	I			1.62
9.333	4.03	0.86	1.905	O	I			1.63
9.417	4.45	0.86	1.928	O	I			1.63
9.500	4.62	0.86	1.953	O	I			1.64
9.583	4.80	0.87	1.980	O	I			1.65
9.667	5.21	0.87	2.008	O	I			1.66
9.750	5.38	0.87	2.039	O	I			1.66
9.833	5.56	0.87	2.071	O	I			1.67
9.917	5.96	0.88	2.104	O	I			1.68
10.000	6.13	0.88	2.140	O	I			1.69
10.083	5.59	0.88	2.174	O	I			1.70
10.167	3.17	0.88	2.198	O	I			1.71
10.250	2.38	0.88	2.211	O	I			1.71
10.333	2.08	0.89	2.220	O	I			1.72
10.417	2.01	0.89	2.228	O	I			1.72
10.500	2.01	0.89	2.236	O	I			1.72
10.583	2.46	0.89	2.245	O	I			1.73
10.667	4.26	0.89	2.262	O	I			1.73
10.750	4.89	0.89	2.288	O	I			1.74
10.833	5.17	0.89	2.316	O	I			1.75
10.917	5.29	0.90	2.346	O	I			1.75
11.000	5.35	0.90	2.377	O	I			1.76
11.083	5.32	0.90	2.407	O	I			1.77
11.167	5.00	0.90	2.437	O	I			1.78
11.250	4.92	0.91	2.464	O	I			1.79
11.333	4.91	0.91	2.492	O	I			1.80
11.417	4.93	0.91	2.520	O	I			1.81
11.500	4.96	0.91	2.547	O	I			1.81
11.583	4.81	0.91	2.575	O	I			1.82
11.667	4.14	0.92	2.599	O	I			1.83
11.750	3.94	0.92	2.621	O	I			1.84
11.833	3.96	0.92	2.642	O	I			1.84

11.917	4.32	0.92	2.664	|O |I | | | 1.85
12.000	4.46	0.92	2.688	|O |I | | | 1.85
12.083	5.16	0.93	2.715	|O | I | | | 1.86
12.167	7.69	0.93	2.752	|O | |I | | 1.87
12.250	8.56	0.93	2.802	|O | |I | | 1.89
12.333	9.02	0.94	2.856	|O | | I | | 1.90
12.417	9.53	0.94	2.913	|O | | I | | 1.92
12.500	9.72	0.95	2.973	|O | | I | | 1.93
12.583	10.00	0.95	3.035	|O | | I | | 1.95
12.667	10.77	0.95	3.100	|O | | I | | 1.96
12.750	11.05	0.96	3.168	| O | | I| | 1.98
12.833	11.27	0.96	3.238	| O | | I| | 2.00
12.917	11.69	1.15	3.310	| O | | I | 2.02
13.000	11.85	1.34	3.383	| O | | I | 2.03
13.083	12.39	1.53	3.456	| O | | |I | 2.05
13.167	14.21	1.75	3.536	| O | | | I | 2.07
13.250	14.84	1.98	3.624	| O | | | I| 2.09
13.333	15.12	2.21	3.712	| O | | | I| 2.11
13.417	15.23	2.45	3.801	| O | | | I| 2.13
13.500	15.29	2.68	3.888	| O | | | I 2.16
13.583	14.36	2.90	3.971	| O | | | I | 2.18
13.667	10.50	3.07	4.036	| O | | I | | 2.19
13.750	9.23	3.19	4.083	| O | | I | | 2.20
13.833	8.73	3.29	4.122	| O | | I | | 2.21
13.917	8.58	3.39	4.159	| O| |I | | 2.22
14.000	8.55	3.48	4.194	| O| |I | | 2.23
14.083	8.90	3.58	4.230	| O| | I | | 2.24
14.167	10.34	3.69	4.271	| O| | I | | 2.25
14.250	10.84	3.81	4.318	| O| | I | | 2.26
14.333	10.98	3.94	4.367	| O | I | | 2.27
14.417	10.72	4.06	4.414	| O | I | | 2.28
14.500	10.65	4.18	4.459	| O | I | | 2.29
14.583	10.65	4.30	4.503	| O | I | | 2.30
14.667	10.67	4.41	4.547	| |O | I | | 2.31
14.750	10.69	4.53	4.589	| |O | I | | 2.32
14.833	10.63	4.64	4.631	| |O | I | | 2.33
14.917	10.31	4.74	4.671	| |O | I | | 2.34
15.000	10.22	4.84	4.709	| | O | I | | 2.35
15.083	10.11	4.94	4.745	| | O | I | | 2.36
15.167	9.77	5.03	4.779	| | O | I | | 2.37
15.250	9.67	5.11	4.811	| | O | I | | 2.38
15.333	9.56	5.19	4.842	| | O | I | | 2.38
15.417	9.22	5.27	4.871	| | O | I | | 2.39
15.500	9.12	5.34	4.897	| | O | I | | 2.40
15.583	8.74	5.40	4.922	| | O | I | | 2.40
15.667	7.34	5.44	4.940	| | O I| | | 2.41
15.750	6.89	5.46	4.951	| | O I | | | 2.41
15.833	6.72	5.48	4.960	| | O I | | | 2.41
15.917	6.68	5.50	4.969	| | O I | | | 2.41
16.000	6.69	5.52	4.977	| | O I | | | 2.42
16.083	6.05	5.53	4.983	| | OI | | | 2.42
16.167	3.48	5.52	4.977	| I| O | | | 2.42
16.250	2.63	5.48	4.961	| I | O | | | 2.41
16.333	2.28	5.44	4.940	| I | O | | | 2.41
16.417	2.16	5.39	4.918	| I | O | | | 2.40
16.500	2.12	5.34	4.896	| I | O | | | 2.40
16.583	2.02	5.28	4.873	| I | O | | | 2.39
16.667	1.72	5.22	4.850	| I | O | | | 2.39
16.750	1.63	5.15	4.826	| I | O | | | 2.38
16.833	1.59	5.09	4.802	| I | O | | | 2.37
16.917	1.57	5.03	4.778	| I | O | | | 2.37
17.000	1.57	4.96	4.754	| I | O | | | 2.36
17.083	1.71	4.90	4.732	| I | O | | | 2.36
17.167	2.29	4.85	4.712	| I | O | | | 2.35
17.250	2.49	4.81	4.695	| I | O | | | 2.35
17.333	2.57	4.77	4.679	| I |O | | | 2.34
17.417	2.59	4.73	4.664	| I |O | | | 2.34
17.500	2.60	4.69	4.650	| I |O | | | 2.34
17.583	2.61	4.65	4.636	| I |O | | | 2.33
17.667	2.61	4.61	4.622	| I |O | | | 2.33
17.750	2.61	4.58	4.608	| I |O | | | 2.33
17.833	2.54	4.54	4.594	| I |O | | | 2.32
17.917	2.25	4.50	4.580	| I |O | | | 2.32
18.000	2.15	4.46	4.564	| I |O | | | 2.32
18.083	2.11	4.42	4.548	| I |O | | | 2.31

18.167	2.10	4.38	4.532	| I |O	|	|	|	2.31
18.250	2.09	4.34	4.517	| I |O	|	|	|	2.31
18.333	2.09	4.30	4.501	| I O	|	|	|	2.30
18.417	2.09	4.26	4.486	| I O	|	|	|	2.30
18.500	2.09	4.22	4.472	| I O	|	|	|	2.30
18.583	2.01	4.18	4.457	| I O	|	|	|	2.29
18.667	1.72	4.14	4.441	| I O	|	|	|	2.29
18.750	1.63	4.09	4.424	| I O	|	|	|	2.28
18.833	1.51	4.05	4.407	| I O	|	|	|	2.28
18.917	1.21	4.00	4.389	| I O	|	|	|	2.28
19.000	1.11	3.95	4.369	| I O	|	|	|	2.27
19.083	1.14	3.90	4.350	| I O	|	|	|	2.27
19.167	1.42	3.85	4.332	| I O	|	|	|	2.26
19.250	1.51	3.81	4.316	| I O|	|	|	|	2.26
19.333	1.62	3.77	4.301	| I O|	|	|	|	2.25
19.417	1.92	3.73	4.287	| I O|	|	|	|	2.25
19.500	2.02	3.70	4.275	| I O|	|	|	|	2.25
19.583	1.99	3.67	4.263	| I O|	|	|	|	2.25
19.667	1.72	3.63	4.251	| I O|	|	|	|	2.24
19.750	1.62	3.60	4.238	| I O|	|	|	|	2.24
19.833	1.51	3.56	4.224	| I O|	|	|	|	2.24
19.917	1.21	3.52	4.209	| I O|	|	|	|	2.23
20.000	1.11	3.48	4.193	| I O|	|	|	|	2.23
20.083	1.14	3.44	4.177	| I O|	|	|	|	2.22
20.167	1.42	3.40	4.162	| I O|	|	|	|	2.22
20.250	1.51	3.36	4.149	| I O|	|	|	|	2.22
20.333	1.54	3.33	4.136	| I O |	|	|	|	2.21
20.417	1.56	3.30	4.124	| I O |	|	|	|	2.21
20.500	1.56	3.27	4.112	| I O |	|	|	|	2.21
20.583	1.56	3.24	4.100	| I O |	|	|	|	2.21
20.667	1.57	3.21	4.089	| I O |	|	|	|	2.20
20.750	1.57	3.18	4.078	| I O |	|	|	|	2.20
20.833	1.49	3.15	4.067	| I O |	|	|	|	2.20
20.917	1.20	3.11	4.054	| I O |	|	|	|	2.20
21.000	1.10	3.08	4.041	| I O |	|	|	|	2.19
21.083	1.14	3.04	4.028	| I O |	|	|	|	2.19
21.167	1.42	3.01	4.015	| I O |	|	|	|	2.19
21.250	1.51	2.98	4.005	| I O |	|	|	|	2.18
21.333	1.47	2.96	3.995	| I O |	|	|	|	2.18
21.417	1.19	2.93	3.984	| I O |	|	|	|	2.18
21.500	1.10	2.90	3.971	| I O |	|	|	|	2.18
21.583	1.14	2.86	3.959	| I O |	|	|	|	2.17
21.667	1.42	2.84	3.949	| I O |	|	|	|	2.17
21.750	1.51	2.81	3.939	| I O |	|	|	|	2.17
21.833	1.47	2.79	3.930	| I O |	|	|	|	2.17
21.917	1.19	2.76	3.920	| I O |	|	|	|	2.16
22.000	1.10	2.73	3.909	| I O |	|	|	|	2.16
22.083	1.14	2.70	3.898	| I O |	|	|	|	2.16
22.167	1.42	2.68	3.888	| I O |	|	|	|	2.16
22.250	1.51	2.65	3.880	| I O |	|	|	|	2.15
22.333	1.47	2.63	3.872	| I O |	|	|	|	2.15
22.417	1.19	2.61	3.863	| I O |	|	|	|	2.15
22.500	1.10	2.58	3.853	| I O |	|	|	|	2.15
22.583	1.06	2.56	3.843	| I O |	|	|	|	2.14
22.667	1.05	2.53	3.833	| I O |	|	|	|	2.14
22.750	1.05	2.50	3.823	| I O |	|	|	|	2.14
22.833	1.04	2.48	3.813	| I O |	|	|	|	2.14
22.917	1.04	2.45	3.803	| I O |	|	|	|	2.13
23.000	1.04	2.43	3.793	| I O |	|	|	|	2.13
23.083	1.04	2.40	3.784	| I O |	|	|	|	2.13
23.167	1.04	2.38	3.775	| I O |	|	|	|	2.13
23.250	1.04	2.35	3.766	| I O |	|	|	|	2.13
23.333	1.04	2.33	3.757	| I O |	|	|	|	2.12
23.417	1.04	2.31	3.748	| I O |	|	|	|	2.12
23.500	1.04	2.28	3.739	| I O |	|	|	|	2.12
23.583	1.04	2.26	3.731	| I O |	|	|	|	2.12
23.667	1.04	2.24	3.723	| I O |	|	|	|	2.12
23.750	1.04	2.22	3.714	| I O |	|	|	|	2.11
23.833	1.04	2.20	3.706	| I O |	|	|	|	2.11
23.917	1.04	2.18	3.699	| I O |	|	|	|	2.11
24.000	1.04	2.15	3.691	| I O |	|	|	|	2.11
24.083	0.90	2.13	3.683	|I O |	|	|	|	2.11
24.167	0.32	2.11	3.672	I O |	|	|	|	2.10
24.250	0.12	2.07	3.659	I O |	|	|	|	2.10
24.333	0.04	2.04	3.646	I O |	|	|	|	2.10

24.417	0.02	2.00	3.632	I O				2.09
24.500	0.01	1.96	3.619	I O				2.09
24.583	0.00	1.93	3.605	I O				2.09
24.667	0.00	1.89	3.592	I O				2.08
24.750	0.00	1.86	3.579	I O				2.08
24.833	0.00	1.83	3.566	I O				2.08
24.917	0.00	1.79	3.554	I O				2.08
25.000	0.00	1.76	3.542	I O				2.07
25.083	0.00	1.73	3.530	I O				2.07
25.167	0.00	1.70	3.518	I O				2.07
25.250	0.00	1.67	3.506	I O				2.06
25.333	0.00	1.64	3.495	I O				2.06
25.417	0.00	1.61	3.484	I O				2.06
25.500	0.00	1.58	3.473	I O				2.06
25.583	0.00	1.55	3.462	I O				2.05
25.667	0.00	1.52	3.451	I O				2.05
25.750	0.00	1.50	3.441	I O				2.05
25.833	0.00	1.47	3.431	I O				2.05
25.917	0.00	1.44	3.421	I O				2.04
26.000	0.00	1.42	3.411	I O				2.04
26.083	0.00	1.39	3.401	I O				2.04
26.167	0.00	1.37	3.392	I O				2.04
26.250	0.00	1.34	3.383	I O				2.03
26.333	0.00	1.32	3.373	I O				2.03
26.417	0.00	1.29	3.364	I O				2.03
26.500	0.00	1.27	3.356	I O				2.03
26.583	0.00	1.25	3.347	I O				2.03
26.667	0.00	1.22	3.338	I O				2.02
26.750	0.00	1.20	3.330	I O				2.02
26.833	0.00	1.18	3.322	I O				2.02
26.917	0.00	1.16	3.314	I O				2.02
27.000	0.00	1.14	3.306	I O				2.02
27.083	0.00	1.12	3.298	I O				2.01
27.167	0.00	1.10	3.291	I O				2.01
27.250	0.00	1.08	3.283	I O				2.01
27.333	0.00	1.06	3.276	I O				2.01
27.417	0.00	1.04	3.268	I O				2.01
27.500	0.00	1.02	3.261	I O				2.01
27.583	0.00	1.00	3.254	I O				2.00
27.667	0.00	0.98	3.248	I O				2.00
27.750	0.00	0.97	3.241	I O				2.00
27.833	0.00	0.96	3.234	I O				2.00
27.917	0.00	0.96	3.228	I O				2.00
28.000	0.00	0.96	3.221	I O				2.00
28.083	0.00	0.96	3.214	I O				1.99
28.167	0.00	0.96	3.208	I O				1.99
28.250	0.00	0.96	3.201	I O				1.99
28.333	0.00	0.96	3.194	I O				1.99
28.417	0.00	0.96	3.188	I O				1.99
28.500	0.00	0.96	3.181	I O				1.99
28.583	0.00	0.96	3.175	I O				1.98
28.667	0.00	0.96	3.168	I O				1.98
28.750	0.00	0.96	3.161	I O				1.98
28.833	0.00	0.96	3.155	I O				1.98
28.917	0.00	0.96	3.148	I O				1.98
29.000	0.00	0.96	3.142	I O				1.98
29.083	0.00	0.96	3.135	I O				1.97
29.167	0.00	0.96	3.128	I O				1.97
29.250	0.00	0.96	3.122	I O				1.97
29.333	0.00	0.96	3.115	IO				1.97
29.417	0.00	0.96	3.109	IO				1.97
29.500	0.00	0.95	3.102	IO				1.97
29.583	0.00	0.95	3.096	IO				1.96
29.667	0.00	0.95	3.089	IO				1.96
29.750	0.00	0.95	3.082	IO				1.96
29.833	0.00	0.95	3.076	IO				1.96
29.917	0.00	0.95	3.069	IO				1.96
30.000	0.00	0.95	3.063	IO				1.96
30.083	0.00	0.95	3.056	IO				1.95
30.167	0.00	0.95	3.050	IO				1.95
30.250	0.00	0.95	3.043	IO				1.95
30.333	0.00	0.95	3.036	IO				1.95
30.417	0.00	0.95	3.030	IO				1.95
30.500	0.00	0.95	3.023	IO				1.95
30.583	0.00	0.95	3.017	IO				1.94

30.667	0.00	0.95	3.010	IO					1.94
30.750	0.00	0.95	3.004	IO					1.94
30.833	0.00	0.95	2.997	IO					1.94
30.917	0.00	0.95	2.991	IO					1.94
31.000	0.00	0.95	2.984	IO					1.94
31.083	0.00	0.95	2.978	IO					1.93
31.167	0.00	0.95	2.971	IO					1.93
31.250	0.00	0.95	2.965	IO					1.93
31.333	0.00	0.94	2.958	IO					1.93
31.417	0.00	0.94	2.952	IO					1.93
31.500	0.00	0.94	2.945	IO					1.93
31.583	0.00	0.94	2.939	IO					1.92
31.667	0.00	0.94	2.932	IO					1.92
31.750	0.00	0.94	2.926	IO					1.92
31.833	0.00	0.94	2.919	IO					1.92
31.917	0.00	0.94	2.913	IO					1.92
32.000	0.00	0.94	2.906	IO					1.92
32.083	0.00	0.94	2.900	IO					1.91
32.167	0.00	0.94	2.893	IO					1.91
32.250	0.00	0.94	2.887	IO					1.91
32.333	0.00	0.94	2.880	IO					1.91
32.417	0.00	0.94	2.874	IO					1.91
32.500	0.00	0.94	2.867	IO					1.91
32.583	0.00	0.94	2.861	IO					1.90
32.667	0.00	0.94	2.854	IO					1.90
32.750	0.00	0.94	2.848	IO					1.90
32.833	0.00	0.94	2.842	IO					1.90
32.917	0.00	0.94	2.835	IO					1.90
33.000	0.00	0.94	2.829	IO					1.90
33.083	0.00	0.94	2.822	IO					1.89
33.167	0.00	0.93	2.816	IO					1.89
33.250	0.00	0.93	2.809	IO					1.89
33.333	0.00	0.93	2.803	IO					1.89
33.417	0.00	0.93	2.796	IO					1.89
33.500	0.00	0.93	2.790	IO					1.88
33.583	0.00	0.93	2.784	IO					1.88
33.667	0.00	0.93	2.777	IO					1.88
33.750	0.00	0.93	2.771	IO					1.88
33.833	0.00	0.93	2.764	IO					1.88
33.917	0.00	0.93	2.758	IO					1.88
34.000	0.00	0.93	2.752	IO					1.87
34.083	0.00	0.93	2.745	IO					1.87
34.167	0.00	0.93	2.739	IO					1.87
34.250	0.00	0.93	2.732	IO					1.87
34.333	0.00	0.93	2.726	IO					1.87
34.417	0.00	0.93	2.720	IO					1.86
34.500	0.00	0.93	2.713	IO					1.86
34.583	0.00	0.93	2.707	IO					1.86
34.667	0.00	0.93	2.700	IO					1.86
34.750	0.00	0.92	2.694	IO					1.86
34.833	0.00	0.92	2.688	IO					1.85
34.917	0.00	0.92	2.681	IO					1.85
35.000	0.00	0.92	2.675	IO					1.85
35.083	0.00	0.92	2.669	IO					1.85
35.167	0.00	0.92	2.662	IO					1.85
35.250	0.00	0.92	2.656	IO					1.85
35.333	0.00	0.92	2.650	IO					1.84
35.417	0.00	0.92	2.643	IO					1.84
35.500	0.00	0.92	2.637	IO					1.84
35.583	0.00	0.92	2.631	IO					1.84
35.667	0.00	0.92	2.624	IO					1.84
35.750	0.00	0.92	2.618	IO					1.83
35.833	0.00	0.92	2.612	IO					1.83
35.917	0.00	0.92	2.605	IO					1.83
36.000	0.00	0.92	2.599	IO					1.83
36.083	0.00	0.92	2.593	IO					1.83
36.167	0.00	0.92	2.586	IO					1.83
36.250	0.00	0.92	2.580	IO					1.82
36.333	0.00	0.91	2.574	IO					1.82
36.417	0.00	0.91	2.567	IO					1.82
36.500	0.00	0.91	2.561	IO					1.82
36.583	0.00	0.91	2.555	IO					1.82
36.667	0.00	0.91	2.549	IO					1.81
36.750	0.00	0.91	2.542	IO					1.81
36.833	0.00	0.91	2.536	IO					1.81

36.917	0.00	0.91	2.530	IO					1.81
37.000	0.00	0.91	2.523	IO					1.81
37.083	0.00	0.91	2.517	IO					1.80
37.167	0.00	0.91	2.511	IO					1.80
37.250	0.00	0.91	2.505	IO					1.80
37.333	0.00	0.91	2.498	IO					1.80
37.417	0.00	0.91	2.492	IO					1.80
37.500	0.00	0.91	2.486	IO					1.80
37.583	0.00	0.91	2.480	IO					1.79
37.667	0.00	0.91	2.473	IO					1.79
37.750	0.00	0.91	2.467	IO					1.79
37.833	0.00	0.91	2.461	IO					1.79
37.917	0.00	0.90	2.455	IO					1.79
38.000	0.00	0.90	2.448	IO					1.78
38.083	0.00	0.90	2.442	IO					1.78
38.167	0.00	0.90	2.436	IO					1.78
38.250	0.00	0.90	2.430	IO					1.78
38.333	0.00	0.90	2.424	IO					1.78
38.417	0.00	0.90	2.417	IO					1.78
38.500	0.00	0.90	2.411	IO					1.77
38.583	0.00	0.90	2.405	IO					1.77
38.667	0.00	0.90	2.399	IO					1.77
38.750	0.00	0.90	2.393	IO					1.77
38.833	0.00	0.90	2.386	IO					1.77
38.917	0.00	0.90	2.380	IO					1.76
39.000	0.00	0.90	2.374	IO					1.76
39.083	0.00	0.90	2.368	IO					1.76
39.167	0.00	0.90	2.362	IO					1.76
39.250	0.00	0.90	2.355	IO					1.76
39.333	0.00	0.90	2.349	IO					1.76
39.417	0.00	0.90	2.343	IO					1.75
39.500	0.00	0.90	2.337	IO					1.75
39.583	0.00	0.89	2.331	IO					1.75
39.667	0.00	0.89	2.325	IO					1.75
39.750	0.00	0.89	2.318	IO					1.75
39.833	0.00	0.89	2.312	IO					1.74
39.917	0.00	0.89	2.306	IO					1.74
40.000	0.00	0.89	2.300	IO					1.74
40.083	0.00	0.89	2.294	IO					1.74
40.167	0.00	0.89	2.288	IO					1.74
40.250	0.00	0.89	2.282	IO					1.74
40.333	0.00	0.89	2.275	IO					1.73
40.417	0.00	0.89	2.269	IO					1.73
40.500	0.00	0.89	2.263	IO					1.73
40.583	0.00	0.89	2.257	IO					1.73
40.667	0.00	0.89	2.251	IO					1.73
40.750	0.00	0.89	2.245	IO					1.72
40.833	0.00	0.89	2.239	IO					1.72
40.917	0.00	0.89	2.233	IO					1.72
41.000	0.00	0.89	2.227	IO					1.72
41.083	0.00	0.89	2.220	IO					1.72
41.167	0.00	0.88	2.214	IO					1.72
41.250	0.00	0.88	2.208	IO					1.71
41.333	0.00	0.88	2.202	IO					1.71
41.417	0.00	0.88	2.196	IO					1.71
41.500	0.00	0.88	2.190	IO					1.71
41.583	0.00	0.88	2.184	IO					1.71
41.667	0.00	0.88	2.178	IO					1.71
41.750	0.00	0.88	2.172	IO					1.70
41.833	0.00	0.88	2.166	IO					1.70
41.917	0.00	0.88	2.160	IO					1.70
42.000	0.00	0.88	2.154	IO					1.70
42.083	0.00	0.88	2.147	IO					1.70
42.167	0.00	0.88	2.141	IO					1.69
42.250	0.00	0.88	2.135	IO					1.69
42.333	0.00	0.88	2.129	IO					1.69
42.417	0.00	0.88	2.123	IO					1.69
42.500	0.00	0.88	2.117	IO					1.69
42.583	0.00	0.88	2.111	IO					1.69
42.667	0.00	0.88	2.105	IO					1.68
42.750	0.00	0.88	2.099	IO					1.68
42.833	0.00	0.87	2.093	IO					1.68
42.917	0.00	0.87	2.087	IO					1.68
43.000	0.00	0.87	2.081	IO					1.68
43.083	0.00	0.87	2.075	IO					1.68

43.167	0.00	0.87	2.069	IO					1.67
43.250	0.00	0.87	2.063	IO					1.67
43.333	0.00	0.87	2.057	IO					1.67
43.417	0.00	0.87	2.051	IO					1.67
43.500	0.00	0.87	2.045	IO					1.67
43.583	0.00	0.87	2.039	IO					1.66
43.667	0.00	0.87	2.033	IO					1.66
43.750	0.00	0.87	2.027	IO					1.66
43.833	0.00	0.87	2.021	IO					1.66
43.917	0.00	0.87	2.015	IO					1.66
44.000	0.00	0.87	2.009	IO					1.66
44.083	0.00	0.87	2.003	IO					1.65
44.167	0.00	0.87	1.997	IO					1.65
44.250	0.00	0.87	1.991	IO					1.65
44.333	0.00	0.87	1.985	IO					1.65
44.417	0.00	0.87	1.979	IO					1.65
44.500	0.00	0.87	1.973	IO					1.65
44.583	0.00	0.86	1.967	IO					1.64
44.667	0.00	0.86	1.961	IO					1.64
44.750	0.00	0.86	1.955	IO					1.64
44.833	0.00	0.86	1.949	IO					1.64
44.917	0.00	0.86	1.944	IO					1.64
45.000	0.00	0.86	1.938	IO					1.63
45.083	0.00	0.86	1.932	IO					1.63
45.167	0.00	0.86	1.926	IO					1.63
45.250	0.00	0.86	1.920	IO					1.63
45.333	0.00	0.86	1.914	IO					1.63
45.417	0.00	0.86	1.908	IO					1.63
45.500	0.00	0.86	1.902	IO					1.62
45.583	0.00	0.86	1.896	IO					1.62
45.667	0.00	0.86	1.890	IO					1.62
45.750	0.00	0.86	1.884	IO					1.62
45.833	0.00	0.86	1.878	IO					1.62
45.917	0.00	0.86	1.872	IO					1.62
46.000	0.00	0.86	1.867	IO					1.61
46.083	0.00	0.86	1.861	IO					1.61
46.167	0.00	0.86	1.855	IO					1.61
46.250	0.00	0.85	1.849	IO					1.61
46.333	0.00	0.85	1.843	IO					1.61
46.417	0.00	0.85	1.837	IO					1.61
46.500	0.00	0.85	1.831	IO					1.60
46.583	0.00	0.85	1.825	IO					1.60
46.667	0.00	0.85	1.820	IO					1.60
46.750	0.00	0.85	1.814	IO					1.60
46.833	0.00	0.85	1.808	IO					1.60
46.917	0.00	0.85	1.802	IO					1.59
47.000	0.00	0.85	1.796	IO					1.59
47.083	0.00	0.85	1.790	IO					1.59
47.167	0.00	0.85	1.784	IO					1.59
47.250	0.00	0.85	1.779	IO					1.59
47.333	0.00	0.85	1.773	IO					1.59
47.417	0.00	0.85	1.767	IO					1.58
47.500	0.00	0.85	1.761	IO					1.58
47.583	0.00	0.85	1.755	IO					1.58
47.667	0.00	0.85	1.749	IO					1.58
47.750	0.00	0.85	1.743	IO					1.58
47.833	0.00	0.85	1.738	IO					1.58
47.917	0.00	0.85	1.732	IO					1.57
48.000	0.00	0.84	1.726	IO					1.57
48.083	0.00	0.84	1.720	IO					1.57
48.167	0.00	0.84	1.714	IO					1.57
48.250	0.00	0.84	1.709	IO					1.57
48.333	0.00	0.84	1.703	IO					1.57
48.417	0.00	0.84	1.697	IO					1.56
48.500	0.00	0.84	1.691	IO					1.56
48.583	0.00	0.84	1.685	IO					1.56
48.667	0.00	0.84	1.680	IO					1.56
48.750	0.00	0.84	1.674	IO					1.56
48.833	0.00	0.84	1.668	IO					1.56
48.917	0.00	0.84	1.662	IO					1.55
49.000	0.00	0.84	1.656	IO					1.55
49.083	0.00	0.84	1.651	IO					1.55
49.167	0.00	0.84	1.645	IO					1.55
49.250	0.00	0.84	1.639	IO					1.55
49.333	0.00	0.84	1.633	IO					1.55

49.417	0.00	0.84	1.628	IO				1.54
49.500	0.00	0.84	1.622	IO				1.54
49.583	0.00	0.84	1.616	IO				1.54
49.667	0.00	0.83	1.610	IO				1.54
49.750	0.00	0.83	1.605	IO				1.54
49.833	0.00	0.83	1.599	IO				1.54
49.917	0.00	0.83	1.593	IO				1.53
50.000	0.00	0.83	1.587	IO				1.53
50.083	0.00	0.83	1.582	IO				1.53
50.167	0.00	0.83	1.576	IO				1.53
50.250	0.00	0.83	1.570	IO				1.53
50.333	0.00	0.83	1.564	IO				1.53
50.417	0.00	0.83	1.559	IO				1.52
50.500	0.00	0.83	1.553	IO				1.52
50.583	0.00	0.83	1.547	IO				1.52
50.667	0.00	0.83	1.542	IO				1.52
50.750	0.00	0.83	1.536	IO				1.52
50.833	0.00	0.83	1.530	IO				1.52
50.917	0.00	0.83	1.524	IO				1.51
51.000	0.00	0.83	1.519	IO				1.51
51.083	0.00	0.83	1.513	IO				1.51
51.167	0.00	0.83	1.507	IO				1.51
51.250	0.00	0.83	1.502	IO				1.51
51.333	0.00	0.83	1.496	IO				1.51
51.417	0.00	0.83	1.490	IO				1.50
51.500	0.00	0.82	1.485	IO				1.50
51.583	0.00	0.82	1.479	IO				1.50
51.667	0.00	0.82	1.473	IO				1.50
51.750	0.00	0.82	1.468	IO				1.50
51.833	0.00	0.82	1.462	IO				1.49
51.917	0.00	0.82	1.456	IO				1.49
52.000	0.00	0.82	1.451	IO				1.49
52.083	0.00	0.82	1.445	IO				1.48
52.167	0.00	0.82	1.439	IO				1.48
52.250	0.00	0.82	1.434	IO				1.48
52.333	0.00	0.82	1.428	IO				1.48
52.417	0.00	0.82	1.423	IO				1.47
52.500	0.00	0.81	1.417	IO				1.47
52.583	0.00	0.81	1.411	IO				1.47
52.667	0.00	0.81	1.406	IO				1.47
52.750	0.00	0.81	1.400	IO				1.46
52.833	0.00	0.81	1.395	IO				1.46
52.917	0.00	0.81	1.389	IO				1.46
53.000	0.00	0.81	1.383	IO				1.45
53.083	0.00	0.81	1.378	IO				1.45
53.167	0.00	0.81	1.372	IO				1.45
53.250	0.00	0.81	1.367	IO				1.45
53.333	0.00	0.81	1.361	IO				1.44
53.417	0.00	0.80	1.356	IO				1.44
53.500	0.00	0.80	1.350	IO				1.44
53.583	0.00	0.80	1.345	IO				1.44
53.667	0.00	0.80	1.339	IO				1.43
53.750	0.00	0.80	1.334	IO				1.43
53.833	0.00	0.80	1.328	IO				1.43
53.917	0.00	0.80	1.322	IO				1.43
54.000	0.00	0.80	1.317	IO				1.42
54.083	0.00	0.80	1.312	IO				1.42
54.167	0.00	0.80	1.306	IO				1.42
54.250	0.00	0.80	1.301	IO				1.42
54.333	0.00	0.79	1.295	IO				1.41
54.417	0.00	0.79	1.290	IO				1.41
54.500	0.00	0.79	1.284	IO				1.41
54.583	0.00	0.79	1.279	IO				1.40
54.667	0.00	0.79	1.273	IO				1.40
54.750	0.00	0.79	1.268	IO				1.40
54.833	0.00	0.79	1.262	IO				1.40
54.917	0.00	0.79	1.257	IO				1.39
55.000	0.00	0.79	1.252	IO				1.39
55.083	0.00	0.79	1.246	IO				1.39
55.167	0.00	0.79	1.241	IO				1.39
55.250	0.00	0.78	1.235	IO				1.38
55.333	0.00	0.78	1.230	IO				1.38
55.417	0.00	0.78	1.224	IO				1.38
55.500	0.00	0.78	1.219	IO				1.38
55.583	0.00	0.78	1.214	IO				1.37

55.667	0.00	0.78	1.208	IO				1.37
55.750	0.00	0.78	1.203	IO				1.37
55.833	0.00	0.78	1.198	IO				1.37
55.917	0.00	0.78	1.192	IO				1.36
56.000	0.00	0.78	1.187	IO				1.36
56.083	0.00	0.78	1.182	IO				1.36
56.167	0.00	0.78	1.176	IO				1.36
56.250	0.00	0.77	1.171	IO				1.35
56.333	0.00	0.77	1.166	IO				1.35
56.417	0.00	0.77	1.160	IO				1.35
56.500	0.00	0.77	1.155	IO				1.35
56.583	0.00	0.77	1.150	IO				1.34
56.667	0.00	0.77	1.144	IO				1.34
56.750	0.00	0.77	1.139	IO				1.34
56.833	0.00	0.77	1.134	IO				1.34
56.917	0.00	0.77	1.128	IO				1.33
57.000	0.00	0.77	1.123	IO				1.33
57.083	0.00	0.77	1.118	IO				1.33
57.167	0.00	0.76	1.113	IO				1.33
57.250	0.00	0.76	1.107	IO				1.32
57.333	0.00	0.76	1.102	IO				1.32
57.417	0.00	0.76	1.097	IO				1.32
57.500	0.00	0.76	1.092	IO				1.32
57.583	0.00	0.76	1.086	IO				1.31
57.667	0.00	0.76	1.081	IO				1.31
57.750	0.00	0.76	1.076	IO				1.31
57.833	0.00	0.76	1.071	IO				1.31
57.917	0.00	0.76	1.065	IO				1.30
58.000	0.00	0.76	1.060	IO				1.30
58.083	0.00	0.76	1.055	IO				1.30
58.167	0.00	0.75	1.050	IO				1.30
58.250	0.00	0.75	1.045	IO				1.29
58.333	0.00	0.75	1.039	IO				1.29
58.417	0.00	0.75	1.034	IO				1.29
58.500	0.00	0.75	1.029	IO				1.29
58.583	0.00	0.75	1.024	IO				1.28
58.667	0.00	0.75	1.019	IO				1.28
58.750	0.00	0.75	1.014	IO				1.28
58.833	0.00	0.75	1.008	IO				1.28
58.917	0.00	0.75	1.003	IO				1.27
59.000	0.00	0.75	0.998	IO				1.27
59.083	0.00	0.75	0.993	IO				1.27
59.167	0.00	0.74	0.988	IO				1.27
59.250	0.00	0.74	0.983	IO				1.26
59.333	0.00	0.74	0.978	IO				1.26
59.417	0.00	0.74	0.972	IO				1.26
59.500	0.00	0.74	0.967	IO				1.26
59.583	0.00	0.74	0.962	IO				1.25
59.667	0.00	0.74	0.957	IO				1.25
59.750	0.00	0.74	0.952	IO				1.25
59.833	0.00	0.74	0.947	IO				1.25
59.917	0.00	0.74	0.942	IO				1.24
60.000	0.00	0.74	0.937	IO				1.24
60.083	0.00	0.74	0.932	IO				1.24
60.167	0.00	0.73	0.927	IO				1.24
60.250	0.00	0.73	0.922	IO				1.23
60.333	0.00	0.73	0.917	IO				1.23
60.417	0.00	0.73	0.912	IO				1.23
60.500	0.00	0.73	0.907	IO				1.23
60.583	0.00	0.73	0.901	IO				1.22
60.667	0.00	0.73	0.896	IO				1.22
60.750	0.00	0.73	0.891	IO				1.22
60.833	0.00	0.73	0.886	IO				1.22
60.917	0.00	0.73	0.881	IO				1.22
61.000	0.00	0.73	0.876	IO				1.21
61.083	0.00	0.73	0.871	IO				1.21
61.167	0.00	0.72	0.866	IO				1.21
61.250	0.00	0.72	0.861	IO				1.21
61.333	0.00	0.72	0.856	IO				1.20
61.417	0.00	0.72	0.851	IO				1.20
61.500	0.00	0.72	0.846	IO				1.20
61.583	0.00	0.72	0.842	IO				1.20
61.667	0.00	0.72	0.837	IO				1.19
61.750	0.00	0.72	0.832	IO				1.19
61.833	0.00	0.72	0.827	IO				1.19

61.917	0.00	0.72	0.822	IO					1.19
62.000	0.00	0.72	0.817	IO					1.18
62.083	0.00	0.72	0.812	IO					1.18
62.167	0.00	0.72	0.807	IO					1.18
62.250	0.00	0.71	0.802	IO					1.18
62.333	0.00	0.71	0.797	IO					1.18
62.417	0.00	0.71	0.792	IO					1.17
62.500	0.00	0.71	0.787	IO					1.17
62.583	0.00	0.71	0.782	IO					1.17
62.667	0.00	0.71	0.777	IO					1.17
62.750	0.00	0.71	0.773	IO					1.16
62.833	0.00	0.71	0.768	IO					1.16
62.917	0.00	0.71	0.763	IO					1.16
63.000	0.00	0.71	0.758	IO					1.16
63.083	0.00	0.71	0.753	IO					1.15
63.167	0.00	0.71	0.748	IO					1.15
63.250	0.00	0.70	0.743	IO					1.15
63.333	0.00	0.70	0.739	IO					1.15
63.417	0.00	0.70	0.734	IO					1.14
63.500	0.00	0.70	0.729	IO					1.14
63.583	0.00	0.70	0.724	IO					1.14
63.667	0.00	0.70	0.719	IO					1.14
63.750	0.00	0.70	0.714	IO					1.14
63.833	0.00	0.70	0.710	IO					1.13
63.917	0.00	0.70	0.705	IO					1.13
64.000	0.00	0.70	0.700	IO					1.13
64.083	0.00	0.70	0.695	IO					1.13
64.167	0.00	0.70	0.690	IO					1.12
64.250	0.00	0.70	0.685	IO					1.12
64.333	0.00	0.69	0.681	IO					1.12
64.417	0.00	0.69	0.676	IO					1.12
64.500	0.00	0.69	0.671	IO					1.12
64.583	0.00	0.69	0.666	IO					1.11
64.667	0.00	0.69	0.662	IO					1.11
64.750	0.00	0.69	0.657	IO					1.11
64.833	0.00	0.69	0.652	IO					1.11
64.917	0.00	0.69	0.647	IO					1.10
65.000	0.00	0.69	0.643	IO					1.10
65.083	0.00	0.69	0.638	IO					1.10
65.167	0.00	0.69	0.633	IO					1.10
65.250	0.00	0.69	0.628	IO					1.09
65.333	0.00	0.69	0.624	IO					1.09
65.417	0.00	0.68	0.619	IO					1.09
65.500	0.00	0.68	0.614	IO					1.09
65.583	0.00	0.68	0.610	IO					1.09
65.667	0.00	0.68	0.605	IO					1.08
65.750	0.00	0.68	0.600	IO					1.08
65.833	0.00	0.68	0.595	IO					1.08
65.917	0.00	0.68	0.591	IO					1.08
66.000	0.00	0.68	0.586	IO					1.07
66.083	0.00	0.68	0.581	IO					1.07
66.167	0.00	0.68	0.577	IO					1.07
66.250	0.00	0.68	0.572	IO					1.07
66.333	0.00	0.68	0.567	IO					1.07
66.417	0.00	0.68	0.563	IO					1.06
66.500	0.00	0.67	0.558	IO					1.06
66.583	0.00	0.67	0.553	IO					1.06
66.667	0.00	0.67	0.549	IO					1.06
66.750	0.00	0.67	0.544	IO					1.05
66.833	0.00	0.67	0.540	IO					1.05
66.917	0.00	0.67	0.535	IO					1.05
67.000	0.00	0.67	0.530	IO					1.05
67.083	0.00	0.67	0.526	IO					1.05
67.167	0.00	0.67	0.521	IO					1.04
67.250	0.00	0.67	0.516	IO					1.04
67.333	0.00	0.67	0.512	IO					1.04
67.417	0.00	0.67	0.507	IO					1.04
67.500	0.00	0.67	0.503	IO					1.03
67.583	0.00	0.67	0.498	IO					1.03
67.667	0.00	0.66	0.494	IO					1.03
67.750	0.00	0.66	0.489	IO					1.03
67.833	0.00	0.66	0.484	IO					1.03
67.917	0.00	0.66	0.480	IO					1.02
68.000	0.00	0.66	0.475	IO					1.02
68.083	0.00	0.66	0.471	IO					1.02

68.167	0.00	0.66	0.466	IO					1.02
68.250	0.00	0.66	0.462	IO					1.02
68.333	0.00	0.66	0.457	IO					1.01
68.417	0.00	0.66	0.453	IO					1.01
68.500	0.00	0.66	0.448	IO					1.01
68.583	0.00	0.66	0.444	IO					1.01
68.667	0.00	0.66	0.439	IO					1.00
68.750	0.00	0.65	0.435	IO					1.00
68.833	0.00	0.65	0.430	IO					1.00
68.917	0.00	0.65	0.425	IO					0.99
69.000	0.00	0.65	0.421	IO					0.99
69.083	0.00	0.65	0.417	IO					0.98
69.167	0.00	0.64	0.412	IO					0.98
69.250	0.00	0.64	0.408	IO					0.97
69.333	0.00	0.64	0.403	IO					0.96
69.417	0.00	0.63	0.399	IO					0.96
69.500	0.00	0.63	0.395	IO					0.95
69.583	0.00	0.63	0.390	IO					0.95
69.667	0.00	0.63	0.386	IO					0.94
69.750	0.00	0.62	0.382	IO					0.94
69.833	0.00	0.62	0.377	IO					0.93
69.917	0.00	0.62	0.373	IO					0.92
70.000	0.00	0.62	0.369	IO					0.92
70.083	0.00	0.61	0.365	IO					0.91
70.167	0.00	0.61	0.360	IO					0.91
70.250	0.00	0.61	0.356	IO					0.90
70.333	0.00	0.61	0.352	IO					0.90
70.417	0.00	0.60	0.348	IO					0.89
70.500	0.00	0.60	0.344	IO					0.89
70.583	0.00	0.60	0.340	IO					0.88
70.667	0.00	0.60	0.335	IO					0.87
70.750	0.00	0.59	0.331	IO					0.87
70.833	0.00	0.59	0.327	IO					0.86
70.917	0.00	0.59	0.323	IO					0.86
71.000	0.00	0.59	0.319	IO					0.85
71.083	0.00	0.58	0.315	IO					0.85
71.167	0.00	0.58	0.311	IO					0.84
71.250	0.00	0.58	0.307	IO					0.84
71.333	0.00	0.58	0.303	IO					0.83
71.417	0.00	0.57	0.299	IO					0.83
71.500	0.00	0.57	0.295	IO					0.82
71.583	0.00	0.57	0.291	IO					0.82
71.667	0.00	0.57	0.287	IO					0.81
71.750	0.00	0.56	0.284	IO					0.81
71.833	0.00	0.56	0.280	IO					0.80
71.917	0.00	0.56	0.276	IO					0.80
72.000	0.00	0.56	0.272	IO					0.79
72.083	0.00	0.55	0.268	IO					0.79
72.167	0.00	0.55	0.264	IO					0.78
72.250	0.00	0.55	0.261	IO					0.78
72.333	0.00	0.55	0.257	IO					0.77
72.417	0.00	0.54	0.253	IO					0.77
72.500	0.00	0.54	0.249	IO					0.76
72.583	0.00	0.54	0.246	IO					0.76
72.667	0.00	0.54	0.242	IO					0.75
72.750	0.00	0.54	0.238	IO					0.75
72.833	0.00	0.53	0.234	IO					0.74
72.917	0.00	0.53	0.231	IO					0.74
73.000	0.00	0.53	0.227	IO					0.73
73.083	0.00	0.53	0.224	IO					0.73
73.167	0.00	0.52	0.220	IO					0.72
73.250	0.00	0.52	0.216	IO					0.72
73.333	0.00	0.52	0.213	IO					0.71
73.417	0.00	0.52	0.209	IO					0.71
73.500	0.00	0.52	0.206	IO					0.70
73.583	0.00	0.51	0.202	IO					0.70
73.667	0.00	0.51	0.199	IO					0.69
73.750	0.00	0.51	0.195	IO					0.69
73.833	0.00	0.51	0.191	IO					0.68
73.917	0.00	0.50	0.188	IO					0.68
74.000	0.00	0.50	0.185	IO					0.67
74.083	0.00	0.50	0.181	IO					0.67
74.167	0.00	0.50	0.178	IO					0.67
74.250	0.00	0.50	0.174	IO					0.66
74.333	0.00	0.49	0.171	IO					0.66

74.417	0.00	0.49	0.167	IO					0.65
74.500	0.00	0.49	0.164	IO					0.65
74.583	0.00	0.49	0.161	IO					0.64
74.667	0.00	0.49	0.157	IO					0.64
74.750	0.00	0.48	0.154	IO					0.63
74.833	0.00	0.48	0.151	IO					0.63
74.917	0.00	0.48	0.147	IO					0.63
75.000	0.00	0.48	0.144	O					0.62
75.083	0.00	0.48	0.141	O					0.62
75.167	0.00	0.47	0.138	O					0.61
75.250	0.00	0.47	0.134	O					0.61
75.333	0.00	0.47	0.131	O					0.60
75.417	0.00	0.47	0.128	O					0.60
75.500	0.00	0.47	0.125	O					0.59
75.583	0.00	0.46	0.121	O					0.59
75.667	0.00	0.46	0.118	O					0.59
75.750	0.00	0.46	0.115	O					0.58
75.833	0.00	0.46	0.112	O					0.58
75.917	0.00	0.46	0.109	O					0.57
76.000	0.00	0.45	0.106	O					0.57
76.083	0.00	0.45	0.103	O					0.57
76.167	0.00	0.45	0.099	O					0.56
76.250	0.00	0.45	0.096	O					0.56
76.333	0.00	0.45	0.093	O					0.55
76.417	0.00	0.44	0.090	O					0.55
76.500	0.00	0.44	0.087	O					0.55
76.583	0.00	0.44	0.084	O					0.54
76.667	0.00	0.44	0.081	O					0.54
76.750	0.00	0.44	0.078	O					0.53
76.833	0.00	0.43	0.075	O					0.53
76.917	0.00	0.43	0.072	O					0.53
77.000	0.00	0.43	0.069	O					0.52
77.083	0.00	0.43	0.066	O					0.52
77.167	0.00	0.43	0.063	O					0.51
77.250	0.00	0.43	0.060	O					0.51
77.333	0.00	0.42	0.057	O					0.51
77.417	0.00	0.42	0.054	O					0.50
77.500	0.00	0.41	0.052	O					0.49
77.583	0.00	0.39	0.049	O					0.47
77.667	0.00	0.37	0.046	O					0.45
77.750	0.00	0.35	0.044	O					0.43
77.833	0.00	0.33	0.041	O					0.41
77.917	0.00	0.31	0.039	O					0.39
78.000	0.00	0.30	0.037	O					0.38
78.083	0.00	0.28	0.035	O					0.36
78.167	0.00	0.26	0.033	O					0.35
78.250	0.00	0.25	0.031	O					0.33
78.333	0.00	0.24	0.030	O					0.32
78.417	0.00	0.22	0.028	O					0.31
78.500	0.00	0.21	0.027	O					0.30
78.583	0.00	0.20	0.025	O					0.29
78.667	0.00	0.19	0.024	O					0.28
78.750	0.00	0.18	0.023	O					0.27
78.833	0.00	0.17	0.021	O					0.26
78.917	0.00	0.16	0.020	O					0.25
79.000	0.00	0.15	0.019	O					0.24
79.083	0.00	0.15	0.018	O					0.23
79.167	0.00	0.14	0.017	O					0.22
79.250	0.00	0.13	0.016	O					0.22
79.333	0.00	0.12	0.015	O					0.21
79.417	0.00	0.12	0.015	O					0.20
79.500	0.00	0.11	0.014	O					0.20
79.583	0.00	0.10	0.013	O					0.19
79.667	0.00	0.10	0.012	O					0.19
79.750	0.00	0.09	0.012	O					0.18
79.833	0.00	0.09	0.011	O					0.18
79.917	0.00	0.08	0.010	O					0.17
80.000	0.00	0.08	0.010	O					0.17
80.083	0.00	0.08	0.009	O					0.16
80.167	0.00	0.07	0.009	O					0.16
80.250	0.00	0.07	0.008	O					0.16
80.333	0.00	0.06	0.008	O					0.15
80.417	0.00	0.06	0.007	O					0.15
80.500	0.00	0.06	0.007	O					0.15
80.583	0.00	0.05	0.007	O					0.14

80.667	0.00	0.05	0.006	O	|	|	|	|	0.14
80.750	0.00	0.05	0.006	O	|	|	|	|	0.14
80.833	0.00	0.05	0.006	O	|	|	|	|	0.14
80.917	0.00	0.04	0.005	O	|	|	|	|	0.13
81.000	0.00	0.04	0.005	O	|	|	|	|	0.13
81.083	0.00	0.04	0.005	O	|	|	|	|	0.13
81.167	0.00	0.04	0.004	O	|	|	|	|	0.13
81.250	0.00	0.04	0.004	O	|	|	|	|	0.12
81.333	0.00	0.03	0.004	O	|	|	|	|	0.12
81.417	0.00	0.03	0.004	O	|	|	|	|	0.12
81.500	0.00	0.03	0.004	O	|	|	|	|	0.12
81.583	0.00	0.03	0.003	O	|	|	|	|	0.12
81.667	0.00	0.03	0.003	O	|	|	|	|	0.12
81.750	0.00	0.03	0.003	O	|	|	|	|	0.12
81.833	0.00	0.02	0.003	O	|	|	|	|	0.11
81.917	0.00	0.02	0.003	O	|	|	|	|	0.11
82.000	0.00	0.02	0.002	O	|	|	|	|	0.11
82.083	0.00	0.02	0.002	O	|	|	|	|	0.11
82.167	0.00	0.02	0.002	O	|	|	|	|	0.11
82.250	0.00	0.02	0.002	O	|	|	|	|	0.11
82.333	0.00	0.02	0.002	O	|	|	|	|	0.11
82.417	0.00	0.02	0.002	O	|	|	|	|	0.11
82.500	0.00	0.02	0.002	O	|	|	|	|	0.11
82.583	0.00	0.01	0.002	O	|	|	|	|	0.10
82.667	0.00	0.01	0.002	O	|	|	|	|	0.10
82.750	0.00	0.01	0.001	O	|	|	|	|	0.10
82.833	0.00	0.01	0.001	O	|	|	|	|	0.10
82.917	0.00	0.01	0.001	O	|	|	|	|	0.10
83.000	0.00	0.01	0.001	O	|	|	|	|	0.10
83.083	0.00	0.01	0.001	O	|	|	|	|	0.10
83.167	0.00	0.01	0.001	O	|	|	|	|	0.10
83.250	0.00	0.01	0.001	O	|	|	|	|	0.09
83.333	0.00	0.01	0.001	O	|	|	|	|	0.09
83.417	0.00	0.01	0.001	O	|	|	|	|	0.08
83.500	0.00	0.01	0.001	O	|	|	|	|	0.08
83.583	0.00	0.01	0.001	O	|	|	|	|	0.07
83.667	0.00	0.01	0.001	O	|	|	|	|	0.07
83.750	0.00	0.01	0.001	O	|	|	|	|	0.06
83.833	0.00	0.01	0.001	O	|	|	|	|	0.06
83.917	0.00	0.01	0.001	O	|	|	|	|	0.05
84.000	0.00	0.01	0.001	O	|	|	|	|	0.05
84.083	0.00	0.00	0.000	O	|	|	|	|	0.05
84.167	0.00	0.00	0.000	O	|	|	|	|	0.04
84.250	0.00	0.00	0.000	O	|	|	|	|	0.04
84.333	0.00	0.00	0.000	O	|	|	|	|	0.04
84.417	0.00	0.00	0.000	O	|	|	|	|	0.04
84.500	0.00	0.00	0.000	O	|	|	|	|	0.03
84.583	0.00	0.00	0.000	O	|	|	|	|	0.03
84.667	0.00	0.00	0.000	O	|	|	|	|	0.03
84.750	0.00	0.00	0.000	O	|	|	|	|	0.03
84.833	0.00	0.00	0.000	O	|	|	|	|	0.03
84.917	0.00	0.00	0.000	O	|	|	|	|	0.02
85.000	0.00	0.00	0.000	O	|	|	|	|	0.02
85.083	0.00	0.00	0.000	O	|	|	|	|	0.02
85.167	0.00	0.00	0.000	O	|	|	|	|	0.02
85.250	0.00	0.00	0.000	O	|	|	|	|	0.02
85.333	0.00	0.00	0.000	O	|	|	|	|	0.02
85.417	0.00	0.00	0.000	O	|	|	|	|	0.02
85.500	0.00	0.00	0.000	O	|	|	|	|	0.01
85.583	0.00	0.00	0.000	O	|	|	|	|	0.01
85.667	0.00	0.00	0.000	O	|	|	|	|	0.01
85.750	0.00	0.00	0.000	O	|	|	|	|	0.01
85.833	0.00	0.00	0.000	O	|	|	|	|	0.01
85.917	0.00	0.00	0.000	O	|	|	|	|	0.01
86.000	0.00	0.00	0.000	O	|	|	|	|	0.01

**********HYDROGRAPH DATA**********

Number of intervals = 1032
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 5.530 (CFS)
Total volume = 7.865 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

SOURCE CONTROL
WILL BE COMPLETED AND ADDRESSED AT THE TIME OF
THE FINAL WQMP SUBMITTAL

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

O&M
WILL BE COMPLETED AND ADDRESSED
AT THE TIME OF THE FINAL WQMP SUBMITTAL

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

EDUCATIONAL MATERIALS WILL BE COMPLETED AND ADDRESSED AT THE TIME OF THE FINAL WQMP SUBMITTAL

G.2 - Preliminary Hydrology Study

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Preliminary Hydrology Study

Shopoff – San Gorgonio Crossings
Riverside County, CA

Prepared for:
TSG Cherry Valley, L.P.
C/O The Shopoff Group
8951 Research Drive
Irvine, CA 92618

October 2014

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Proposed On-Site Drainage Facilities 2
Extended Detention Basin A 2
Extended Detention Basin B 3
Conclusion 4
Vicinity and Project Location Maps 5

Appendix A – Soils and Rainfall Data
Appendix B – Rational Method Hydrology
Appendix C – Unit Hydrograph Hydrology
Appendix D – Basin Routing

List of Maps

Rational Method Hydrology Exhibit – DMA A Proposed Conditions (24”x36” Folded)
Rational Method Hydrology Exhibit – DMA B Proposed Conditions (24”x36” Folded)
Unit Hydrograph Hydrology Exhibit – DMA A Existing Conditions (24”x36” Folded)
Unit Hydrograph Hydrology Exhibit – DMA B Existing Conditions (24”x36” Folded)
Unit Hydrograph Hydrology Exhibit – DMA A Proposed Conditions (24”x36” Folded)
Unit Hydrograph Hydrology Exhibit – DMA B Proposed Conditions (24”x36” Folded)

Introduction

The purpose of this preliminary hydrology study is to present the hydrology analysis and drainage calculations prepared in conjunction with the design and future construction of the Shopoff – San Gorgonio Crossings warehouse facility in Riverside County.

Project Description

The Shopoff – San Gorgonio Crossings project proposes to develop approximately 150 acres of vacant land between Calimesa and Beaumont. The project is located northeast of the intersection of I-10 and Cherry Valley Boulevard. The project proposes to build 2 warehouse/distribution facilities totaling approximately 1,819,000 SF with associated parking, loading docks, drive aisles, and landscaped areas.

Hydrologic Analysis and Methodology

Hydrologic calculations were performed in accordance to the methods described in the Riverside County Flood Control and Water Conservation District Hydrology Manual. The Civil Design Version 7.1 Computer Software Program was used in performing the hydrology calculations.

The Rational Method was performed to evaluate surface runoff under proposed conditions associated with the 100-year storm frequency from the project watershed. The results were used to calculate on-site storm drain pipe sizes. The on-site pipe sizes range from 24” to 42”. See the Rational Method Exhibits for more information (Appendix B).

The Unit Hydrograph Method was performed to evaluate the Flood Volumes and Peak Flows for the 2-yr 24-hr event, 10-yr 24-hr and the 100-yr events. The results were used to determine mitigation requirements for the site and basin depths (See Appendix C).

Basin Routing was performed to model the proposed basins and outlet structures. The proposed basins are designed to meet the Design Capture Volume requirements and to mitigate the 2-yr 24-hr event, 10-yr 24-hr event, and the 100-yr storm events (See Appendix D). The 2-year mitigation complies with the requirements of the Hydrological Conditions of Concern (HCOC) related to the water quality technical guidance document.

Existing On-Site Drainage Facilities

The site is presently vacant with little vegetation. Elevations on the site vary from 2580 feet above mean sea level (MSL) to 2380 feet. The existing site drains to a natural channel which conveys the runoff to a basin west of Roberts Street which conveys the water to San Timoteo Creek. Off-site flows from the northeast enter the channel and flow through the site.

Hydrological Data

Based on the site’s location, the following site data is referenced from the Riverside County Flood Control and Water Conservation District Hydrology Manual (See Appendix A):

Hydrologic Soil Type

The soils map on Plate C-1.18 indicated the following Soil Types:

- Soils Group "B" – 62%
- Soils Group "D" – 38%

Rainfall Data

The following precipitation data was taken from the Riverside County Flood Control and Water Conservation District Hydrology Manual:

- 2-Year 24-Hour Rainfall Intensity – 2.6 inches/hour (Plate E-5.5)
- 100-Year 24-Hour Rainfall Intensity – 7 inches/hour (Plate E-5.6)

Runoff Index

The Runoff Index (RI) values were determined from Plate D-5.5 with AMCII conditions:

- Existing Conditions DMA A: Barren (Rockland, eroded, graded land) B and D: 88
- Existing Conditions DMA B: Barren (Rockland, eroded, graded land) B and D: 89
- Proposed Conditions DMA A: Commercial Landscaping with Soils Group B and D: 62
- Proposed Conditions DMA B: Commercial Landscaping with Soils Group B and D: 64

Land Use

The Actual Impervious Cover values were determined from Plate D-5.6:

- Existing Conditions: Natural or Agriculture – 0%
- Proposed Conditions: Commercial or Industrial – 90%

Proposed On-Site Drainage Facilities

The proposed site will replace the natural channel with an improved channel which will convey off-site runoff and treated on-site flows to the west toward the basin west of Roberts Street. The northerly off-site flows will be conveyed to the west by a channel and will not enter the site. All flows will continue to reach San Timoteo Creek.

The Design Capture Volume and HCOC will be addressed by two Extended Detention Basins.

Building #1 (west building) with associated parking, loading docks, drive aisles, and landscaped areas will drain to Extended Detention Basin A. Building #2 (east building) with associated parking, loading docks, drive aisles, and landscaped areas will drain to Extended Detention Basin B. The runoff will be conveyed to each basin by surface flow and an on-site storm drain system. Each basin will outlet to a storm drain pipe which discharges to the on-site channel along the southern property boundary which conveys off-site flows through the site.

Extended Detention Basin A

Runoff will enter Basin A primarily from the on-site storm drain system. The middle of the basin will be the lowest elevation and slope up to the north and south at 0.5%. A low-flow trench and collector trenches will convey the runoff to the bottom stage and outlet structure which will be located in the middle of the basin on the east side. The outlet structure has been designed to allow for treatment of the Design Capture Volume. The Vbmp depth is 3.4 ft. The outlet structure has also been designed to mitigate the 2-yr 24-hr and 10-yr 24-hr events with orifices and the 100-yr event will spill over the top of the outlet structure. The basin depth will be 7.2 ft,

including 1 ft of freeboard. See Figure 1 below and Appendix D for Basin Routing Calculations for more information.

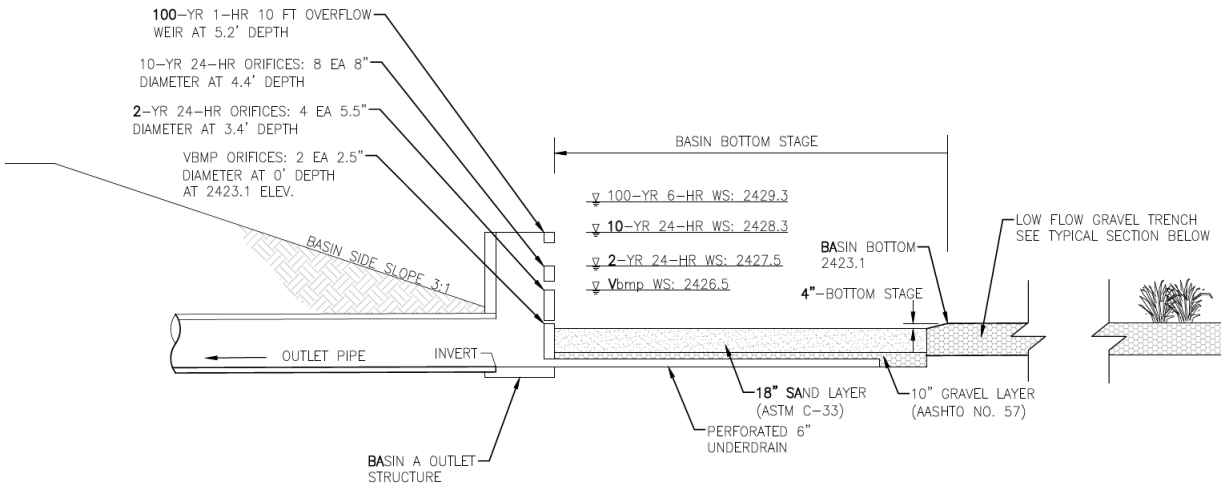


Figure 1. Extended Detention Basin A Outlet Structure Schematic Detail

Extended Detention Basin B

Runoff will enter Basin B primarily from the on-site storm drain systems. The middle of the basin will be the lowest elevation and slope up to the north and south at 0.5%. A low-flow trench and collector trenches will convey the runoff to the bottom stage and outlet structure which will be located in the middle of the basin on the west side. The outlet structure has been designed to allow for treatment of the Design Capture Volume. The Vbmp depth is 1.9 ft. The outlet structure has also been designed to mitigate the 2-yr 24-hr and 10-yr 24-hr events with orifices and the 100-yr event will spill over the top of the outlet structure. The basin depth will be 4.6 ft, including 1 ft of freeboard. See Figure 2 below and Appendix D for Basin Routing Calculations for more information.

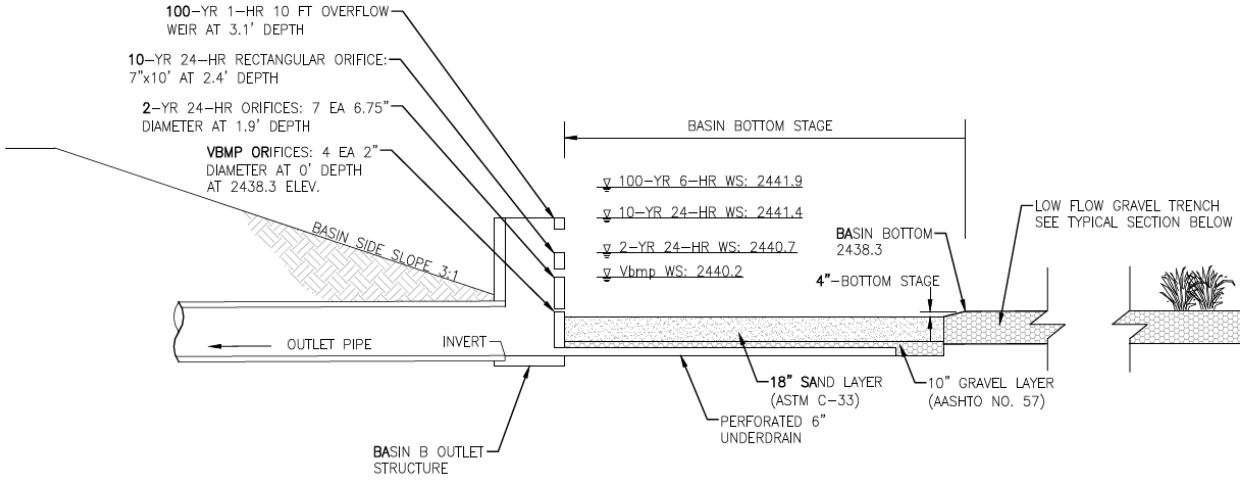


Figure 2. Extended Detention Basin B Outlet Structure Schematic Detail

Conclusion

Based upon the results of this report, the proposed facilities, with ultimate development and adequate maintenance, will convey flows safely through the region to the MDP facilities in accordance with Riverside County Requirements. Additional hydrological analyses will be performed as part of the final site specific engineering wherein finer details of the proposed design will be established.

Vicinity and Project Location Maps



G:\2014\14-0213\GIS\0213aerial.mxd

Sources: Eagle Aerial, April 2012

Legend

Project Location

N
W
E
S

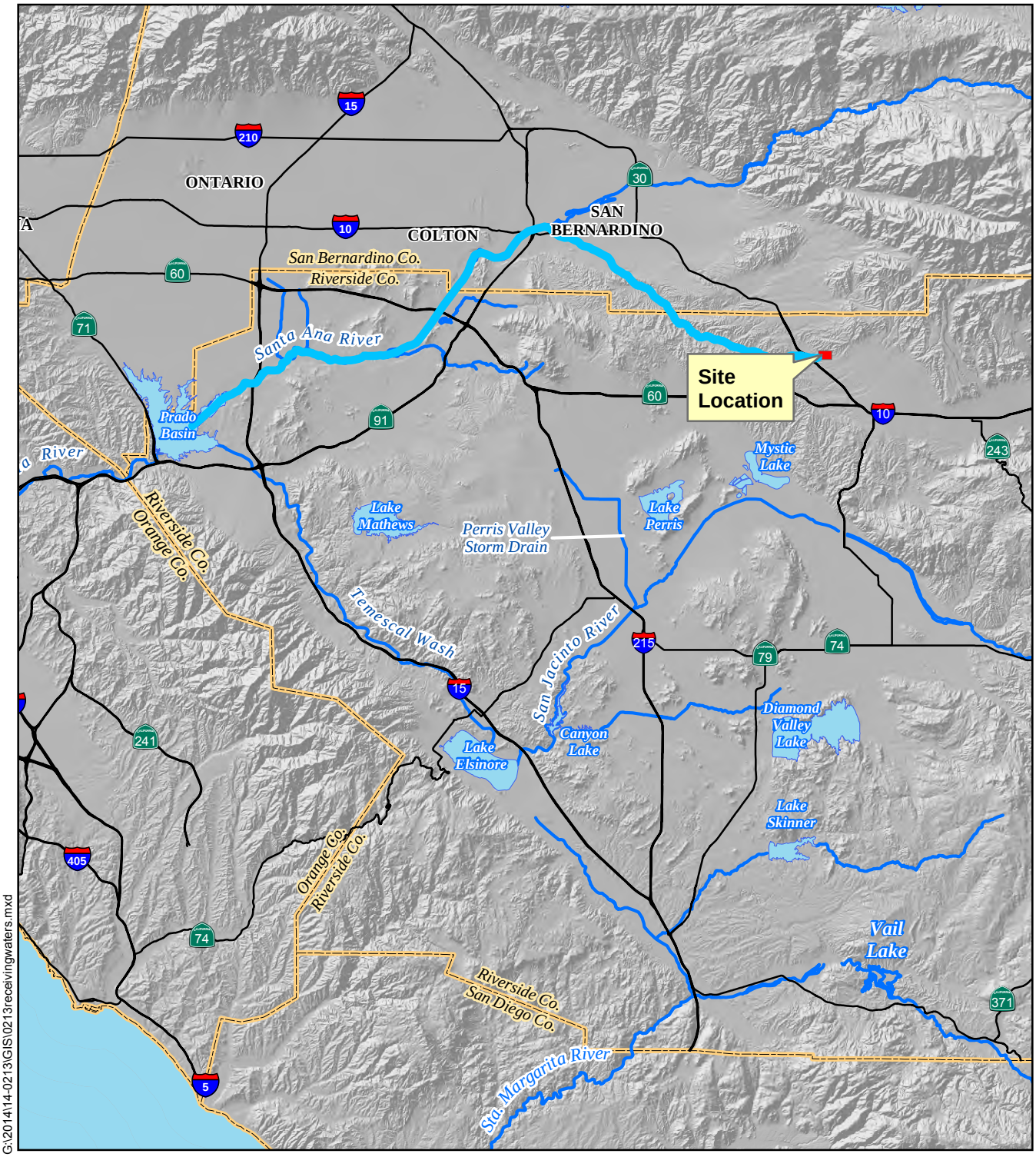
0 750 1,500 2,250 Feet

Aerial Map

ALBERT A. WEBB ASSOCIATES

Shopoff Realty Investments - San Gorgonio Crosings

CVAR_10341



G:\2014\14-0213\GIS\0213receivingwaters.mxd

LEGEND

Receiving Waters

N
W E
S

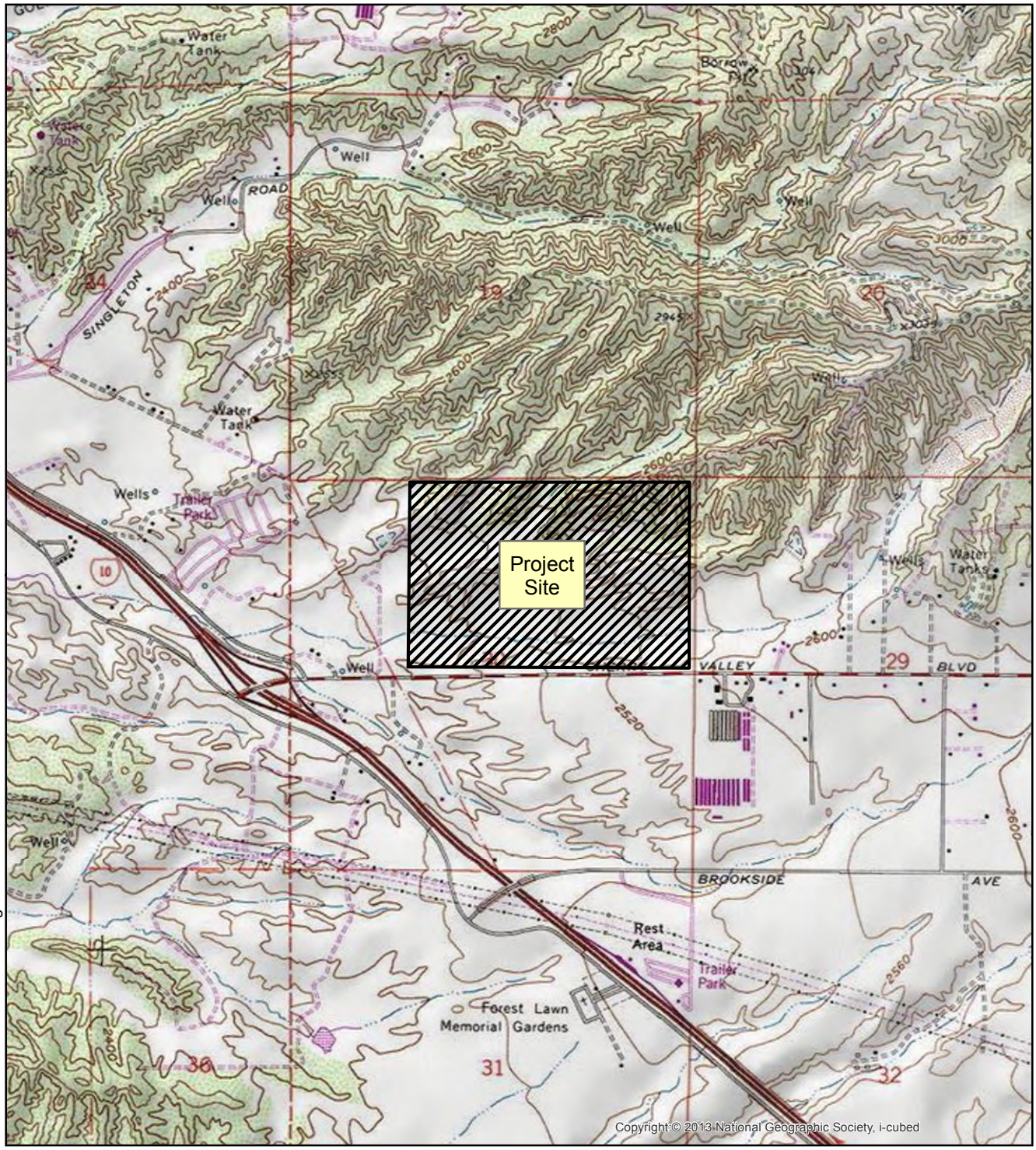
0 3 6 9
Miles

ALBERT A. WEBB ASSOCIATES

Receiving Waters Map

Shopoff Realty Investments - San Gorgonio Crossings

CVAR_10342



G:\2014\14-0213\GIS\0213usgs.mxd

Source: USGS 7.5 min Quadrangle
El Casco

Legend

Project Boundary

N
W E
S

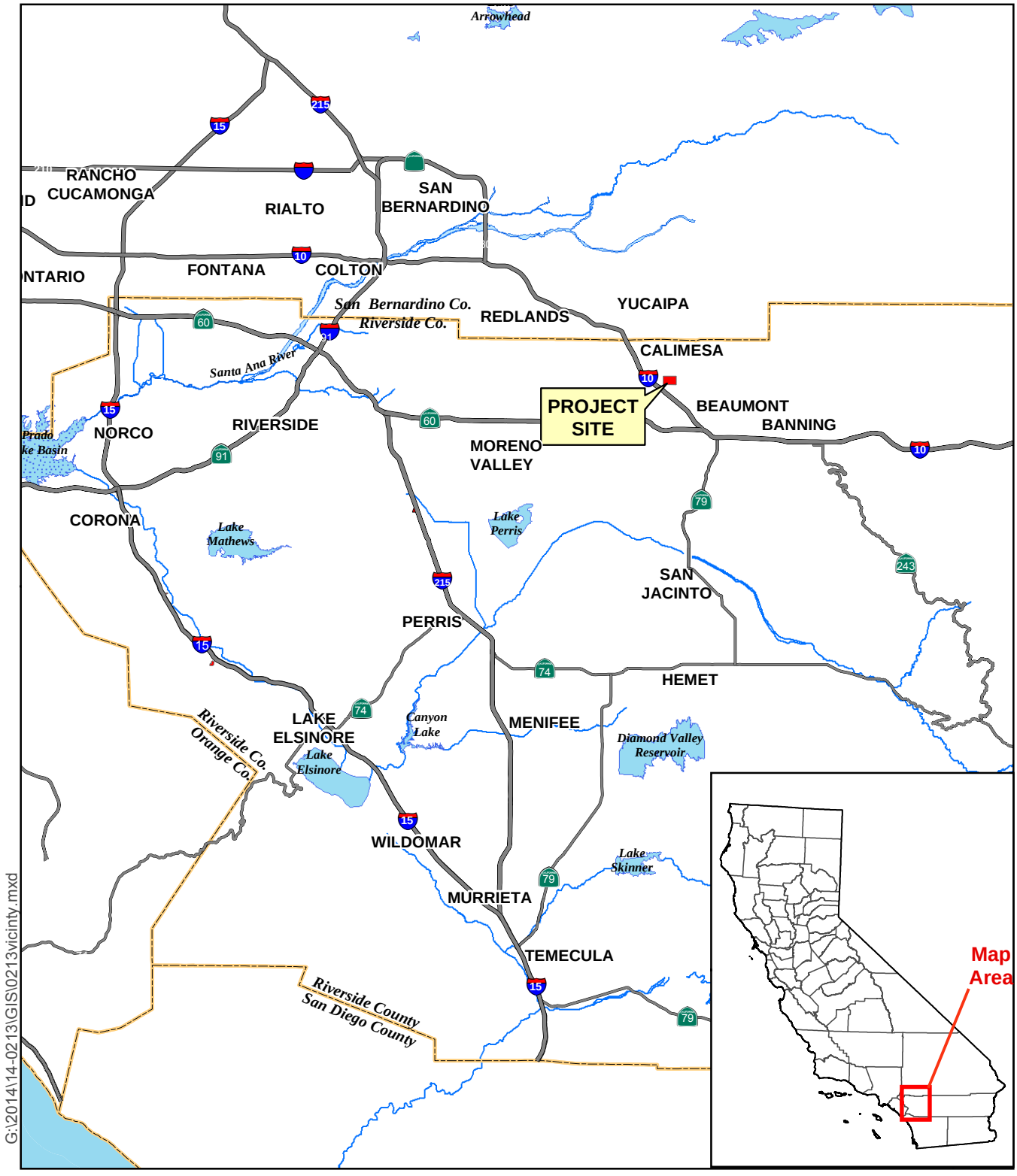
0 750 1,500 2,250
Feet

USGS Topographic Map

ALBERT A. WEBB ASSOCIATES

Shopoff Realty Investments - San Gorgonio Crossings

CVAR_10343



G:\2014\14-0213\GIS\0213vicinity.mxd

Vicinity Map

ALBERT A. WEBB ASSOCIATES

Shopoff Realty Investments - San Gorgonio Crossings

CVAR_10344

Appendix A – Soils and Rainfall Data

Hydrologic Soils Group Map

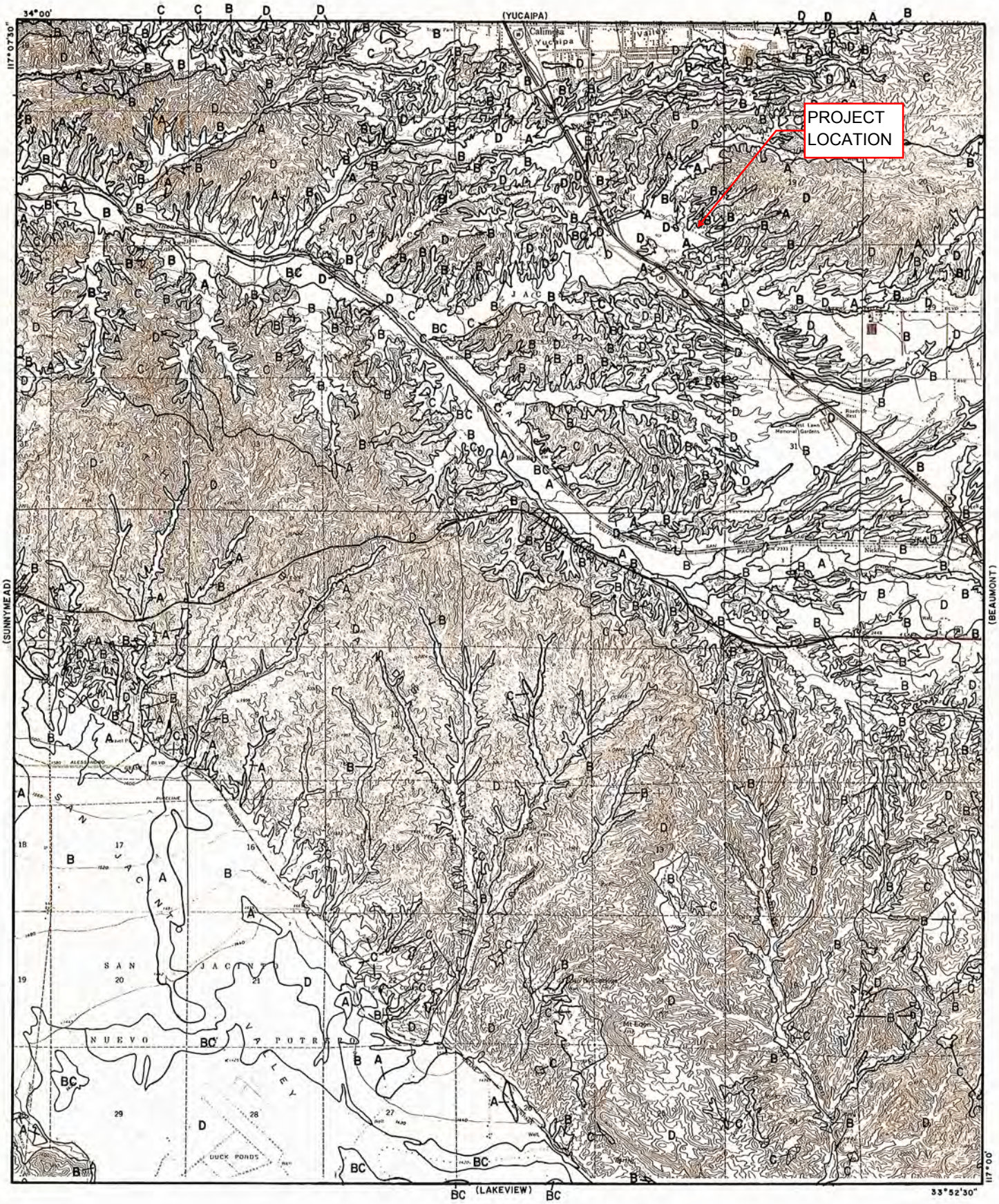
Intensity Duration Curve Data

Impervious Cover Data

Runoff Index Numbers

NOAA Isohyetal maps

HYDROLOGIC SOILS GROUP MAP



LEGEND

—— SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC&WCD

HYDROLOGY MANUAL

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR EL CASCO

PLATE C-1.18

CVAR 10347

INTENSITY DURATION CURVE DATA

RAINFALL INTENSITY–INCHES PER HOUR

ANZA			BANNING			BEAUMONT			CALIMESA			CANYON LAKE		
DURATION MINUTES	FREQUENCY 10 YEAR	100 YEAR	DURATION MINUTES	FREQUENCY 10 YEAR	100 YEAR	DURATION MINUTES	FREQUENCY 10 YEAR	100 YEAR	DURATION MINUTES	FREQUENCY 10 YEAR	100 YEAR	DURATION MINUTES	FREQUENCY 10 YEAR	100 YEAR
5	4.23	6.85	5	3.32	4.93	5	3.32	4.93	5	3.57	5.30	5	3.07	4.61
6	3.80	6.16	6	3.02	4.47	6	3.02	4.47	6	3.23	4.79	6	2.81	4.23
7	3.48	5.63	7	2.78	4.12	7	2.78	4.12	7	2.97	4.40	7	2.61	3.93
8	3.22	5.21	8	2.59	3.84	8	2.59	3.84	8	2.76	4.09	8	2.45	3.68
9	3.01	4.87	9	2.43	3.61	9	2.43	3.61	9	2.58	3.83	9	2.31	3.48
10	2.83	4.58	10	2.30	3.41	10	2.30	3.41	10	2.44	3.62	10	2.20	3.31
11	2.67	4.33	11	2.19	3.24	11	2.19	3.24	11	2.31	3.43	11	2.10	3.16
12	2.54	4.12	12	2.09	3.10	12	2.09	3.10	12	2.21	3.27	12	2.01	3.03
13	2.43	3.93	13	2.00	2.97	13	2.00	2.97	13	2.11	3.13	13	1.94	2.92
14	2.33	3.77	14	1.92	2.85	14	1.92	2.85	14	2.03	3.01	14	1.87	2.82
15	2.23	3.62	15	1.86	2.75	15	1.86	2.75	15	1.95	2.89	15	1.81	2.72
16	2.15	3.49	16	1.79	2.66	16	1.79	2.66	16	1.88	2.79	16	1.75	2.64
17	2.08	3.37	17	1.74	2.58	17	1.74	2.58	17	1.82	2.70	17	1.70	2.56
18	2.01	3.26	18	1.68	2.50	18	1.68	2.50	18	1.76	2.62	18	1.66	2.50
19	1.95	3.16	19	1.64	2.43	19	1.64	2.43	19	1.71	2.54	19	1.62	2.43
20	1.89	3.06	20	1.59	2.36	20	1.59	2.36	20	1.67	2.47	20	1.58	2.37
22	1.79	2.90	22	1.51	2.25	22	1.51	2.25	22	1.58	2.34	22	1.51	2.27
24	1.70	2.76	24	1.45	2.15	24	1.45	2.15	24	1.51	2.23	24	1.44	2.17
26	1.62	2.63	26	1.39	2.06	26	1.39	2.06	26	1.44	2.14	26	1.39	2.09
28	1.56	2.52	28	1.33	1.98	28	1.33	1.98	28	1.38	2.05	28	1.34	2.02
30	1.49	2.42	30	1.29	1.91	30	1.29	1.91	30	1.33	1.98	30	1.30	1.95
32	1.44	2.33	32	1.24	1.84	32	1.24	1.84	32	1.29	1.91	32	1.26	1.89
34	1.39	2.25	34	1.20	1.78	34	1.20	1.78	34	1.24	1.85	34	1.22	1.84
36	1.34	2.18	36	1.17	1.73	36	1.17	1.73	36	1.21	1.79	36	1.19	1.79
38	1.30	2.11	38	1.13	1.68	38	1.13	1.68	38	1.17	1.74	38	1.16	1.74
40	1.27	2.05	40	1.10	1.64	40	1.10	1.64	40	1.14	1.69	40	1.13	1.70
45	1.18	1.91	45	1.04	1.54	45	1.04	1.54	45	1.07	1.58	45	1.07	1.61
50	1.11	1.80	50	.98	1.45	50	.98	1.45	50	1.01	1.49	50	1.02	1.53
55	1.05	1.70	55	.93	1.38	55	.93	1.38	55	.95	1.42	55	.97	1.46
60	1.00	1.62	60	.89	1.32	60	.89	1.32	60	.91	1.35	60	.93	1.40
65	.95	1.55	65	.85	1.27	65	.85	1.27	65	.87	1.29	65	.89	1.35
70	.91	1.48	70	.82	1.22	70	.82	1.22	70	.84	1.24	70	.86	1.30
75	.88	1.42	75	.79	1.17	75	.79	1.17	75	.80	1.19	75	.84	1.26
80	.85	1.37	80	.76	1.13	80	.76	1.13	80	.78	1.15	80	.81	1.22
85	.82	1.32	85	.74	1.10	85	.74	1.10	85	.75	1.11	85	.79	1.18
SLOPE = .580			SLOPE = .530			SLOPE = .530			SLOPE = .550			SLOPE = .480		

STANDARD
INTENSITY–DURATION
CURVES DATA

PLATE D-4.1 (1 of 6)

CVAR_10349

IMPERVIOUS COVER DATA

ACTUAL IMPERVIOUS COVER

Land Use (1)	Range-Percent	Recommended Value For Average Conditions-Percent(2)
Natural or Agriculture	0 - 10	0
Single Family Residential: (3)		
40,000 S. F. (1 Acre) Lots	10 - 25	20
20,000 S. F. (½ Acre) Lots	30 - 45	40
7,200 - 10,000 S. F. Lots	45 - 55	50
Multiple Family Residential:		
Condominiums	45 - 70	65
Apartments	65 - 90	80
Mobile Home Park	60 - 85	75
Commercial, Downtown Business or Industrial	80 -100	90

Notes:

1. Land use should be based on ultimate development of the watershed. Long range master plans for the County and incorporated cities should be reviewed to insure reasonable land use assumptions.

2. Recommended values are based on average conditions which may not apply to a particular study area. The percentage impervious may vary greatly even on comparable sized lots due to differences in dwelling size, improvements, etc. Landscape practices should also be considered as it is common in some areas to use ornamental gravels underlain by impervious plastic materials in place of lawns and shrubs. A field investigation of a study area should always be made, and a review of aerial photos, where available may assist in estimating the percentage of impervious cover in developed areas.

3. For typical horse ranch subdivisions increase impervious area 5 percent over the values recommended in the table above.

RCFC & WCD
HYDROLOGY MANUAL

IMPERVIOUS COVER FOR DEVELOPED AREAS

PLATE D-5.6

CVAR_10351

RUNOFF INDEX NUMBERS

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
NATURAL COVERS -					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparrel, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparrel, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	72	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	28	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
URBAN COVERS -					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
AGRICULTURAL COVERS -					
Fallow (Land plowed but not tilled or seeded)		76	85	90	92

RCFC & WCD
HYDROLOGY MANUAL

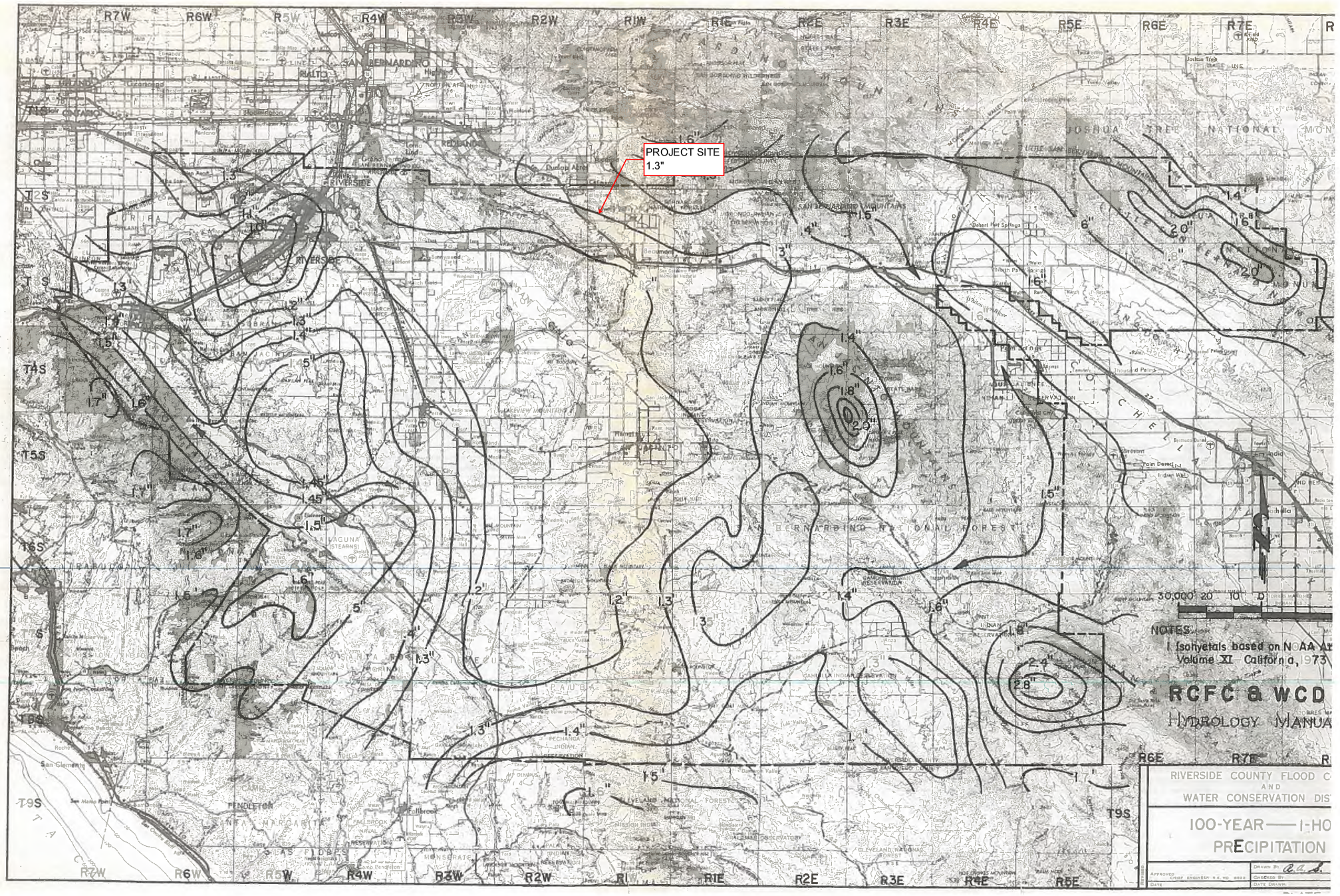
RUNOFF INDEX NUMBERS FOR PERVIOUS AREA

PLATE D-5.5 (1 of 2)
CVAR_10353

NOAA ISOHYETAL MAPS


PROJECT SITE
0.57"
NOTES:
1. Isohyetals based on NOAA
Volume XI – California, 1973
RCFC & WCD
HYDROLOGY MANUA
RIVERSIDE COUNTY FLOOD C
AND
WATER CONSERVATION DIS
2-YEAR — 1-HO
PRECIPITATION

CVAR_10355


PROJECT SITE
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NOTES:
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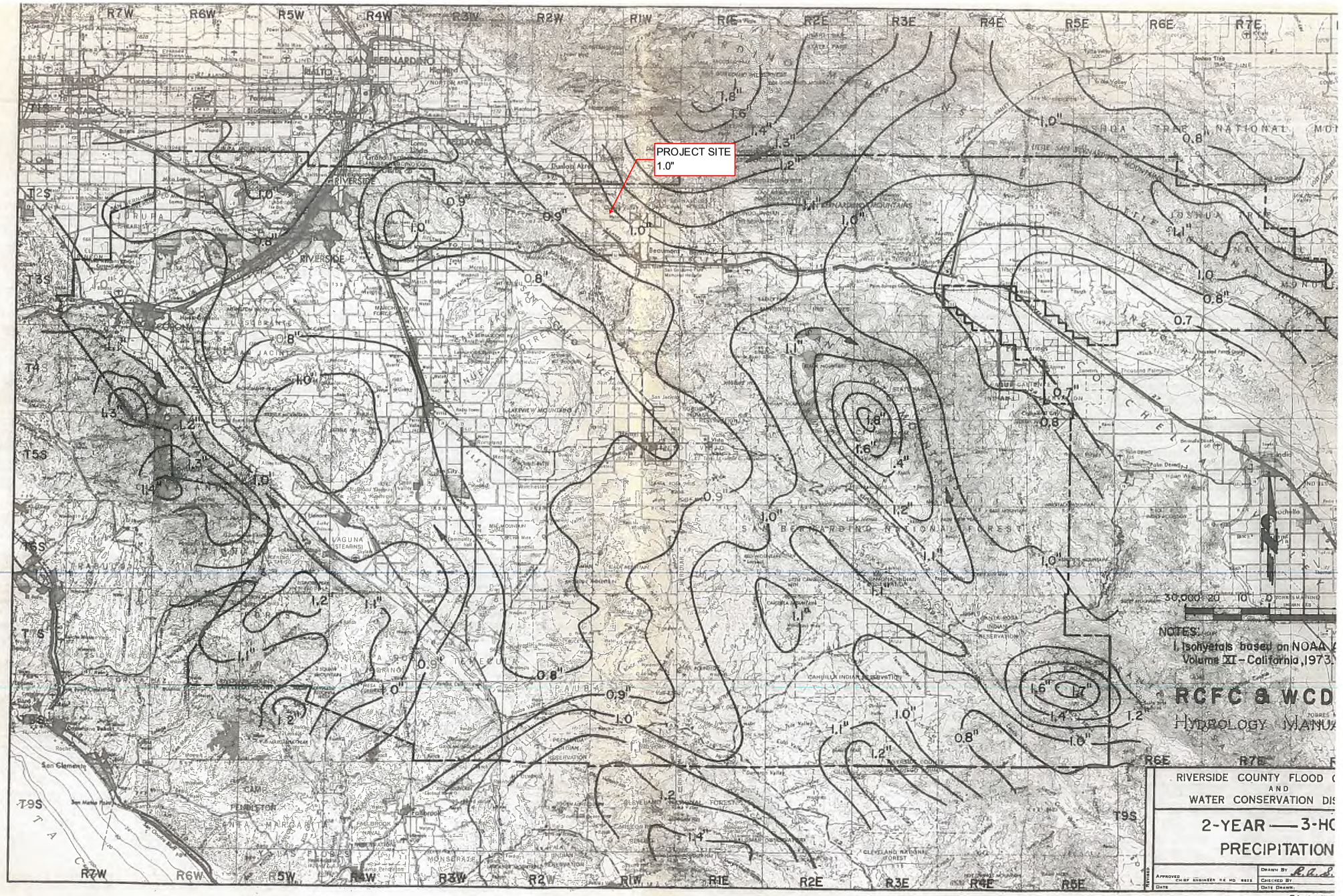
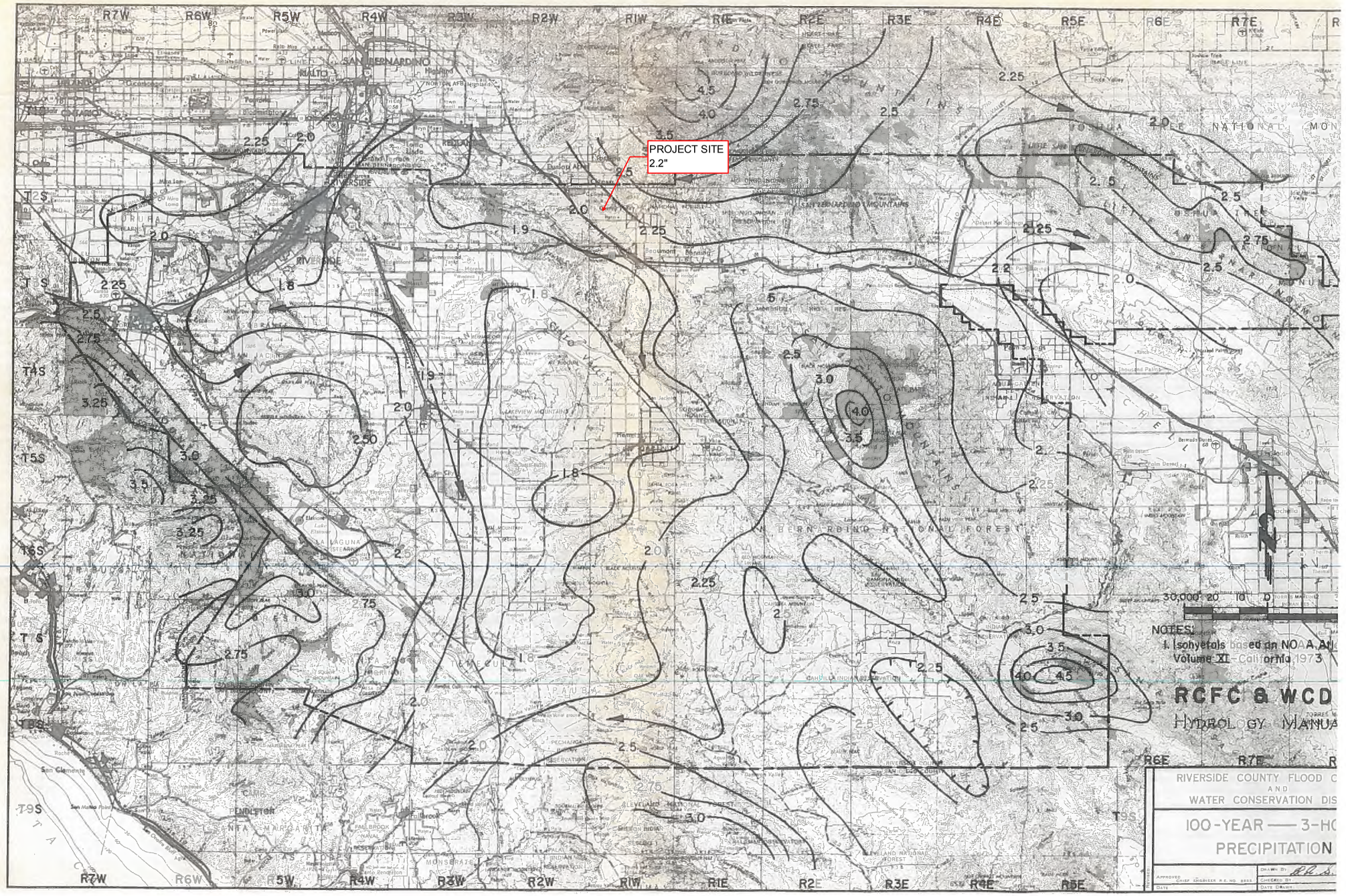
Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 1-HOUR PRECIPITATION

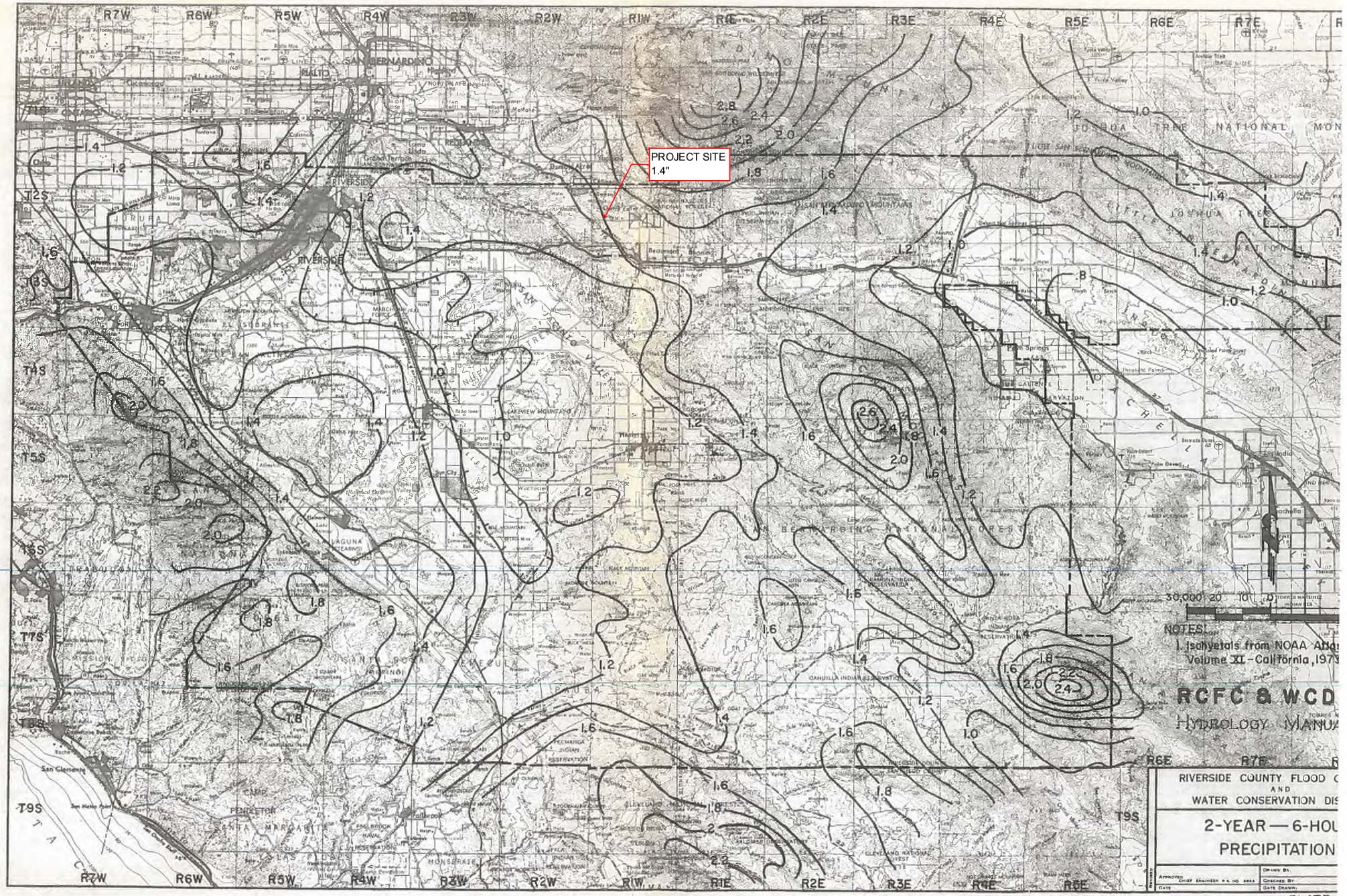
CVAR_10356


PROJECT SITE
1.0"
NOTES:
1. Isohyetals based on NOAA
Volume XI - California, 1973.
RCFC & WCD
HYDROLOGY MANU
RIVERSIDE COUNTY FLOOD
AND
WATER CONSERVATION DIS
2-YEAR — 3-HO
PRECIPITATION

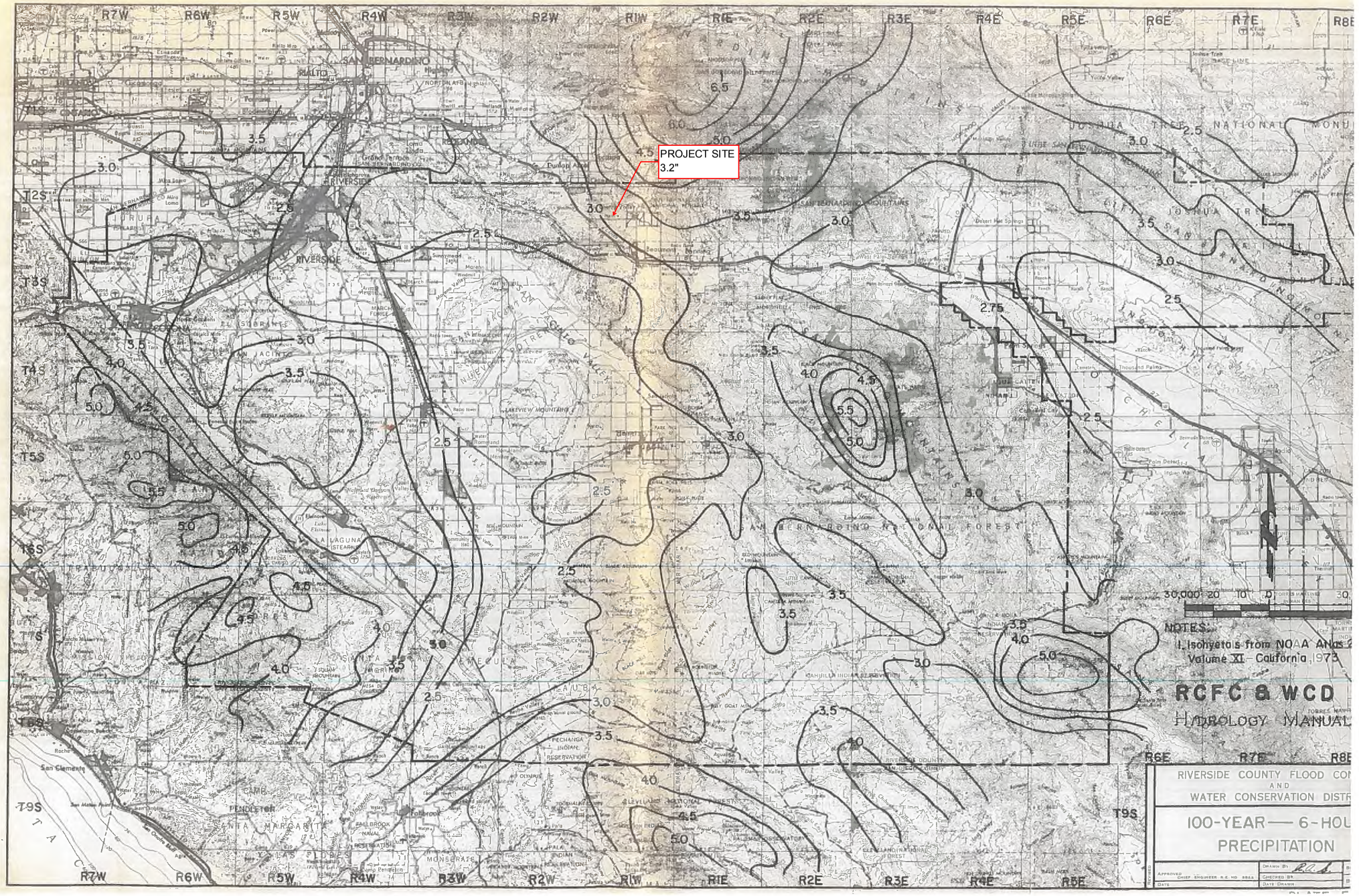
CVAR_10357


PROJECT SITE
2.2"
NOTES:
1. Isohyetals based on NOAA Atl
Volume XI - California 1973
RCFC & WCD
HYDROLOGY MANUA
RIVERSIDE COUNTY FLOOD C
AND
WATER CONSERVATION DIS
100-YEAR — 3-HO
PRECIPITATION

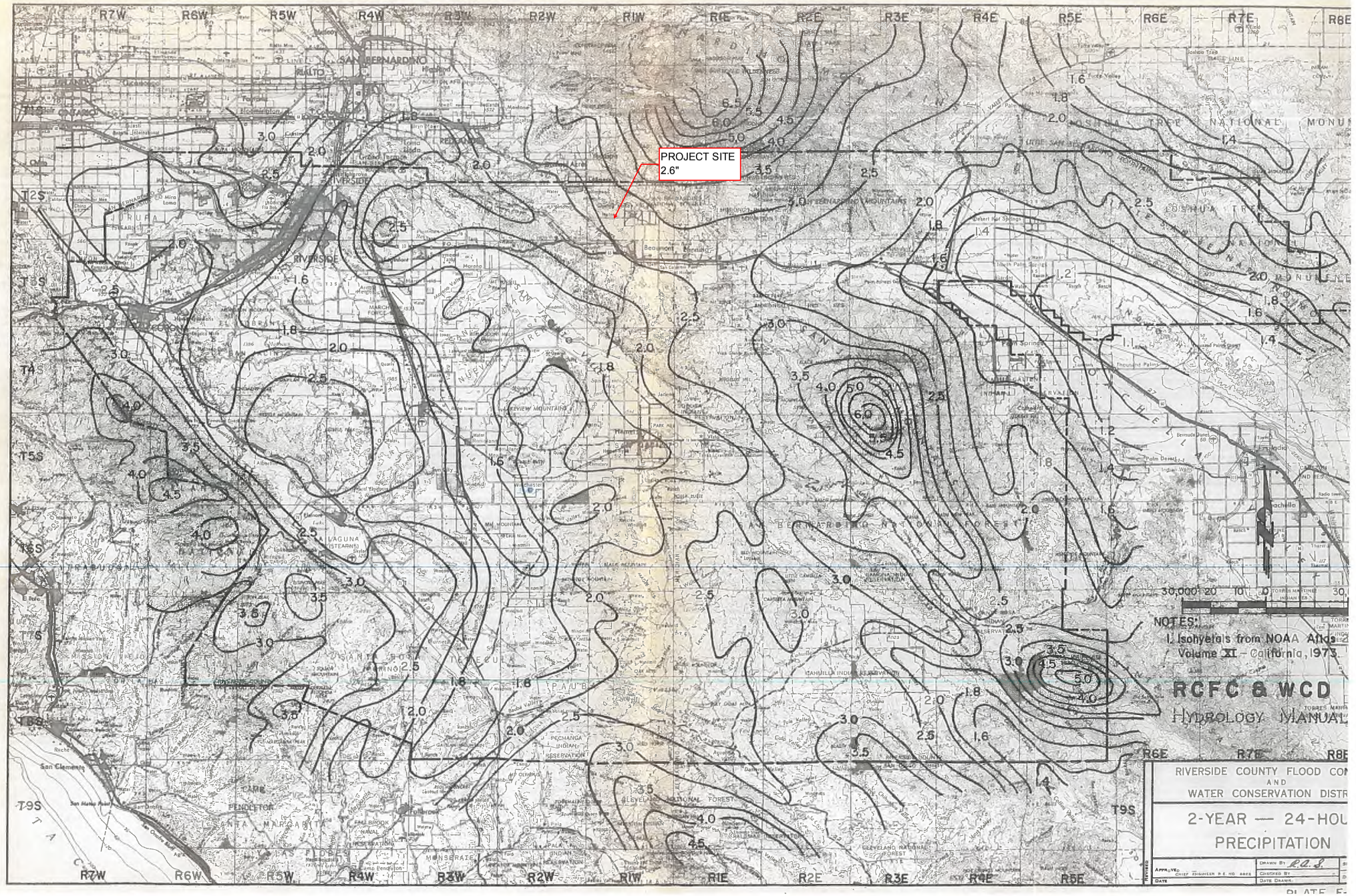
CVAR_10358


PROJECT SITE
1.4"
NOTES:
1. Isohyetals from NOAA Atla
Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUA
RIVERSIDE COUNTY FLOOD C
AND
WATER CONSERVATION DIS
2-YEAR — 6-HOU
PRECIPITATION
SAN BERNARDINO
RIVERSIDE
JOSHUA TREE NATIONAL MON
SAN BERNARDINO NATIONAL FOREST
R7W
R6W
R5W
R4W
R3W
R2W
R1W
R1E
R2E
R3E
R4E
R5E
R6E
R7E
T2S
T3S
T4S
T5S
T6S
T7S
T8S
T9S

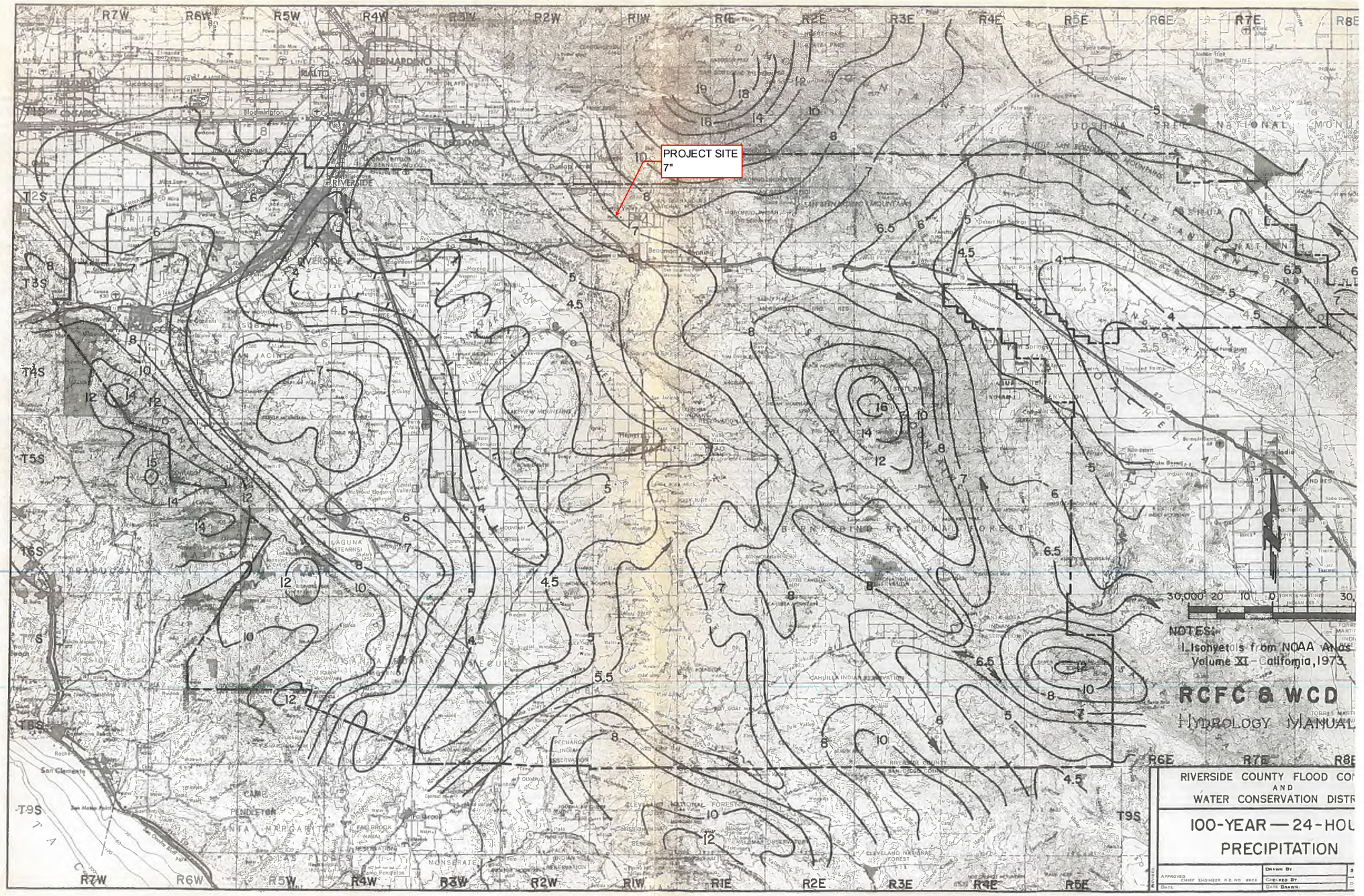
CVAR_10359


PROJECT SITE
3.2"
NOTES:
1. Isohyetals from NOAA Atlas 2
Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CON
AND
WATER CONSERVATION DISTR
100-YEAR — 6-HOU
PRECIPITATION

CVAR_10360


PROJECT SITE
2.6"
NOTES:
1. Isohyetals from NOAA Atlas
Volume XI – California, 1973
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CO
AND
WATER CONSERVATION DISTR
2-YEAR — 24-HOU
PRECIPITATION
PLATE E-

CVAR_10361


PROJECT SITE
7"
NOTES:
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Volume XI - California, 1973.
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CO
AND
WATER CONSERVATION DISTR
100-YEAR — 24-HOU
PRECIPITATION
DRAWN BY
CHECKED BY
DATE DRAWN
APPROVED
CHIEF ENGINEER R.E. NO. 8822
DATE

CVAR_10362

Appendix B – Rational Method Hydrology

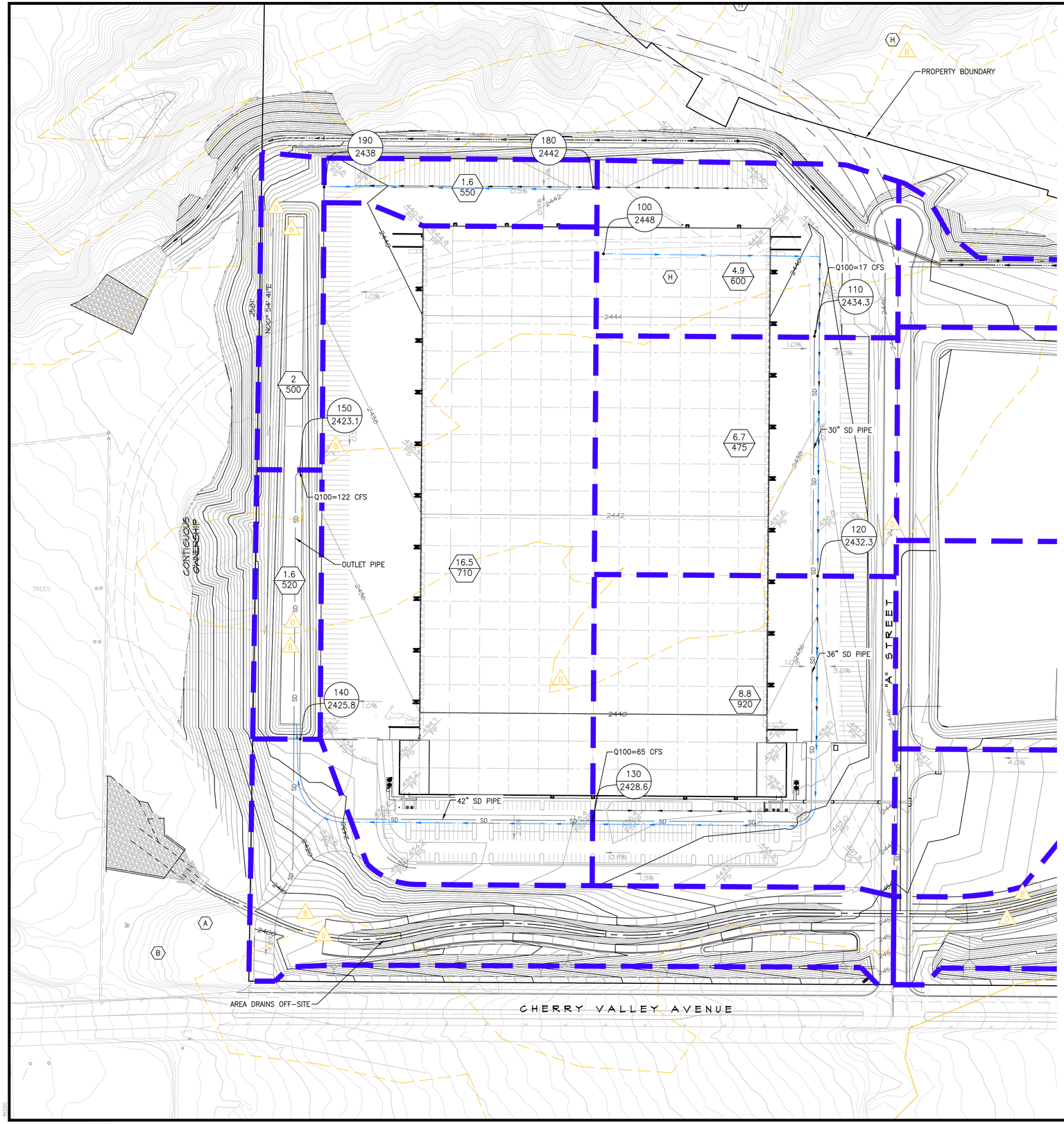
DMA A – Rational Method Exhibit

DMA A – Rational Method Results

DMA B – Rational Method Exhibit

DMA B – Rational Method Results

RATIONAL METHOD
DMA A
EXHIBIT



LEGEND

- DRAINAGE BOUNDARY
- DRAINAGE PATH
- SOIL TYPE BOUNDARY
- 100 / 2448 — NODE NUMBER, ELEVATION (FT)
- 4.9 / 600 — DRAINAGE SUBAREA (AC), DRAINAGE LENGTH (FT)

N W E S

100' 0 100'

COUNTY OF RIVERSIDE
SHOPOFF REALTY - SAN GORGONIO CROSSINGS

HYDROLOGY MAP
RATIONAL METHOD
PROPOSED CONDITIONS
DMA A

SCALE: N/A	ALBERT A. WEBB ASSOCIATES	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	W.O. WO
DATE: DATE			SHEET DMA A
DESIGNED: DESIGNER			OF # SHEETS
CHECKED: CHECKER			
PLN CK REF: REF			DWG. NO.
F.B. F.B.			

CVAR_10365

RATIONAL METHOD
DMA A
PROPOSED CONDITIONS
100-YEAR

```
              Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
        Rational Hydrology Study        Date: 10/22/14  File:A.out
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------

14-0213 SHOPOFF
RATIONAL METHOD HYDROLOGY
PROPOSED CONDITIONS
100-YEAR
DMA A
Program License Serial Number 4010

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [ Calimesa ] area used.
10 year storm 10 minute intensity =  2.440(In/Hr)
10 year storm 60 minute intensity =  0.910(In/Hr)
100 year storm 10 minute intensity =  3.620(In/Hr)
100 year storm 60 minute intensity =  1.350(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.350(In/Hr)
Slope of intensity duration curve = 0.5500




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      100.000 to Point/Station      110.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   600.000(Ft.)
Top (of initial area) elevation =  2448.000(Ft.)
Bottom (of initial area) elevation =  2434.300(Ft.)
Difference in elevation =    13.700(Ft.)
Slope =    0.02283  s(percent)=       2.28
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.254 min.
Rainfall intensity =      4.019(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.800
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.200
RI index for soil(AMC 2)  =  59.80
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =     17.402(CFS)
Total initial stream area =        4.900(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      120.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2434.300(Ft.)
Downstream point/station elevation =  2432.300(Ft.)
Pipe length  =   475.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.402(CFS)
```

```
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    17.402(CFS)
Normal flow depth in pipe =   19.41(In.)
Flow top width inside pipe =   24.28(In.)
Critical Depth =   17.49(In.)
Pipe flow velocity =      5.69(Ft/s)
Travel time through pipe =    1.39 min.
Time of concentration (TC) =     9.65 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      120.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.889
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.200
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.800
RI index for soil(AMC 2)  =  71.20
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =     9.65 min.
Rainfall intensity =      3.689(In/Hr) for a   100.0 year storm
Subarea runoff =     21.963(CFS) for      6.700(Ac.)
Total runoff =     39.364(CFS)        Total area =      11.600(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      120.000 to Point/Station      130.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2432.300(Ft.)
Downstream point/station elevation =  2428.600(Ft.)
Pipe length  =   920.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    39.364(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    39.364(CFS)
Normal flow depth in pipe =   27.47(In.)
Flow top width inside pipe =   30.62(In.)
Critical Depth =   24.50(In.)
Pipe flow velocity =      6.80(Ft/s)
Travel time through pipe =    2.26 min.
Time of concentration (TC) =    11.90 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      120.000 to Point/Station      130.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.887
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.200
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.800
RI index for soil(AMC 2)  =  71.20
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    11.90 min.
Rainfall intensity =      3.287(In/Hr) for a   100.0 year storm
Subarea runoff =     25.662(CFS) for      8.800(Ac.)
Total runoff =     65.027(CFS)        Total area =      20.400(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      130.000 to Point/Station      140.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2428.600(Ft.)
Downstream point/station elevation =  2425.800(Ft.)
Pipe length  =   710.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    65.027(CFS)
Nearest computed pipe diameter  =     42.00(In.)
Calculated individual pipe flow  =    65.027(CFS)
Normal flow depth in pipe =   35.63(In.)
```

```
Flow top width inside pipe =   30.14(In.)
Critical Depth =   30.35(In.)
Pipe flow velocity =      7.47(Ft/s)
Travel time through pipe =    1.58 min.
Time of concentration (TC) =    13.49 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      130.000 to Point/Station      140.000
**** SUBAREA FLOW ADDITION ****
_____________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.882
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.600
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.400
RI index for soil(AMC 2)  =  63.60
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    13.49 min.
Rainfall intensity =      3.068(In/Hr) for a   100.0 year storm
Subarea runoff =     44.656(CFS) for     16.500(Ac.)
Total runoff =    109.683(CFS)        Total area =      36.900(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      140.000 to Point/Station      150.000
**** IMPROVED CHANNEL TRAVEL TIME ****
_____________________________________________________________________________
Upstream point elevation =  2425.800(Ft.)
Downstream point elevation =  2423.100(Ft.)
Channel length thru subarea  =   520.000(Ft.)
Channel base width     =    4.000(Ft.)
Slope or 'Z' of left channel bank =   0.000
Slope or 'Z' of right channel bank =   0.000
Estimated mean flow rate at midpoint of channel =    111.551(CFS)
Manning's 'N'    = 0.030
Maximum depth of channel  =    2.000(Ft.)
Flow(q) thru subarea =    111.551(CFS)
Depth of flow =   4.530(Ft.), Average velocity =   6.156(Ft/s)
!!Warning: Water is above left or right bank elevations
Channel flow top width =    4.000(Ft.)
Flow Velocity =    6.16(Ft/s)
Travel time  =    1.41 min.
Time of concentration =   14.89 min.

Sub-Channel No. 1 Critical depth =      2.875(Ft.)
  '     '       '     Critical flow top width =      4.000(Ft.)
  '     '       '     Critical flow velocity=    9.700(Ft/s)
  '     '       '     Critical flow area =     11.500(Sq.Ft)

ERROR - Channel depth exceeds maximum allowable depth
 Adding area flow to channel
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.789
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.500
RI index for soil(AMC 2)  =  76.50
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.905(In/Hr) for a   100.0 year storm
Subarea runoff =      3.667(CFS) for      1.600(Ac.)
Total runoff =    113.350(CFS)        Total area =      38.500(Ac.)
Depth of flow =   4.574(Ft.), Average velocity =   6.196(Ft/s)
!!Warning: Water is above left or right bank elevations
ERROR - Channel depth exceeds maximum allowable depth

Sub-Channel No. 1 Critical depth =      2.938(Ft.)
  '     '       '     Critical flow top width =      4.000(Ft.)
  '     '       '     Critical flow velocity=    9.646(Ft/s)
  '     '       '     Critical flow area =     11.750(Sq.Ft)
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      150.000 to Point/Station      150.000
**** CONFLUENCE OF MINOR STREAMS ****
____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     38.500(Ac.)
Runoff from this stream =    113.350(CFS)
Time of concentration =   14.89 min.
Rainfall intensity =     2.905(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      180.000 to Point/Station      190.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
Initial area flow distance =   550.000(Ft.)
Top (of initial area) elevation =  2442.000(Ft.)
Bottom (of initial area) elevation =  2438.000(Ft.)
Difference in elevation =     4.000(Ft.)
Slope =    0.00727  s(percent)=       0.73
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.021 min.
Rainfall intensity =      3.612(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.882
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.800
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.200
RI index for soil(AMC 2)  =  59.80
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      5.099(CFS)
Total initial stream area =        1.600(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      190.000 to Point/Station      150.000
**** IMPROVED CHANNEL TRAVEL TIME ****
____________________________________________________________________________
Upstream point elevation =  2438.000(Ft.)
Downstream point elevation =  2423.100(Ft.)
Channel length thru subarea  =   500.000(Ft.)
Channel base width     =    4.000(Ft.)
Slope or 'Z' of left channel bank =   0.000
Slope or 'Z' of right channel bank =   0.000
Estimated mean flow rate at midpoint of channel =      7.640(CFS)
Manning's 'N'    = 0.030
Maximum depth of channel  =    2.000(Ft.)
Flow(q) thru subarea =      7.640(CFS)
Depth of flow =   0.441(Ft.), Average velocity =   4.335(Ft/s)
Channel flow top width =    4.000(Ft.)
Flow Velocity =    4.34(Ft/s)
Travel time  =    1.92 min.
Time of concentration =   11.94 min.

Sub-Channel No. 1 Critical depth =      0.484(Ft.)
  '     '       '     Critical flow top width =      4.000(Ft.)
  '     '       '     Critical flow velocity=    3.943(Ft/s)
  '     '       '     Critical flow area =      1.938(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.761
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      3.280(In/Hr) for a   100.0 year storm
Subarea runoff =      4.993(CFS) for      2.000(Ac.)
Total runoff =     10.091(CFS)        Total area =       3.600(Ac.)
Depth of flow =   0.528(Ft.), Average velocity =   4.778(Ft/s)
```
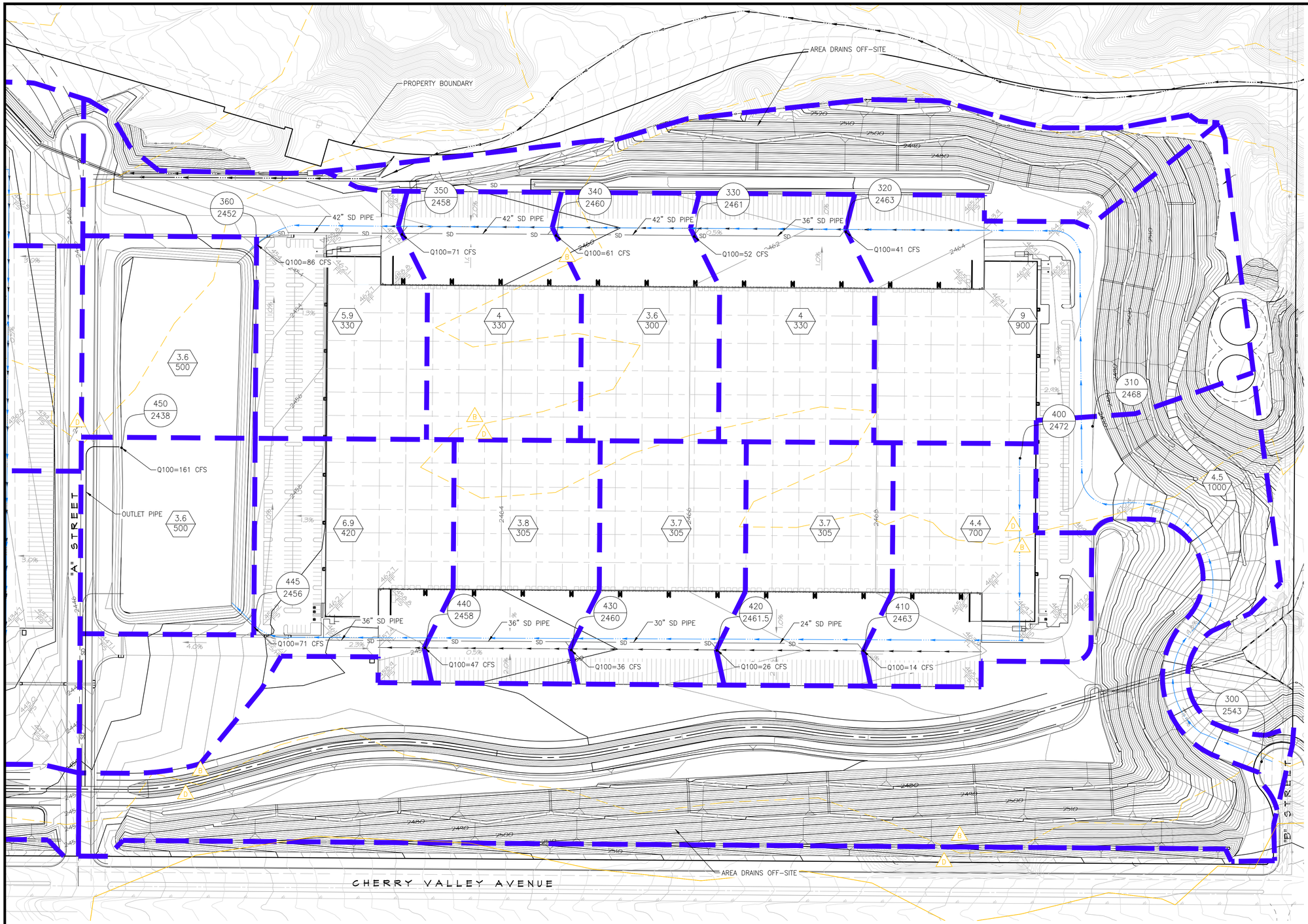

```
Sub-Channel No. 1 Critical depth =      0.586(Ft.)
  '     '       '     Critical flow top width =      4.000(Ft.)
  '     '       '     Critical flow velocity=    4.306(Ft/s)
  '     '       '     Critical flow area =      2.344(Sq.Ft)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      150.000 to Point/Station      150.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      3.600(Ac.)
Runoff from this stream =     10.091(CFS)
Time of concentration =   11.94 min.
Rainfall intensity =     3.280(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1      113.350     14.89                2.905
2       10.091     11.94                3.280
Largest stream flow has longer time of concentration
Qp =    113.350 + sum of
          Qb         Ia/Ib
          10.091 *    0.886 =      8.938
Qp =    122.287

Total of 2 streams to confluence:
Flow rates before confluence point:
     113.350      10.091
Area of streams before confluence:
       38.500        3.600
Results of confluence:
Total flow rate =    122.287(CFS)
Time of concentration =    14.893 min.
Effective stream area after confluence =     42.100(Ac.)
End of computations, total study area =           42.10 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.177
Area averaged RI index number =  66.6
```

RATIONAL METHOD
DMA B
EXHIBIT



LEGEND

- DRAINAGE BOUNDARY
- DRAINAGE PATH
- SOIL TYPE BOUNDARY
- 400 / 2472 — NODE NUMBER / ELEVATION (FT)
- 9 / 900 — DRAINAGE SUBAREA (AC) / DRAINAGE LENGTH (FT)

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W E
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100' 0 100'

COUNTY OF RIVERSIDE
SHOPOFF REALTY - SAN GORGONIO CROSSINGS

HYDROLOGY MAP
RATIONAL METHOD
PROPOSED CONDITIONS
DMA B

SCALE:	ALBERT A. WEBB ASSOCIATES ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	W.O. WO
DATE: DATE		SHEET DMA B
DESIGNED: DESIGNER		OF # SHEETS
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RATIONAL METHOD
DMA B
PROPOSED CONDITIONS
100-YEAR

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
Rational Hydrology Study Date: 10/22/14 File:B.out

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

14-0212 SHOPOFF
RATIONAL METHOD HYDROLOGY
PROPOSED CONDITIONS
100-YEAR
DMA B

Program License Serial Number 4010

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Calimesa] area used.
10 year storm 10 minute intensity = 2.440(In/Hr)
10 year storm 60 minute intensity = 0.910(In/Hr)
100 year storm 10 minute intensity = 3.620(In/Hr)
100 year storm 60 minute intensity = 1.350(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.350(In/Hr)
Slope of intensity duration curve = 0.5500

++
Process from Point/Station 300.000 to Point/Station 310.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 1000.000(Ft.)
Top (of initial area) elevation = 2543.000(Ft.)
Bottom (of initial area) elevation = 2468.000(Ft.)
Difference in elevation = 75.000(Ft.)
Slope = 0.07500 s(percent)= 7.50
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 7.982 min.
Rainfall intensity = 4.094(In/Hr) for a 100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.887
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.500
RI index for soil(AMC 2) = 65.50
Pervious area fraction = 0.100; Impervious fraction = 0.900
Initial subarea runoff = 16.701(CFS)
Total initial stream area = 4.600(Ac.)
Pervious area fraction = 0.100

++
Process from Point/Station 310.000 to Point/Station 320.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****

Top of street segment elevation = 2468.000(Ft.)
End of street segment elevation = 2463.000(Ft.)
Length of street segment = 900.000(Ft.)

```
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  20.000(Ft.)
Distance from crown to crossfall grade break  =  10.000(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [2] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.025
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     29.045(CFS)
Depth of flow =   0.580(Ft.), Average velocity =   2.728(Ft/s)
Warning: depth of flow exceeds top of curb
Note:  depth of flow exceeds top of street crown.
Distance that curb overflow reaches into property =    3.21(Ft.)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  20.000(Ft.)
Flow velocity =   2.73(Ft/s)
Travel time =    5.50 min.     TC =   13.48  min.
 Adding area flow to street
COMMERCIAL subarea type
Runoff Coefficient = 0.889
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  75.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      3.069(In/Hr) for a   100.0 year storm
Subarea runoff =     24.542(CFS) for      9.000(Ac.)
Total runoff =     41.244(CFS)        Total area =      13.600(Ac.)
Street flow at end of street =     41.244(CFS)
Half street flow at end of street =     20.622(CFS)
Depth of flow =   0.642(Ft.), Average velocity =   3.016(Ft/s)
Warning: depth of flow exceeds top of curb
Note:  depth of flow exceeds top of street crown.
Distance that curb overflow reaches into property =    5.68(Ft.)
Flow width (from curb towards crown)=  20.000(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      320.000 to Point/Station      330.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2463.000(Ft.)
Downstream point/station elevation =  2461.000(Ft.)
Pipe length  =   330.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    41.244(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    41.244(CFS)
Normal flow depth in pipe =   27.09(In.)
Flow top width inside pipe =   25.30(In.)
Critical Depth =   25.60(In.)
Pipe flow velocity =      7.90(Ft/s)
Travel time through pipe =    0.70 min.
Time of concentration (TC) =    14.18 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      320.000 to Point/Station      330.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.887
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.100
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.900
RI index for soil(AMC 2)  =  73.10
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    14.18 min.
Rainfall intensity =      2.985(In/Hr) for a   100.0 year storm
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Subarea runoff =     10.594(CFS) for      4.000(Ac.)
Total runoff =     51.838(CFS)       Total area =      17.600(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      330.000 to Point/Station      340.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2461.000(Ft.)
Downstream point/station elevation =  2460.000(Ft.)
Pipe length  =   300.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    51.838(CFS)
Nearest computed pipe diameter  =     42.00(In.)
Calculated individual pipe flow  =    51.838(CFS)
Normal flow depth in pipe =   30.94(In.)
Flow top width inside pipe =   37.00(In.)
Critical Depth =   27.00(In.)
Pipe flow velocity =      6.83(Ft/s)
Travel time through pipe =    0.73 min.
Time of concentration (TC) =    14.91 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      330.000 to Point/Station      340.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.886
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.200
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.800
RI index for soil(AMC 2)  =  71.20
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    14.91 min.
Rainfall intensity =      2.903(In/Hr) for a   100.0 year storm
Subarea runoff =      9.260(CFS) for      3.600(Ac.)
Total runoff =     61.097(CFS)       Total area =      21.200(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      340.000 to Point/Station      350.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2460.000(Ft.)
Downstream point/station elevation =  2458.000(Ft.)
Pipe length  =   330.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    61.097(CFS)
Nearest computed pipe diameter  =     39.00(In.)
Calculated individual pipe flow  =    61.097(CFS)
Normal flow depth in pipe =   30.38(In.)
Flow top width inside pipe =   32.37(In.)
Critical Depth =   29.92(In.)
Pipe flow velocity =      8.82(Ft/s)
Travel time through pipe =    0.62 min.
Time of concentration (TC) =    15.53 min.


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Process from Point/Station      340.000 to Point/Station      350.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.880
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.700
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.300
RI index for soil(AMC 2)  =  61.70
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    15.53 min.
Rainfall intensity =      2.839(In/Hr) for a   100.0 year storm
Subarea runoff =      9.989(CFS) for      4.000(Ac.)
Total runoff =     71.086(CFS)       Total area =      25.200(Ac.)
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Process from Point/Station      350.000 to Point/Station      360.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2458.000(Ft.)
Downstream point/station elevation =  2452.000(Ft.)
Pipe length  =   330.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    71.086(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    71.086(CFS)
Normal flow depth in pipe =   26.95(In.)
Flow top width inside pipe =   25.53(In.)
Critical Depth =   31.20(In.)
Pipe flow velocity =     13.69(Ft/s)
Travel time through pipe =    0.40 min.
Time of concentration (TC) =    15.94 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      350.000 to Point/Station      360.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.875
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  56.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    15.94 min.
Rainfall intensity =      2.799(In/Hr) for a   100.0 year storm
Subarea runoff =     14.458(CFS) for      5.900(Ac.)
Total runoff =     85.544(CFS)       Total area =      31.100(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      360.000 to Point/Station      450.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  2452.000(Ft.)
Downstream point elevation =  2438.000(Ft.)
Channel length thru subarea  =   500.000(Ft.)
Channel base width    =    4.000(Ft.)
Slope or 'Z' of left channel bank =   0.000
Slope or 'Z' of right channel bank =   0.000
Estimated mean flow rate at midpoint of channel =     89.192(CFS)
Manning's 'N'    = 0.030
Maximum depth of channel  =    2.000(Ft.)
Flow(q) thru subarea =     89.192(CFS)
Depth of flow =   2.389(Ft.), Average velocity =   9.332(Ft/s)
!!Warning: Water is above left or right bank elevations
Channel flow top width =    4.000(Ft.)
Flow Velocity =    9.33(Ft/s)
Travel time  =    0.89 min.
Time of concentration =   16.83 min.

Sub-Channel No. 1 Critical depth =      2.500(Ft.)
  '     '       '     Critical flow top width =      4.000(Ft.)
  '     '       '     Critical flow velocity=    8.919(Ft/s)
  '     '       '     Critical flow area =     10.000(Sq.Ft)

ERROR - Channel depth exceeds maximum allowable depth
 Adding area flow to channel
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.737
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.716(In/Hr) for a   100.0 year storm
Subarea runoff =      7.211(CFS) for      3.600(Ac.)
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Total runoff =     92.755(CFS)        Total area =      34.700(Ac.)
Depth of flow =   2.446(Ft.), Average velocity =   9.479(Ft/s)
!!Warning: Water is above left or right bank elevations
ERROR - Channel depth exceeds maximum allowable depth

Sub-Channel No. 1 Critical depth =      2.563(Ft.)
  '     '       '     Critical flow top width =      4.000(Ft.)
  '     '       '     Critical flow velocity=    9.049(Ft/s)
  '     '       '     Critical flow area =     10.250(Sq.Ft)



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      450.000 to Point/Station      450.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     34.700(Ac.)
Runoff from this stream =     92.755(CFS)
Time of concentration =   16.83 min.
Rainfall intensity =     2.716(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      400.000 to Point/Station      410.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   700.000(Ft.)
Top (of initial area) elevation =  2472.000(Ft.)
Bottom (of initial area) elevation =  2463.000(Ft.)
Difference in elevation =     9.000(Ft.)
Slope =    0.01286  s(percent)=       1.29
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.848 min.
Rainfall intensity =      3.647(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.600
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.400
RI index for soil(AMC 2)  =  63.60
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =     14.194(CFS)
Total initial stream area =        4.400(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      410.000 to Point/Station      420.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2463.000(Ft.)
Downstream point/station elevation =  2461.500(Ft.)
Pipe length  =   305.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.194(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    14.194(CFS)
Normal flow depth in pipe =   17.72(In.)
Flow top width inside pipe =   21.10(In.)
Critical Depth =   16.29(In.)
Pipe flow velocity =      5.71(Ft/s)
Travel time through pipe =    0.89 min.
Time of concentration (TC) =    10.74 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      410.000 to Point/Station      420.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.883
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.700
Decimal fraction soil group C = 0.000
```

```
Decimal fraction soil group D = 0.300
RI index for soil(AMC 2)  =  61.70
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    10.74 min.
Rainfall intensity =      3.478(In/Hr) for a   100.0 year storm
Subarea runoff =     11.359(CFS) for      3.700(Ac.)
Total runoff =     25.553(CFS)        Total area =       8.100(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      420.000 to Point/Station      430.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2461.500(Ft.)
Downstream point/station elevation =  2460.000(Ft.)
Pipe length  =   305.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    25.553(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    25.553(CFS)
Normal flow depth in pipe =   22.01(In.)
Flow top width inside pipe =   26.52(In.)
Critical Depth =   20.67(In.)
Pipe flow velocity =      6.62(Ft/s)
Travel time through pipe =    0.77 min.
Time of concentration (TC) =    11.51 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      420.000 to Point/Station      430.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  56.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    11.51 min.
Rainfall intensity =      3.348(In/Hr) for a   100.0 year storm
Subarea runoff =     10.884(CFS) for      3.700(Ac.)
Total runoff =     36.437(CFS)        Total area =      11.800(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      430.000 to Point/Station      440.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2460.000(Ft.)
Downstream point/station elevation =  2458.000(Ft.)
Pipe length  =   305.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    36.437(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    36.437(CFS)
Normal flow depth in pipe =   23.39(In.)
Flow top width inside pipe =   29.98(In.)
Critical Depth =   24.11(In.)
Pipe flow velocity =      8.09(Ft/s)
Travel time through pipe =    0.63 min.
Time of concentration (TC) =    12.13 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      430.000 to Point/Station      440.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.881
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.800
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.200
RI index for soil(AMC 2)  =  59.80
Pervious area fraction =  0.100; Impervious fraction =  0.900
```

```
Time of concentration =    12.13 min.
Rainfall intensity =      3.252(In/Hr) for a   100.0 year storm
Subarea runoff =     10.881(CFS) for      3.800(Ac.)
Total runoff =     47.317(CFS)        Total area =      15.600(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      440.000 to Point/Station      445.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2458.000(Ft.)
Downstream point/station elevation =  2456.000(Ft.)
Pipe length  =   420.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    47.317(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    47.317(CFS)
Normal flow depth in pipe =   30.47(In.)
Flow top width inside pipe =   25.96(In.)
Critical Depth =   26.89(In.)
Pipe flow velocity =      7.41(Ft/s)
Travel time through pipe =    0.94 min.
Time of concentration (TC) =    13.08 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      440.000 to Point/Station      445.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.877
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  56.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    13.08 min.
Rainfall intensity =      3.120(In/Hr) for a   100.0 year storm
Subarea runoff =     18.891(CFS) for      6.900(Ac.)
Total runoff =     66.208(CFS)        Total area =      22.500(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      445.000 to Point/Station      450.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  2456.000(Ft.)
Downstream point elevation =  2438.000(Ft.)
Channel length thru subarea  =   500.000(Ft.)
Channel base width     =    4.000(Ft.)
Slope or 'Z' of left channel bank =   0.000
Slope or 'Z' of right channel bank =   0.000
Estimated mean flow rate at midpoint of channel =     70.990(CFS)
Manning's 'N'    = 0.030
Maximum depth of channel  =    2.000(Ft.)
Flow(q) thru subarea =     70.990(CFS)
Depth of flow =   1.916(Ft.), Average velocity =   9.263(Ft/s)
Channel flow top width =    4.000(Ft.)
Flow Velocity =    9.26(Ft/s)
Travel time  =    0.90 min.
Time of concentration =   13.98 min.

Sub-Channel No. 1 Critical depth =      2.125(Ft.)
  '     '       '     Critical flow top width =      4.000(Ft.)
  '     '       '     Critical flow velocity=    8.352(Ft/s)
  '     '       '     Critical flow area =      8.500(Sq.Ft)

 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.877
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  56.00
```

```
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      3.008(In/Hr) for a   100.0 year storm
Subarea runoff =      9.495(CFS) for      3.600(Ac.)
Total runoff =     75.703(CFS)        Total area =      26.100(Ac.)
Depth of flow =   2.008(Ft.), Average velocity =   9.424(Ft/s)
!!Warning: Water is above left or right bank elevations
ERROR - Channel depth exceeds maximum allowable depth

Sub-Channel No. 1 Critical depth =      2.219(Ft.)
  '     '       '     Critical flow top width =      4.000(Ft.)
  '     '       '     Critical flow velocity=    8.530(Ft/s)
  '     '       '     Critical flow area =      8.875(Sq.Ft)



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      450.000 to Point/Station      450.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     26.100(Ac.)
Runoff from this stream =     75.703(CFS)
Time of concentration =   13.98 min.
Rainfall intensity =     3.008(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                  (In/Hr)


1       92.755     16.83                2.716
2       75.703     13.98                3.008
Largest stream flow has longer time of concentration
Qp =     92.755 + sum of
          Qb         Ia/Ib
          75.703 *    0.903 =     68.357
Qp =    161.112

Total of 2 streams to confluence:
Flow rates before confluence point:
      92.755      75.703
Area of streams before confluence:
       34.700       26.100
Results of confluence:
Total flow rate =    161.112(CFS)
Time of concentration =    16.829 min.
Effective stream area after confluence =     60.800(Ac.)
End of computations, total study area =           60.80 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.153
Area averaged RI index number =  63.8
```

Appendix C – Unit Hydrograph Hydrology

DMA A – Unit Hydrograph Exhibit

DMA A – Unit Hydrograph Input Data

DMA A – Hydrology Results Summary

DMA A – Unit Hydrographs

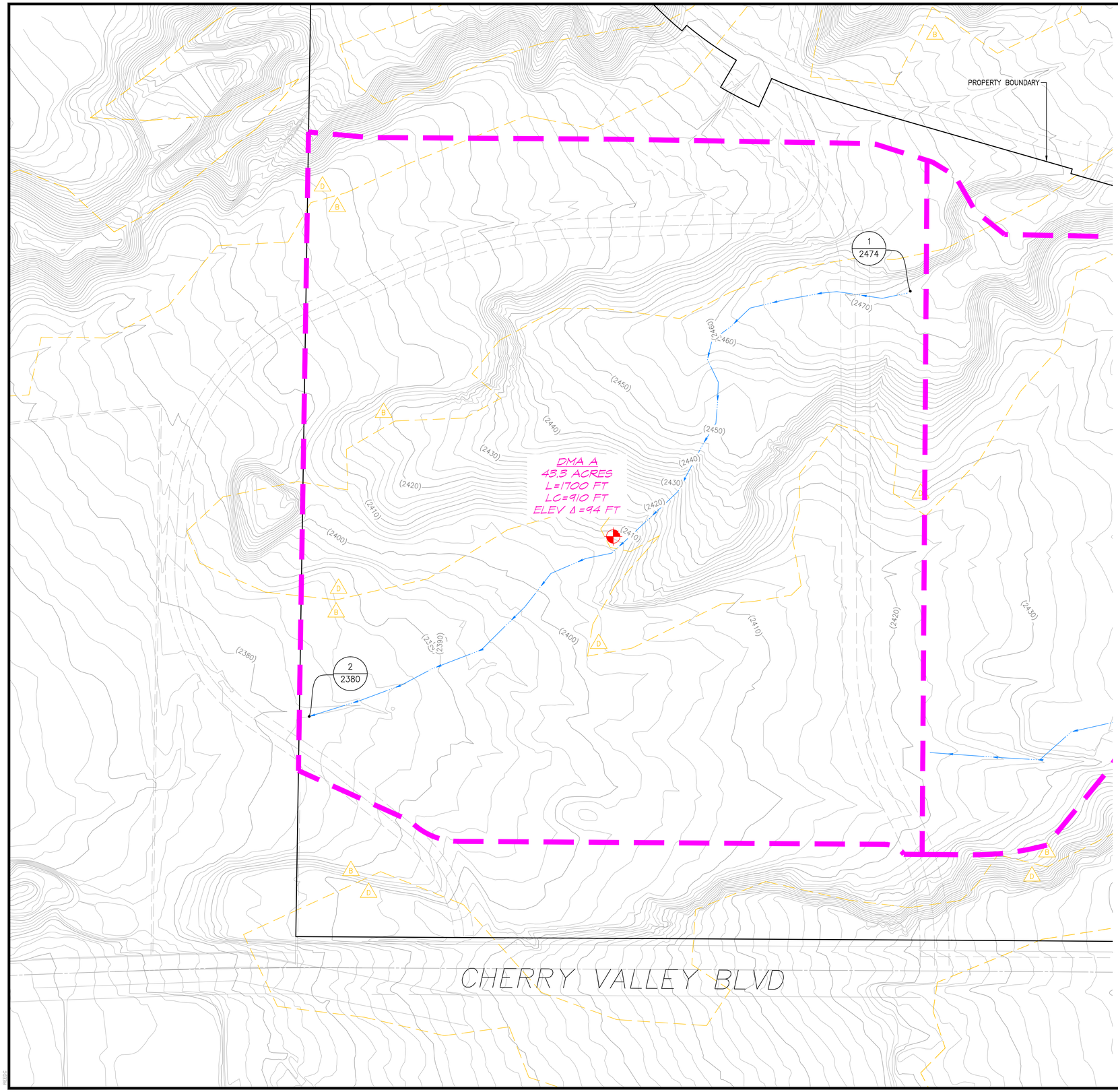
DMA B – Unit Hydrograph Exhibit

DMA B – Unit Hydrograph Input Data

DMA B – Hydrology Results Summary

DMA B – Unit Hydrographs

UNIT HYDROGRAPH EXHIBIT
DMA A



LEGEND

- DRAINAGE BOUNDARY
- DRAINAGE PATH
- SOIL TYPE BOUNDARY
- CENTROID
- 1 / 2474 — NODE NUMBER / ELEVATION (FT)

N
W WEBB E
S

100' 0 100'

COUNTY OF RIVERSIDE
SAN GORGONIO CROSSINGS

HYDROLOGY MAP
UNIT HYDROGRAPH
EXISTING CONDITIONS
DMA A

SCALE: N/A	ALBERT A. WEBB ASSOCIATES	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	W.O. WO
DATE: DATE			SHEET DMA A
DESIGNED: DESIGNER			OF # SHEETS
CHECKED: CHECKER			DWG. NO.
PLN CK REF: REF			
F.B. F.B.			

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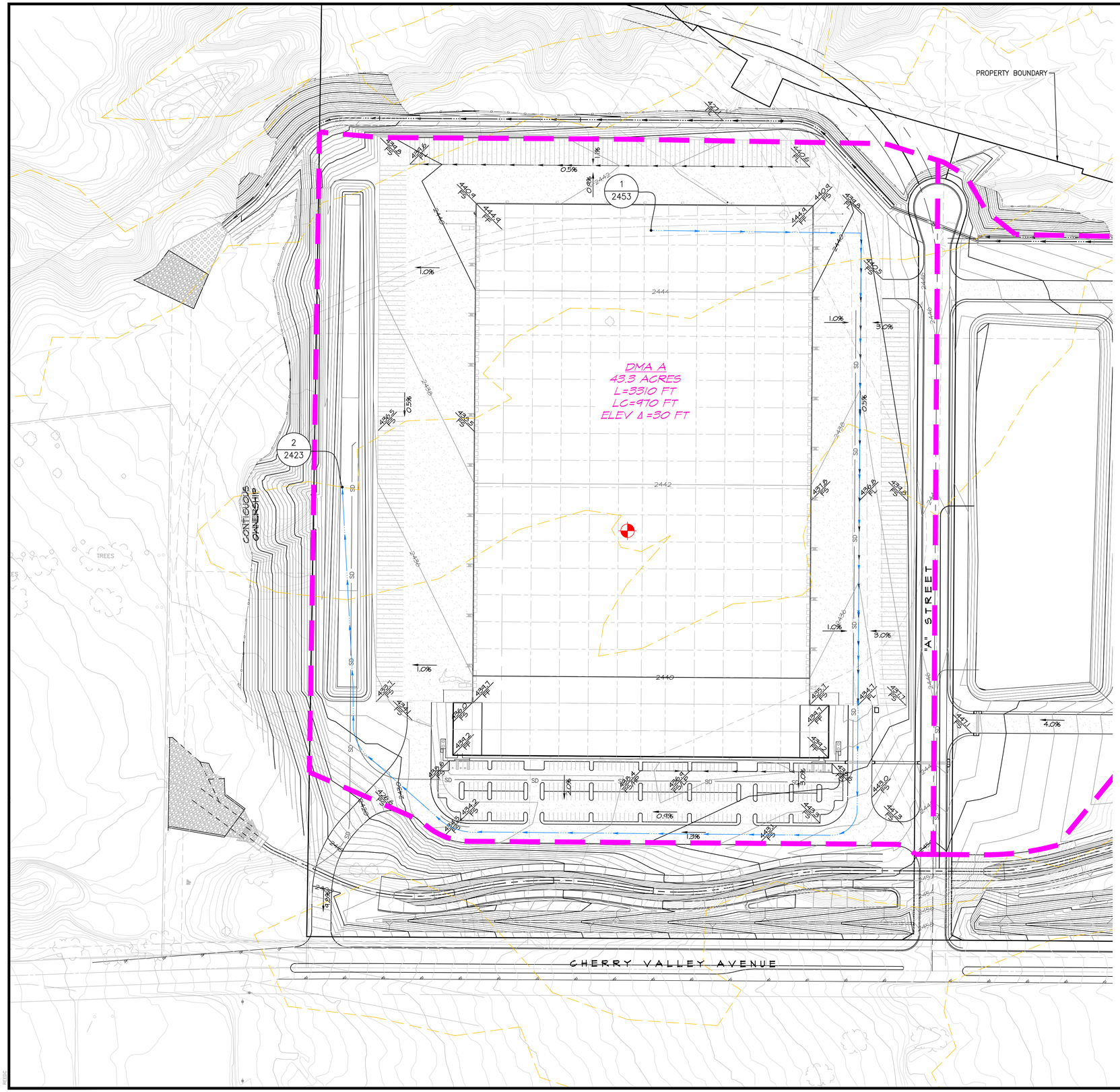
CVAR_10385



LEGEND

- DRAINAGE BOUNDARY
- DRAINAGE PATH
- SOIL TYPE BOUNDARY
- CENTROID
- NODE NUMBER / ELEVATION (FT)

N
W E
S

100' 0 100'

COUNTY OF RIVERSIDE
SHOPOFF REALTY - SAN GORGONIO CROSSINGS

HYDROLOGY MAP
UNIT HYDROGRAPH
PROPOSED CONDITIONS
DMA A

SCALE:	ALBERT A. WEBB ASSOCIATES ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	W.O. WO
DATE: DATE		SHEET DMA A
DESIGNED: DESIGNER		OF # SHEETS
CHECKED: CHECKER		DWG. NO.
PLN CK REF: REF		
F.B. F.B.		

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UNIT HYDROGRAPH INPUT DATA
DMA A

14-0213 Date 10/21/2014
SHOPOFF

UNIT HYDROGRAPH INPUT DATA - BASIN A

		EXISTING		DEVELOPED	
TOTAL AREA		43.30		43.30	
L (ft)		1700.00		3310.00	
Lc (ft)		910.00		970.00	
DIFFERENCE IN ELEV. (ft)		94.00		30.00	
AVERAGE "N"		0.040		0.015	
LOW LOSS RATE		0.85 (2YR)-0.9 (10YR)		0.18	
AMC		1(2YR) 2 (10YR)			
AMC II SOIL GROUP BREAKDOWN (Plate C-1.18)					
	A				
	B	0.68		0.68	
	C				
	D	0.32		0.32	
% IMPERVIOUS		0		90	
RI		88	*	62	**
FOOTHILL					

* Barren (Rockland, eroded, graded land) (Plate D-5.5 Runoff Index Numbers)

A	78
B	86
C	91
D	93

** Urban Residential Landscaping (Plate D-5.5 Runoff Index Numbers)

A	32
B	56
C	69
D	75

2-YR 1-HR	0.57
100-YR 1-HR	1.30
2-YR 3-HR	1.00
100-YR 3-HR	2.20
2-YR 6-HR	1.40
100-YR 6-HR	3.20
2-YR 24-HR	2.60
100-YR 24-HR	7.00

HYDROLOGY RESULTS SUMMARY
DMA A

UNIT HYDROGRAPH/ROUTING SUMMARY

14-0213 SHOPOFF

ON-SITE CONDITIONS

DMA A

Treated Area:	43.3	AC
Vbmp:	94,432	CF
Vbmp Depth:	3.4	FT

		EXISTING CONDITIONS		PROPOSED CONDITIONS		PROPOSED CONDITIONS		
		Unit Hydrograph		Unit Hydrograph		Basin Routing		
STORM YEAR	DURATION HOUR	Peak Flow CFS	Total Volume Ac-Ft	Peak Flow CFS	Total Volume Ac-Ft	Routed Peak CFS	Basin Volume Ac.Ft.	Basin Depth Ft.
2	24	3.9	1.0	10.8	5.5	3.8	3.5	4.4
10	24	20.4	7.5	21.5	10.9	15.0	4.6	5.2
100	1			146.1	4.4	9.9	4.1	4.8
100	3			81.9	7.0	33.5	5.6	5.8
100	6			74.9	9.7	50.1	6.2	6.2
100	24			38.3	19.0	33.9	5.6	5.8

UNIT HYDROGRAPH
DMA A
EXISTING CONDITIONS
2-YEAR 24-HOUR

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004, Version 7.0
Study date 10/21/14 File: AEX242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

14-0213 SHOPOFF
UNIT HYDROGRAPH
DMA A
EXISTING CONDITIONS
2-YEAR 24-HOUR

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 43.30(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.30(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 1700.00(Ft.)
Length along longest watercourse measured to centroid = 910.00(Ft.)
Length along longest watercourse = 0.322 Mi.
Length along longest watercourse measured to centroid = 0.172 Mi.
Difference in elevation = 94.00(Ft.)
Slope along watercourse = 291.9529 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.109 Hr.
Lag time = 6.53 Min.
25% of lag time = 1.63 Min.
40% of lag time = 2.61 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
43.30	2.60	112.58

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
43.30	7.00	303.10

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 2.600(In)
Area Averaged 100-Year Rainfall = 7.000(In)

Point rain (area averaged) = 2.600(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 2.600(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
43.300	88.00	0.000

Total Area Entered = 43.30(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
88.0	74.8	0.305	0.000	0.305	1.000	0.305
					Sum (F) =	0.305

Area averaged mean soil loss (F) (In/Hr) = 0.305
Minimum soil loss rate ((In/Hr)) = 0.153
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	76.587	8.338	3.639
2	0.167	153.173	46.146	20.137
3	0.250	229.760	25.949	11.324
4	0.333	306.346	10.129	4.420
5	0.417	382.933	5.283	2.305
6	0.500	459.519	2.278	0.994
7	0.583	536.106	0.821	0.358
8	0.667	612.692	0.549	0.240
9	0.750	689.279	0.390	0.170
10	0.833	765.865	0.116	0.051
			Sum = 100.000 Sum=	43.638

Unit Time	(Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.021	0.541	0.019	0.00
2	0.17	0.07	0.021	0.539	0.019	0.00
3	0.25	0.07	0.021	0.537	0.019	0.00
4	0.33	0.10	0.031	0.535	0.028	0.00
5	0.42	0.10	0.031	0.533	0.028	0.00
6	0.50	0.10	0.031	0.531	0.028	0.00
7	0.58	0.10	0.031	0.529	0.028	0.00
8	0.67	0.10	0.031	0.527	0.028	0.00
9	0.75	0.10	0.031	0.525	0.028	0.00
10	0.83	0.13	0.042	0.523	0.037	0.00
11	0.92	0.13	0.042	0.521	0.037	0.00
12	1.00	0.13	0.042	0.519	0.037	0.00
13	1.08	0.10	0.031	0.516	0.028	0.00
14	1.17	0.10	0.031	0.514	0.028	0.00
15	1.25	0.10	0.031	0.512	0.028	0.00
16	1.33	0.10	0.031	0.510	0.028	0.00
17	1.42	0.10	0.031	0.508	0.028	0.00
18	1.50	0.10	0.031	0.506	0.028	0.00
19	1.58	0.10	0.031	0.504	0.028	0.00
20	1.67	0.10	0.031	0.502	0.028	0.00
21	1.75	0.10	0.031	0.500	0.028	0.00
22	1.83	0.13	0.042	0.498	0.037	0.00
23	1.92	0.13	0.042	0.496	0.037	0.00
24	2.00	0.13	0.042	0.494	0.037	0.00
25	2.08	0.13	0.042	0.492	0.037	0.00
26	2.17	0.13	0.042	0.490	0.037	0.00
27	2.25	0.13	0.042	0.488	0.037	0.00
28	2.33	0.13	0.042	0.486	0.037	0.00
29	2.42	0.13	0.042	0.484	0.037	0.00
30	2.50	0.13	0.042	0.482	0.037	0.00
31	2.58	0.17	0.052	0.480	0.047	0.01
32	2.67	0.17	0.052	0.478	0.047	0.01
33	2.75	0.17	0.052	0.476	0.047	0.01
34	2.83	0.17	0.052	0.474	0.047	0.01
35	2.92	0.17	0.052	0.472	0.047	0.01
36	3.00	0.17	0.052	0.470	0.047	0.01
37	3.08	0.17	0.052	0.469	0.047	0.01
38	3.17	0.17	0.052	0.467	0.047	0.01
39	3.25	0.17	0.052	0.465	0.047	0.01
40	3.33	0.17	0.052	0.463	0.047	0.01
41	3.42	0.17	0.052	0.461	0.047	0.01

42	3.50	0.17	0.052	0.459	0.047	0.01
43	3.58	0.17	0.052	0.457	0.047	0.01
44	3.67	0.17	0.052	0.455	0.047	0.01
45	3.75	0.17	0.052	0.453	0.047	0.01
46	3.83	0.20	0.062	0.451	0.056	0.01
47	3.92	0.20	0.062	0.449	0.056	0.01
48	4.00	0.20	0.062	0.447	0.056	0.01
49	4.08	0.20	0.062	0.445	0.056	0.01
50	4.17	0.20	0.062	0.444	0.056	0.01
51	4.25	0.20	0.062	0.442	0.056	0.01
52	4.33	0.23	0.073	0.440	0.066	0.01
53	4.42	0.23	0.073	0.438	0.066	0.01
54	4.50	0.23	0.073	0.436	0.066	0.01
55	4.58	0.23	0.073	0.434	0.066	0.01
56	4.67	0.23	0.073	0.432	0.066	0.01
57	4.75	0.23	0.073	0.430	0.066	0.01
58	4.83	0.27	0.083	0.429	0.075	0.01
59	4.92	0.27	0.083	0.427	0.075	0.01
60	5.00	0.27	0.083	0.425	0.075	0.01
61	5.08	0.20	0.062	0.423	0.056	0.01
62	5.17	0.20	0.062	0.421	0.056	0.01
63	5.25	0.20	0.062	0.419	0.056	0.01
64	5.33	0.23	0.073	0.418	0.066	0.01
65	5.42	0.23	0.073	0.416	0.066	0.01
66	5.50	0.23	0.073	0.414	0.066	0.01
67	5.58	0.27	0.083	0.412	0.075	0.01
68	5.67	0.27	0.083	0.410	0.075	0.01
69	5.75	0.27	0.083	0.408	0.075	0.01
70	5.83	0.27	0.083	0.407	0.075	0.01
71	5.92	0.27	0.083	0.405	0.075	0.01
72	6.00	0.27	0.083	0.403	0.075	0.01
73	6.08	0.30	0.094	0.401	0.084	0.01
74	6.17	0.30	0.094	0.399	0.084	0.01
75	6.25	0.30	0.094	0.398	0.084	0.01
76	6.33	0.30	0.094	0.396	0.084	0.01
77	6.42	0.30	0.094	0.394	0.084	0.01
78	6.50	0.30	0.094	0.392	0.084	0.01
79	6.58	0.33	0.104	0.391	0.094	0.01
80	6.67	0.33	0.104	0.389	0.094	0.01
81	6.75	0.33	0.104	0.387	0.094	0.01
82	6.83	0.33	0.104	0.385	0.094	0.01
83	6.92	0.33	0.104	0.384	0.094	0.01
84	7.00	0.33	0.104	0.382	0.094	0.01
85	7.08	0.33	0.104	0.380	0.094	0.01
86	7.17	0.33	0.104	0.378	0.094	0.01
87	7.25	0.33	0.104	0.377	0.094	0.01
88	7.33	0.37	0.114	0.375	0.103	0.01
89	7.42	0.37	0.114	0.373	0.103	0.01
90	7.50	0.37	0.114	0.372	0.103	0.01
91	7.58	0.40	0.125	0.370	0.112	0.01
92	7.67	0.40	0.125	0.368	0.112	0.01
93	7.75	0.40	0.125	0.366	0.112	0.01
94	7.83	0.43	0.135	0.365	0.122	0.01
95	7.92	0.43	0.135	0.363	0.122	0.01
96	8.00	0.43	0.135	0.361	0.122	0.01
97	8.08	0.50	0.156	0.360	0.140	0.02
98	8.17	0.50	0.156	0.358	0.140	0.02
99	8.25	0.50	0.156	0.356	0.140	0.02
100	8.33	0.50	0.156	0.355	0.140	0.02
101	8.42	0.50	0.156	0.353	0.140	0.02
102	8.50	0.50	0.156	0.351	0.140	0.02
103	8.58	0.53	0.166	0.350	0.150	0.02
104	8.67	0.53	0.166	0.348	0.150	0.02
105	8.75	0.53	0.166	0.346	0.150	0.02
106	8.83	0.57	0.177	0.345	0.159	0.02
107	8.92	0.57	0.177	0.343	0.159	0.02
108	9.00	0.57	0.177	0.342	0.159	0.02
109	9.08	0.63	0.198	0.340	0.178	0.02
110	9.17	0.63	0.198	0.338	0.178	0.02
111	9.25	0.63	0.198	0.337	0.178	0.02
112	9.33	0.67	0.208	0.335	0.187	0.02
113	9.42	0.67	0.208	0.334	0.187	0.02
114	9.50	0.67	0.208	0.332	0.187	0.02
115	9.58	0.70	0.218	0.330	0.197	0.02
116	9.67	0.70	0.218	0.329	0.197	0.02

117	9.75	0.70	0.218	0.327	0.197	0.02
118	9.83	0.73	0.229	0.326	0.206	0.02
119	9.92	0.73	0.229	0.324	0.206	0.02
120	10.00	0.73	0.229	0.322	0.206	0.02
121	10.08	0.50	0.156	0.321	0.140	0.02
122	10.17	0.50	0.156	0.319	0.140	0.02
123	10.25	0.50	0.156	0.318	0.140	0.02
124	10.33	0.50	0.156	0.316	0.140	0.02
125	10.42	0.50	0.156	0.315	0.140	0.02
126	10.50	0.50	0.156	0.313	0.140	0.02
127	10.58	0.67	0.208	0.312	0.187	0.02
128	10.67	0.67	0.208	0.310	0.187	0.02
129	10.75	0.67	0.208	0.309	0.187	0.02
130	10.83	0.67	0.208	0.307	0.187	0.02
131	10.92	0.67	0.208	0.306	0.187	0.02
132	11.00	0.67	0.208	0.304	0.187	0.02
133	11.08	0.63	0.198	0.303	0.178	0.02
134	11.17	0.63	0.198	0.301	0.178	0.02
135	11.25	0.63	0.198	0.300	0.178	0.02
136	11.33	0.63	0.198	0.298	0.178	0.02
137	11.42	0.63	0.198	0.297	0.178	0.02
138	11.50	0.63	0.198	0.295	0.178	0.02
139	11.58	0.57	0.177	0.294	0.159	0.02
140	11.67	0.57	0.177	0.292	0.159	0.02
141	11.75	0.57	0.177	0.291	0.159	0.02
142	11.83	0.60	0.187	0.289	0.168	0.02
143	11.92	0.60	0.187	0.288	0.168	0.02
144	12.00	0.60	0.187	0.286	0.168	0.02
145	12.08	0.83	0.260	0.285	0.234	0.03
146	12.17	0.83	0.260	0.284	0.234	0.03
147	12.25	0.83	0.260	0.282	0.234	0.03
148	12.33	0.87	0.270	0.281	0.243	0.03
149	12.42	0.87	0.270	0.279	0.243	0.03
150	12.50	0.87	0.270	0.278	0.243	0.03
151	12.58	0.93	0.291	0.277	---	0.01
152	12.67	0.93	0.291	0.275	---	0.02
153	12.75	0.93	0.291	0.274	---	0.02
154	12.83	0.97	0.302	0.272	---	0.03
155	12.92	0.97	0.302	0.271	---	0.03
156	13.00	0.97	0.302	0.270	---	0.03
157	13.08	1.13	0.354	0.268	---	0.09
158	13.17	1.13	0.354	0.267	---	0.09
159	13.25	1.13	0.354	0.266	---	0.09
160	13.33	1.13	0.354	0.264	---	0.09
161	13.42	1.13	0.354	0.263	---	0.09
162	13.50	1.13	0.354	0.262	---	0.09
163	13.58	0.77	0.239	0.260	0.215	0.02
164	13.67	0.77	0.239	0.259	0.215	0.02
165	13.75	0.77	0.239	0.258	0.215	0.02
166	13.83	0.77	0.239	0.256	0.215	0.02
167	13.92	0.77	0.239	0.255	0.215	0.02
168	14.00	0.77	0.239	0.254	0.215	0.02
169	14.08	0.90	0.281	0.252	---	0.03
170	14.17	0.90	0.281	0.251	---	0.03
171	14.25	0.90	0.281	0.250	---	0.03
172	14.33	0.87	0.270	0.249	---	0.02
173	14.42	0.87	0.270	0.247	---	0.02
174	14.50	0.87	0.270	0.246	---	0.02
175	14.58	0.87	0.270	0.245	---	0.03
176	14.67	0.87	0.270	0.243	---	0.03
177	14.75	0.87	0.270	0.242	---	0.03
178	14.83	0.83	0.260	0.241	---	0.02
179	14.92	0.83	0.260	0.240	---	0.02
180	15.00	0.83	0.260	0.238	---	0.02
181	15.08	0.80	0.250	0.237	---	0.01
182	15.17	0.80	0.250	0.236	---	0.01
183	15.25	0.80	0.250	0.235	---	0.01
184	15.33	0.77	0.239	0.234	---	0.01
185	15.42	0.77	0.239	0.232	---	0.01
186	15.50	0.77	0.239	0.231	---	0.01
187	15.58	0.63	0.198	0.230	0.178	0.02
188	15.67	0.63	0.198	0.229	0.178	0.02
189	15.75	0.63	0.198	0.228	0.178	0.02
190	15.83	0.63	0.198	0.227	0.178	0.02
191	15.92	0.63	0.198	0.225	0.178	0.02

192	16.00	0.63	0.198	0.224	0.178	0.02
193	16.08	0.13	0.042	0.223	0.037	0.00
194	16.17	0.13	0.042	0.222	0.037	0.00
195	16.25	0.13	0.042	0.221	0.037	0.00
196	16.33	0.13	0.042	0.220	0.037	0.00
197	16.42	0.13	0.042	0.219	0.037	0.00
198	16.50	0.13	0.042	0.217	0.037	0.00
199	16.58	0.10	0.031	0.216	0.028	0.00
200	16.67	0.10	0.031	0.215	0.028	0.00
201	16.75	0.10	0.031	0.214	0.028	0.00
202	16.83	0.10	0.031	0.213	0.028	0.00
203	16.92	0.10	0.031	0.212	0.028	0.00
204	17.00	0.10	0.031	0.211	0.028	0.00
205	17.08	0.17	0.052	0.210	0.047	0.01
206	17.17	0.17	0.052	0.209	0.047	0.01
207	17.25	0.17	0.052	0.208	0.047	0.01
208	17.33	0.17	0.052	0.207	0.047	0.01
209	17.42	0.17	0.052	0.206	0.047	0.01
210	17.50	0.17	0.052	0.205	0.047	0.01
211	17.58	0.17	0.052	0.204	0.047	0.01
212	17.67	0.17	0.052	0.203	0.047	0.01
213	17.75	0.17	0.052	0.202	0.047	0.01
214	17.83	0.13	0.042	0.201	0.037	0.00
215	17.92	0.13	0.042	0.200	0.037	0.00
216	18.00	0.13	0.042	0.199	0.037	0.00
217	18.08	0.13	0.042	0.198	0.037	0.00
218	18.17	0.13	0.042	0.197	0.037	0.00
219	18.25	0.13	0.042	0.196	0.037	0.00
220	18.33	0.13	0.042	0.195	0.037	0.00
221	18.42	0.13	0.042	0.194	0.037	0.00
222	18.50	0.13	0.042	0.193	0.037	0.00
223	18.58	0.10	0.031	0.192	0.028	0.00
224	18.67	0.10	0.031	0.191	0.028	0.00
225	18.75	0.10	0.031	0.190	0.028	0.00
226	18.83	0.07	0.021	0.189	0.019	0.00
227	18.92	0.07	0.021	0.188	0.019	0.00
228	19.00	0.07	0.021	0.187	0.019	0.00
229	19.08	0.10	0.031	0.186	0.028	0.00
230	19.17	0.10	0.031	0.186	0.028	0.00
231	19.25	0.10	0.031	0.185	0.028	0.00
232	19.33	0.13	0.042	0.184	0.037	0.00
233	19.42	0.13	0.042	0.183	0.037	0.00
234	19.50	0.13	0.042	0.182	0.037	0.00
235	19.58	0.10	0.031	0.181	0.028	0.00
236	19.67	0.10	0.031	0.181	0.028	0.00
237	19.75	0.10	0.031	0.180	0.028	0.00
238	19.83	0.07	0.021	0.179	0.019	0.00
239	19.92	0.07	0.021	0.178	0.019	0.00
240	20.00	0.07	0.021	0.177	0.019	0.00
241	20.08	0.10	0.031	0.177	0.028	0.00
242	20.17	0.10	0.031	0.176	0.028	0.00
243	20.25	0.10	0.031	0.175	0.028	0.00
244	20.33	0.10	0.031	0.174	0.028	0.00
245	20.42	0.10	0.031	0.173	0.028	0.00
246	20.50	0.10	0.031	0.173	0.028	0.00
247	20.58	0.10	0.031	0.172	0.028	0.00
248	20.67	0.10	0.031	0.171	0.028	0.00
249	20.75	0.10	0.031	0.171	0.028	0.00
250	20.83	0.07	0.021	0.170	0.019	0.00
251	20.92	0.07	0.021	0.169	0.019	0.00
252	21.00	0.07	0.021	0.169	0.019	0.00
253	21.08	0.10	0.031	0.168	0.028	0.00
254	21.17	0.10	0.031	0.167	0.028	0.00
255	21.25	0.10	0.031	0.167	0.028	0.00
256	21.33	0.07	0.021	0.166	0.019	0.00
257	21.42	0.07	0.021	0.165	0.019	0.00
258	21.50	0.07	0.021	0.165	0.019	0.00
259	21.58	0.10	0.031	0.164	0.028	0.00
260	21.67	0.10	0.031	0.163	0.028	0.00
261	21.75	0.10	0.031	0.163	0.028	0.00
262	21.83	0.07	0.021	0.162	0.019	0.00
263	21.92	0.07	0.021	0.162	0.019	0.00
264	22.00	0.07	0.021	0.161	0.019	0.00
265	22.08	0.10	0.031	0.161	0.028	0.00
266	22.17	0.10	0.031	0.160	0.028	0.00

267	22.25	0.10	0.031	0.160	0.028	0.00
268	22.33	0.07	0.021	0.159	0.019	0.00
269	22.42	0.07	0.021	0.159	0.019	0.00
270	22.50	0.07	0.021	0.158	0.019	0.00
271	22.58	0.07	0.021	0.158	0.019	0.00
272	22.67	0.07	0.021	0.157	0.019	0.00
273	22.75	0.07	0.021	0.157	0.019	0.00
274	22.83	0.07	0.021	0.156	0.019	0.00
275	22.92	0.07	0.021	0.156	0.019	0.00
276	23.00	0.07	0.021	0.156	0.019	0.00
277	23.08	0.07	0.021	0.155	0.019	0.00
278	23.17	0.07	0.021	0.155	0.019	0.00
279	23.25	0.07	0.021	0.155	0.019	0.00
280	23.33	0.07	0.021	0.154	0.019	0.00
281	23.42	0.07	0.021	0.154	0.019	0.00
282	23.50	0.07	0.021	0.154	0.019	0.00
283	23.58	0.07	0.021	0.154	0.019	0.00
284	23.67	0.07	0.021	0.153	0.019	0.00
285	23.75	0.07	0.021	0.153	0.019	0.00
286	23.83	0.07	0.021	0.153	0.019	0.00
287	23.92	0.07	0.021	0.153	0.019	0.00
288	24.00	0.07	0.021	0.153	0.019	0.00
	Sum =	100.0			Sum =	3.3

Flood volume = Effective rainfall 0.27(In)
times area 43.3(Ac.)/[(In)/(Ft.)] = 1.0(Ac.Ft)
Total soil loss = 2.33(In)
Total soil loss = 8.391(Ac.Ft)
Total rainfall = 2.60(In)
Flood volume = 43108.2 Cubic Feet
Total soil loss = 365522.6 Cubic Feet

Peak flow rate of this hydrograph = 3.873(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.01	Q	|	|	|	|
0+10	0.0004	0.05	Q	|	|	|	|
0+15	0.0009	0.07	Q	|	|	|	|
0+20	0.0015	0.09	Q	|	|	|	|
0+25	0.0023	0.11	Q	|	|	|	|
0+30	0.0031	0.13	Q	|	|	|	|
0+35	0.0040	0.13	Q	|	|	|	|
0+40	0.0049	0.13	Q	|	|	|	|
0+45	0.0059	0.14	Q	|	|	|	|
0+50	0.0068	0.14	Q	|	|	|	|
0+55	0.0079	0.16	Q	|	|	|	|
1+ 0	0.0091	0.17	Q	|	|	|	|
1+ 5	0.0103	0.17	Q	|	|	|	|
1+10	0.0114	0.15	Q	|	|	|	|
1+15	0.0124	0.14	Q	|	|	|	|
1+20	0.0134	0.14	Q	|	|	|	|
1+25	0.0143	0.14	Q	|	|	|	|
1+30	0.0152	0.14	Q	|	|	|	|
1+35	0.0162	0.14	Q	|	|	|	|
1+40	0.0171	0.14	Q	|	|	|	|
1+45	0.0181	0.14	Q	|	|	|	|
1+50	0.0190	0.14	Q	|	|	|	|
1+55	0.0201	0.16	Q	|	|	|	|
2+ 0	0.0213	0.17	Q	|	|	|	|
2+ 5	0.0226	0.18	Q	|	|	|	|
2+10	0.0238	0.18	Q	|	|	|	|
2+15	0.0250	0.18	QV	|	|	|	|
2+20	0.0263	0.18	QV	|	|	|	|
2+25	0.0275	0.18	QV	|	|	|	|
2+30	0.0288	0.18	QV	|	|	|	|
2+35	0.0301	0.19	QV	|	|	|	|
2+40	0.0315	0.21	QV	|	|	|	|
2+45	0.0330	0.22	QV	|	|	|	|

2+50	0.0345	0.22	QV	|	|	|	|
2+55	0.0361	0.23	QV	|	|	|	|
3+ 0	0.0376	0.23	QV	|	|	|	|
3+ 5	0.0392	0.23	QV	|	|	|	|
3+10	0.0407	0.23	QV	|	|	|	|
3+15	0.0423	0.23	QV	|	|	|	|
3+20	0.0439	0.23	QV	|	|	|	|
3+25	0.0454	0.23	QV	|	|	|	|
3+30	0.0470	0.23	QV	|	|	|	|
3+35	0.0486	0.23	QV	|	|	|	|
3+40	0.0501	0.23	Q V	|	|	|	|
3+45	0.0517	0.23	Q V	|	|	|	|
3+50	0.0533	0.23	Q V	|	|	|	|
3+55	0.0550	0.25	|QV	|	|	|	|
4+ 0	0.0568	0.26	|QV	|	|	|	|
4+ 5	0.0587	0.27	|QV	|	|	|	|
4+10	0.0605	0.27	|QV	|	|	|	|
4+15	0.0624	0.27	|QV	|	|	|	|
4+20	0.0643	0.28	|QV	|	|	|	|
4+25	0.0664	0.30	|QV	|	|	|	|
4+30	0.0685	0.31	|QV	|	|	|	|
4+35	0.0706	0.31	|QV	|	|	|	|
4+40	0.0728	0.32	|QV	|	|	|	|
4+45	0.0750	0.32	|Q V	|	|	|	|
4+50	0.0772	0.32	|Q V	|	|	|	|
4+55	0.0796	0.34	|Q V	|	|	|	|
5+ 0	0.0820	0.35	|Q V	|	|	|	|
5+ 5	0.0844	0.35	|Q V	|	|	|	|
5+10	0.0866	0.31	|Q V	|	|	|	|
5+15	0.0886	0.29	|Q V	|	|	|	|
5+20	0.0905	0.28	|Q V	|	|	|	|
5+25	0.0926	0.30	|Q V	|	|	|	|
5+30	0.0947	0.31	|Q V	|	|	|	|
5+35	0.0969	0.32	|Q V	|	|	|	|
5+40	0.0993	0.34	|Q V	|	|	|	|
5+45	0.1017	0.35	|Q V	|	|	|	|
5+50	0.1042	0.36	|Q V	|	|	|	|
5+55	0.1067	0.36	|Q V	|	|	|	|
6+ 0	0.1092	0.36	|Q V	|	|	|	|
6+ 5	0.1117	0.37	|Q V	|	|	|	|
6+10	0.1144	0.39	|Q V	|	|	|	|
6+15	0.1171	0.40	|Q V	|	|	|	|
6+20	0.1199	0.40	|Q V	|	|	|	|
6+25	0.1227	0.41	|Q V	|	|	|	|
6+30	0.1255	0.41	|Q V	|	|	|	|
6+35	0.1283	0.41	|Q V	|	|	|	|
6+40	0.1313	0.43	|Q V	|	|	|	|
6+45	0.1344	0.45	|Q V	|	|	|	|
6+50	0.1375	0.45	|Q V	|	|	|	|
6+55	0.1406	0.45	|Q V	|	|	|	|
7+ 0	0.1437	0.45	|Q V	|	|	|	|
7+ 5	0.1468	0.45	|Q V	|	|	|	|
7+10	0.1500	0.45	|Q V	|	|	|	|
7+15	0.1531	0.45	|Q V	|	|	|	|
7+20	0.1563	0.46	|Q V	|	|	|	|
7+25	0.1595	0.48	|Q V	|	|	|	|
7+30	0.1629	0.49	|Q V	|	|	|	|
7+35	0.1664	0.50	|Q V	|	|	|	|
7+40	0.1700	0.52	| Q V	|	|	|	|
7+45	0.1736	0.54	| Q V	|	|	|	|
7+50	0.1774	0.54	| Q V	|	|	|	|
7+55	0.1813	0.57	| Q V	|	|	|	|
8+ 0	0.1853	0.58	| Q V	|	|	|	|
8+ 5	0.1894	0.59	| Q V	|	|	|	|
8+10	0.1938	0.64	| Q V	|	|	|	|
8+15	0.1983	0.66	| Q V	|	|	|	|
8+20	0.2030	0.67	| Q V	|	|	|	|
8+25	0.2076	0.68	| Q V	|	|	|	|
8+30	0.2123	0.68	| Q V	|	|	|	|
8+35	0.2170	0.68	| Q V	|	|	|	|
8+40	0.2219	0.71	| Q V	|	|	|	|
8+45	0.2268	0.72	| Q V|	|	|	|	|
8+50	0.2318	0.73	| Q V|	|	|	|	|
8+55	0.2370	0.75	| Q V|	|	|	|	|
9+ 0	0.2422	0.76	| Q V|	|	|	|	|

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 9+ 5       0.2476      0.77  |  Q      V         |         |         |
 9+10       0.2532      0.82  |  Q      V         |         |         |
 9+15       0.2590      0.84  |  Q      V         |         |         |
 9+20       0.2649      0.86  |  Q      V         |         |         |
 9+25       0.2710      0.88  |  Q      V         |         |         |
 9+30       0.2772      0.90  |  Q      |V        |         |         |
 9+35       0.2834      0.91  |  Q      |V        |         |         |
 9+40       0.2898      0.93  |  Q      |V        |         |         |
 9+45       0.2963      0.94  |  Q      |V        |         |         |
 9+50       0.3029      0.95  |  Q      | V       |         |         |
 9+55       0.3096      0.98  |  Q      | V       |         |         |
10+ 0       0.3164      0.99  |  Q      | V       |         |         |
10+ 5       0.3231      0.97  |  Q      |  V      |         |         |
10+10       0.3288      0.82  |  Q      |  V      |         |         |
10+15       0.3339      0.74  | Q       |  V      |         |         |
10+20       0.3388      0.71  | Q       |  V      |         |         |
10+25       0.3435      0.69  | Q       |  V      |         |         |
10+30       0.3483      0.69  | Q       |   V     |         |         |
10+35       0.3531      0.70  | Q       |   V     |         |         |
10+40       0.3587      0.81  |  Q      |   V     |         |         |
10+45       0.3646      0.86  |  Q      |   V     |         |         |
10+50       0.3707      0.89  |  Q      |   V     |         |         |
10+55       0.3769      0.90  |  Q      |    V    |         |         |
11+ 0       0.3831      0.90  |  Q      |    V    |         |         |
11+ 5       0.3894      0.90  |  Q      |    V    |         |         |
11+10       0.3954      0.88  |  Q      |    V    |         |         |
11+15       0.4014      0.87  |  Q      |     V   |         |         |
11+20       0.4074      0.87  |  Q      |     V   |         |         |
11+25       0.4134      0.86  |  Q      |     V   |         |         |
11+30       0.4193      0.86  |  Q      |     V   |         |         |
11+35       0.4252      0.86  |  Q      |      V  |         |         |
11+40       0.4308      0.81  |  Q      |      V  |         |         |
11+45       0.4362      0.79  |  Q      |      V  |         |         |
11+50       0.4416      0.78  |  Q      |      V  |         |         |
11+55       0.4472      0.80  |  Q      |       V |         |         |
12+ 0       0.4527      0.81  |  Q      |       V |         |         |
12+ 5       0.4585      0.84  |  Q      |       V |         |         |
12+10       0.4653      0.99  |  Q      |       V |         |         |
12+15       0.4727      1.07  |   Q     |        V|         |         |
12+20       0.4803      1.11  |   Q     |        V|         |         |
12+25       0.4882      1.15  |   Q     |        V|         |         |
12+30       0.4963      1.17  |   Q     |         V         |         |
12+35       0.5040      1.13  |   Q     |         V         |         |
12+40       0.5101      0.89  |  Q      |         V         |         |
12+45       0.5155      0.78  |  Q      |         V         |         |
12+50       0.5211      0.81  |  Q      |         |V        |         |
12+55       0.5283      1.05  |   Q     |         |V        |         |
13+ 0       0.5367      1.21  |   Q     |         |V        |         |
13+ 5       0.5470      1.50  |     Q   |         | V       |         |
13+10       0.5652      2.63  |         Q         | V       |         |
13+15       0.5878      3.29  |         |  Q      |  V      |         |
13+20       0.6124      3.58  |         |   Q     |   V     |         |
13+25       0.6383      3.76  |         |    Q    |    V    |         |
13+30       0.6650      3.87  |         |    Q    |     V   |         |
13+35       0.6905      3.70  |         |   Q     |      V  |         |
13+40       0.7068      2.36  |        Q|         |       V |         |
13+45       0.7179      1.61  |     Q   |         |        V|         |
13+50       0.7270      1.32  |    Q    |         |        V|         |
13+55       0.7350      1.17  |   Q     |         |        V|         |
14+ 0       0.7426      1.10  |   Q     |         |         V         |
14+ 5       0.7501      1.09  |   Q     |         |         V         |
14+10       0.7582      1.17  |   Q     |         |         V         |
14+15       0.7667      1.24  |   Q     |         |         V         |
14+20       0.7754      1.27  |    Q    |         |         |V        |
14+25       0.7831      1.12  |   Q     |         |         |V        |
14+30       0.7904      1.06  |   Q     |         |         |V        |
14+35       0.7977      1.07  |   Q     |         |         | V       |
14+40       0.8053      1.10  |   Q     |         |         | V       |
14+45       0.8132      1.14  |   Q     |         |         | V       |
14+50       0.8211      1.16  |   Q     |         |         |  V      |
14+55       0.8280      1.00  |  Q      |         |         |  V      |
15+ 0       0.8344      0.93  |  Q      |         |         |  V      |
15+ 5       0.8407      0.90  |  Q      |         |         |  V      |
15+10       0.8456      0.72  | Q       |         |         |   V     |
15+15       0.8501      0.65  | Q       |         |         |   V     |
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15+20	0.8543	0.61	| Q	|	|	|	V |
15+25	0.8573	0.43	|Q	|	|	|	V |
15+30	0.8597	0.35	|Q	|	|	|	V |
15+35	0.8624	0.39	|Q	|	|	|	V |
15+40	0.8668	0.63	| Q	|	|	|	V |
15+45	0.8720	0.76	| Q	|	|	|	V |
15+50	0.8776	0.81	| Q	|	|	|	V |
15+55	0.8834	0.84	| Q	|	|	|	V |
16+ 0	0.8893	0.85	| Q	|	|	|	V |
16+ 5	0.8948	0.80	| Q	|	|	|	V |
16+10	0.8982	0.49	|Q	|	|	|	V |
16+15	0.9003	0.31	|Q	|	|	|	V |
16+20	0.9020	0.25	Q	|	|	|	V |
16+25	0.9035	0.21	Q	|	|	|	V |
16+30	0.9048	0.19	Q	|	|	|	V |
16+35	0.9061	0.19	Q	|	|	|	V |
16+40	0.9072	0.16	Q	|	|	|	V |
16+45	0.9082	0.15	Q	|	|	|	V |
16+50	0.9092	0.14	Q	|	|	|	V |
16+55	0.9101	0.14	Q	|	|	|	V |
17+ 0	0.9111	0.14	Q	|	|	|	V |
17+ 5	0.9121	0.14	Q	|	|	|	V |
17+10	0.9133	0.19	Q	|	|	|	V |
17+15	0.9148	0.21	Q	|	|	|	V |
17+20	0.9163	0.22	Q	|	|	|	V |
17+25	0.9178	0.22	Q	|	|	|	V |
17+30	0.9194	0.23	Q	|	|	|	V |
17+35	0.9209	0.23	Q	|	|	|	V |
17+40	0.9225	0.23	Q	|	|	|	V |
17+45	0.9241	0.23	Q	|	|	|	V |
17+50	0.9256	0.22	Q	|	|	|	V |
17+55	0.9270	0.20	Q	|	|	|	V |
18+ 0	0.9283	0.19	Q	|	|	|	V |
18+ 5	0.9296	0.19	Q	|	|	|	V |
18+10	0.9308	0.18	Q	|	|	|	V |
18+15	0.9321	0.18	Q	|	|	|	V |
18+20	0.9334	0.18	Q	|	|	|	V |
18+25	0.9346	0.18	Q	|	|	|	V |
18+30	0.9359	0.18	Q	|	|	|	V |
18+35	0.9371	0.18	Q	|	|	|	V |
18+40	0.9382	0.16	Q	|	|	|	V |
18+45	0.9392	0.15	Q	|	|	|	V |
18+50	0.9401	0.14	Q	|	|	|	V |
18+55	0.9409	0.11	Q	|	|	|	V |
19+ 0	0.9416	0.10	Q	|	|	|	V |
19+ 5	0.9423	0.10	Q	|	|	|	V |
19+10	0.9431	0.12	Q	|	|	|	V |
19+15	0.9440	0.13	Q	|	|	|	V |
19+20	0.9449	0.14	Q	|	|	|	V |
19+25	0.9460	0.16	Q	|	|	|	V |
19+30	0.9472	0.17	Q	|	|	|	V |
19+35	0.9484	0.17	Q	|	|	|	V |
19+40	0.9494	0.15	Q	|	|	|	V |
19+45	0.9504	0.14	Q	|	|	|	V |
19+50	0.9514	0.14	Q	|	|	|	V |
19+55	0.9521	0.11	Q	|	|	|	V |
20+ 0	0.9528	0.10	Q	|	|	|	V |
20+ 5	0.9535	0.10	Q	|	|	|	V |
20+10	0.9543	0.12	Q	|	|	|	V |
20+15	0.9552	0.13	Q	|	|	|	V |
20+20	0.9561	0.13	Q	|	|	|	V |
20+25	0.9571	0.13	Q	|	|	|	V |
20+30	0.9580	0.14	Q	|	|	|	V |
20+35	0.9589	0.14	Q	|	|	|	V |
20+40	0.9599	0.14	Q	|	|	|	V |
20+45	0.9608	0.14	Q	|	|	|	V |
20+50	0.9617	0.13	Q	|	|	|	V |
20+55	0.9625	0.11	Q	|	|	|	V |
21+ 0	0.9632	0.10	Q	|	|	|	V |
21+ 5	0.9638	0.10	Q	|	|	|	V |
21+10	0.9646	0.12	Q	|	|	|	V |
21+15	0.9655	0.13	Q	|	|	|	V|
21+20	0.9664	0.13	Q	|	|	|	V|
21+25	0.9672	0.11	Q	|	|	|	V|
21+30	0.9679	0.10	Q	|	|	|	V|

21+35	0.9685	0.10	Q	|	|	|	V|
21+40	0.9693	0.12	Q	|	|	|	V|
21+45	0.9702	0.13	Q	|	|	|	V|
21+50	0.9711	0.13	Q	|	|	|	V|
21+55	0.9719	0.11	Q	|	|	|	V|
22+ 0	0.9725	0.10	Q	|	|	|	V|
22+ 5	0.9732	0.10	Q	|	|	|	V|
22+10	0.9740	0.12	Q	|	|	|	V|
22+15	0.9749	0.13	Q	|	|	|	V|
22+20	0.9758	0.13	Q	|	|	|	V|
22+25	0.9766	0.11	Q	|	|	|	V|
22+30	0.9772	0.10	Q	|	|	|	V|
22+35	0.9779	0.09	Q	|	|	|	V|
22+40	0.9785	0.09	Q	|	|	|	V|
22+45	0.9792	0.09	Q	|	|	|	V|
22+50	0.9798	0.09	Q	|	|	|	V|
22+55	0.9804	0.09	Q	|	|	|	V|
23+ 0	0.9810	0.09	Q	|	|	|	V|
23+ 5	0.9817	0.09	Q	|	|	|	V|
23+10	0.9823	0.09	Q	|	|	|	V|
23+15	0.9829	0.09	Q	|	|	|	V|
23+20	0.9835	0.09	Q	|	|	|	V|
23+25	0.9842	0.09	Q	|	|	|	V|
23+30	0.9848	0.09	Q	|	|	|	V|
23+35	0.9854	0.09	Q	|	|	|	V|
23+40	0.9860	0.09	Q	|	|	|	V|
23+45	0.9867	0.09	Q	|	|	|	V|
23+50	0.9873	0.09	Q	|	|	|	V|
23+55	0.9879	0.09	Q	|	|	|	V|
24+ 0	0.9885	0.09	Q	|	|	|	V|
24+ 5	0.9891	0.08	Q	|	|	|	V|
24+10	0.9894	0.04	Q	|	|	|	V|
24+15	0.9895	0.02	Q	|	|	|	V|
24+20	0.9896	0.01	Q	|	|	|	V|
24+25	0.9896	0.00	Q	|	|	|	V|
24+30	0.9896	0.00	Q	|	|	|	V|
24+35	0.9896	0.00	Q	|	|	|	V|
24+40	0.9896	0.00	Q	|	|	|	V|
24+45	0.9896	0.00	Q	|	|	|	V

UNIT HYDROGRAPH
DMA A
EXISTING CONDITIONS
10-YEAR 24-HOUR

U n i t H y d r o g r a p h A n a l y s i s

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Study date 10/21/14 File: AEX2410.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

14-0213 SHOPOFF
UNIT HYDROGRAPH
DMA A
EXISTING CONDITIONS
10-YEAR 24-HOUR

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 43.30(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.30(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 1700.00(Ft.)
Length along longest watercourse measured to centroid = 910.00(Ft.)
Length along longest watercourse = 0.322 Mi.
Length along longest watercourse measured to centroid = 0.172 Mi.
Difference in elevation = 94.00(Ft.)
Slope along watercourse = 291.9529 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.109 Hr.
Lag time = 6.53 Min.
25% of lag time = 1.63 Min.
40% of lag time = 2.61 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
43.30	2.60	112.58

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
43.30	7.00	303.10

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.600(In)
Area Averaged 100-Year Rainfall = 7.000(In)

Point rain (area averaged) = 4.410(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 4.410(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
43.300	88.00	0.000

Total Area Entered = 43.30(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)

88.0	88.0	0.153	0.000	0.153	1.000	0.153
					Sum (F) =	0.153

Area averaged mean soil loss (F) (In/Hr) = 0.153
Minimum soil loss rate ((In/Hr)) = 0.076
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	76.587	8.338	3.639
2	0.167	153.173	46.146	20.137
3	0.250	229.760	25.949	11.324
4	0.333	306.346	10.129	4.420
5	0.417	382.933	5.283	2.305
6	0.500	459.519	2.278	0.994
7	0.583	536.106	0.821	0.358
8	0.667	612.692	0.549	0.240
9	0.750	689.279	0.390	0.170
10	0.833	765.865	0.116	0.051
			Sum = 100.000 Sum=	43.638

Unit Time		Pattern	Storm Rain	Loss rate(In./Hr)		Effective
	(Hr.)	Percent	(In/Hr)	Max	Low	(In/Hr)
1	0.08	0.07	0.035	0.271	0.032	0.00
2	0.17	0.07	0.035	0.270	0.032	0.00
3	0.25	0.07	0.035	0.269	0.032	0.00
4	0.33	0.10	0.053	0.268	0.048	0.01
5	0.42	0.10	0.053	0.267	0.048	0.01
6	0.50	0.10	0.053	0.266	0.048	0.01
7	0.58	0.10	0.053	0.265	0.048	0.01
8	0.67	0.10	0.053	0.264	0.048	0.01
9	0.75	0.10	0.053	0.263	0.048	0.01
10	0.83	0.13	0.071	0.262	0.064	0.01
11	0.92	0.13	0.071	0.260	0.064	0.01
12	1.00	0.13	0.071	0.259	0.064	0.01
13	1.08	0.10	0.053	0.258	0.048	0.01
14	1.17	0.10	0.053	0.257	0.048	0.01
15	1.25	0.10	0.053	0.256	0.048	0.01
16	1.33	0.10	0.053	0.255	0.048	0.01
17	1.42	0.10	0.053	0.254	0.048	0.01
18	1.50	0.10	0.053	0.253	0.048	0.01
19	1.58	0.10	0.053	0.252	0.048	0.01
20	1.67	0.10	0.053	0.251	0.048	0.01
21	1.75	0.10	0.053	0.250	0.048	0.01
22	1.83	0.13	0.071	0.249	0.064	0.01
23	1.92	0.13	0.071	0.248	0.064	0.01
24	2.00	0.13	0.071	0.247	0.064	0.01
25	2.08	0.13	0.071	0.246	0.064	0.01
26	2.17	0.13	0.071	0.245	0.064	0.01
27	2.25	0.13	0.071	0.244	0.064	0.01
28	2.33	0.13	0.071	0.243	0.064	0.01
29	2.42	0.13	0.071	0.242	0.064	0.01
30	2.50	0.13	0.071	0.241	0.064	0.01
31	2.58	0.17	0.088	0.240	0.079	0.01
32	2.67	0.17	0.088	0.239	0.079	0.01
33	2.75	0.17	0.088	0.238	0.079	0.01
34	2.83	0.17	0.088	0.237	0.079	0.01
35	2.92	0.17	0.088	0.236	0.079	0.01
36	3.00	0.17	0.088	0.235	0.079	0.01
37	3.08	0.17	0.088	0.234	0.079	0.01
38	3.17	0.17	0.088	0.233	0.079	0.01
39	3.25	0.17	0.088	0.233	0.079	0.01
40	3.33	0.17	0.088	0.232	0.079	0.01
41	3.42	0.17	0.088	0.231	0.079	0.01
42	3.50	0.17	0.088	0.230	0.079	0.01
43	3.58	0.17	0.088	0.229	0.079	0.01

44	3.67	0.17	0.088	0.228	0.079	0.01
45	3.75	0.17	0.088	0.227	0.079	0.01
46	3.83	0.20	0.106	0.226	0.095	0.01
47	3.92	0.20	0.106	0.225	0.095	0.01
48	4.00	0.20	0.106	0.224	0.095	0.01
49	4.08	0.20	0.106	0.223	0.095	0.01
50	4.17	0.20	0.106	0.222	0.095	0.01
51	4.25	0.20	0.106	0.221	0.095	0.01
52	4.33	0.23	0.123	0.220	0.111	0.01
53	4.42	0.23	0.123	0.219	0.111	0.01
54	4.50	0.23	0.123	0.218	0.111	0.01
55	4.58	0.23	0.123	0.217	0.111	0.01
56	4.67	0.23	0.123	0.216	0.111	0.01
57	4.75	0.23	0.123	0.215	0.111	0.01
58	4.83	0.27	0.141	0.214	0.127	0.01
59	4.92	0.27	0.141	0.214	0.127	0.01
60	5.00	0.27	0.141	0.213	0.127	0.01
61	5.08	0.20	0.106	0.212	0.095	0.01
62	5.17	0.20	0.106	0.211	0.095	0.01
63	5.25	0.20	0.106	0.210	0.095	0.01
64	5.33	0.23	0.123	0.209	0.111	0.01
65	5.42	0.23	0.123	0.208	0.111	0.01
66	5.50	0.23	0.123	0.207	0.111	0.01
67	5.58	0.27	0.141	0.206	0.127	0.01
68	5.67	0.27	0.141	0.205	0.127	0.01
69	5.75	0.27	0.141	0.204	0.127	0.01
70	5.83	0.27	0.141	0.203	0.127	0.01
71	5.92	0.27	0.141	0.203	0.127	0.01
72	6.00	0.27	0.141	0.202	0.127	0.01
73	6.08	0.30	0.159	0.201	0.143	0.02
74	6.17	0.30	0.159	0.200	0.143	0.02
75	6.25	0.30	0.159	0.199	0.143	0.02
76	6.33	0.30	0.159	0.198	0.143	0.02
77	6.42	0.30	0.159	0.197	0.143	0.02
78	6.50	0.30	0.159	0.196	0.143	0.02
79	6.58	0.33	0.176	0.195	0.159	0.02
80	6.67	0.33	0.176	0.195	0.159	0.02
81	6.75	0.33	0.176	0.194	0.159	0.02
82	6.83	0.33	0.176	0.193	0.159	0.02
83	6.92	0.33	0.176	0.192	0.159	0.02
84	7.00	0.33	0.176	0.191	0.159	0.02
85	7.08	0.33	0.176	0.190	0.159	0.02
86	7.17	0.33	0.176	0.189	0.159	0.02
87	7.25	0.33	0.176	0.188	0.159	0.02
88	7.33	0.37	0.194	0.188	---	0.01
89	7.42	0.37	0.194	0.187	---	0.01
90	7.50	0.37	0.194	0.186	---	0.01
91	7.58	0.40	0.212	0.185	---	0.03
92	7.67	0.40	0.212	0.184	---	0.03
93	7.75	0.40	0.212	0.183	---	0.03
94	7.83	0.43	0.229	0.183	---	0.05
95	7.92	0.43	0.229	0.182	---	0.05
96	8.00	0.43	0.229	0.181	---	0.05
97	8.08	0.50	0.265	0.180	---	0.08
98	8.17	0.50	0.265	0.179	---	0.09
99	8.25	0.50	0.265	0.178	---	0.09
100	8.33	0.50	0.265	0.177	---	0.09
101	8.42	0.50	0.265	0.177	---	0.09
102	8.50	0.50	0.265	0.176	---	0.09
103	8.58	0.53	0.282	0.175	---	0.11
104	8.67	0.53	0.282	0.174	---	0.11
105	8.75	0.53	0.282	0.173	---	0.11
106	8.83	0.57	0.300	0.173	---	0.13
107	8.92	0.57	0.300	0.172	---	0.13
108	9.00	0.57	0.300	0.171	---	0.13
109	9.08	0.63	0.335	0.170	---	0.17
110	9.17	0.63	0.335	0.169	---	0.17
111	9.25	0.63	0.335	0.168	---	0.17
112	9.33	0.67	0.353	0.168	---	0.19
113	9.42	0.67	0.353	0.167	---	0.19
114	9.50	0.67	0.353	0.166	---	0.19
115	9.58	0.70	0.370	0.165	---	0.21
116	9.67	0.70	0.370	0.165	---	0.21
117	9.75	0.70	0.370	0.164	---	0.21
118	9.83	0.73	0.388	0.163	---	0.23

119	9.92	0.73	0.388	0.162	---	0.23
120	10.00	0.73	0.388	0.161	---	0.23
121	10.08	0.50	0.265	0.161	---	0.10
122	10.17	0.50	0.265	0.160	---	0.10
123	10.25	0.50	0.265	0.159	---	0.11
124	10.33	0.50	0.265	0.158	---	0.11
125	10.42	0.50	0.265	0.157	---	0.11
126	10.50	0.50	0.265	0.157	---	0.11
127	10.58	0.67	0.353	0.156	---	0.20
128	10.67	0.67	0.353	0.155	---	0.20
129	10.75	0.67	0.353	0.154	---	0.20
130	10.83	0.67	0.353	0.154	---	0.20
131	10.92	0.67	0.353	0.153	---	0.20
132	11.00	0.67	0.353	0.152	---	0.20
133	11.08	0.63	0.335	0.151	---	0.18
134	11.17	0.63	0.335	0.151	---	0.18
135	11.25	0.63	0.335	0.150	---	0.19
136	11.33	0.63	0.335	0.149	---	0.19
137	11.42	0.63	0.335	0.148	---	0.19
138	11.50	0.63	0.335	0.148	---	0.19
139	11.58	0.57	0.300	0.147	---	0.15
140	11.67	0.57	0.300	0.146	---	0.15
141	11.75	0.57	0.300	0.146	---	0.15
142	11.83	0.60	0.318	0.145	---	0.17
143	11.92	0.60	0.318	0.144	---	0.17
144	12.00	0.60	0.318	0.143	---	0.17
145	12.08	0.83	0.441	0.143	---	0.30
146	12.17	0.83	0.441	0.142	---	0.30
147	12.25	0.83	0.441	0.141	---	0.30
148	12.33	0.87	0.459	0.141	---	0.32
149	12.42	0.87	0.459	0.140	---	0.32
150	12.50	0.87	0.459	0.139	---	0.32
151	12.58	0.93	0.494	0.138	---	0.36
152	12.67	0.93	0.494	0.138	---	0.36
153	12.75	0.93	0.494	0.137	---	0.36
154	12.83	0.97	0.512	0.136	---	0.38
155	12.92	0.97	0.512	0.136	---	0.38
156	13.00	0.97	0.512	0.135	---	0.38
157	13.08	1.13	0.600	0.134	---	0.47
158	13.17	1.13	0.600	0.134	---	0.47
159	13.25	1.13	0.600	0.133	---	0.47
160	13.33	1.13	0.600	0.132	---	0.47
161	13.42	1.13	0.600	0.132	---	0.47
162	13.50	1.13	0.600	0.131	---	0.47
163	13.58	0.77	0.406	0.130	---	0.28
164	13.67	0.77	0.406	0.130	---	0.28
165	13.75	0.77	0.406	0.129	---	0.28
166	13.83	0.77	0.406	0.128	---	0.28
167	13.92	0.77	0.406	0.128	---	0.28
168	14.00	0.77	0.406	0.127	---	0.28
169	14.08	0.90	0.476	0.126	---	0.35
170	14.17	0.90	0.476	0.126	---	0.35
171	14.25	0.90	0.476	0.125	---	0.35
172	14.33	0.87	0.459	0.124	---	0.33
173	14.42	0.87	0.459	0.124	---	0.33
174	14.50	0.87	0.459	0.123	---	0.34
175	14.58	0.87	0.459	0.122	---	0.34
176	14.67	0.87	0.459	0.122	---	0.34
177	14.75	0.87	0.459	0.121	---	0.34
178	14.83	0.83	0.441	0.121	---	0.32
179	14.92	0.83	0.441	0.120	---	0.32
180	15.00	0.83	0.441	0.119	---	0.32
181	15.08	0.80	0.423	0.119	---	0.30
182	15.17	0.80	0.423	0.118	---	0.31
183	15.25	0.80	0.423	0.118	---	0.31
184	15.33	0.77	0.406	0.117	---	0.29
185	15.42	0.77	0.406	0.116	---	0.29
186	15.50	0.77	0.406	0.116	---	0.29
187	15.58	0.63	0.335	0.115	---	0.22
188	15.67	0.63	0.335	0.115	---	0.22
189	15.75	0.63	0.335	0.114	---	0.22
190	15.83	0.63	0.335	0.113	---	0.22
191	15.92	0.63	0.335	0.113	---	0.22
192	16.00	0.63	0.335	0.112	---	0.22
193	16.08	0.13	0.071	0.112	0.064	0.01

194	16.17	0.13	0.071	0.111	0.064	0.01
195	16.25	0.13	0.071	0.110	0.064	0.01
196	16.33	0.13	0.071	0.110	0.064	0.01
197	16.42	0.13	0.071	0.109	0.064	0.01
198	16.50	0.13	0.071	0.109	0.064	0.01
199	16.58	0.10	0.053	0.108	0.048	0.01
200	16.67	0.10	0.053	0.108	0.048	0.01
201	16.75	0.10	0.053	0.107	0.048	0.01
202	16.83	0.10	0.053	0.107	0.048	0.01
203	16.92	0.10	0.053	0.106	0.048	0.01
204	17.00	0.10	0.053	0.106	0.048	0.01
205	17.08	0.17	0.088	0.105	0.079	0.01
206	17.17	0.17	0.088	0.104	0.079	0.01
207	17.25	0.17	0.088	0.104	0.079	0.01
208	17.33	0.17	0.088	0.103	0.079	0.01
209	17.42	0.17	0.088	0.103	0.079	0.01
210	17.50	0.17	0.088	0.102	0.079	0.01
211	17.58	0.17	0.088	0.102	0.079	0.01
212	17.67	0.17	0.088	0.101	0.079	0.01
213	17.75	0.17	0.088	0.101	0.079	0.01
214	17.83	0.13	0.071	0.100	0.064	0.01
215	17.92	0.13	0.071	0.100	0.064	0.01
216	18.00	0.13	0.071	0.099	0.064	0.01
217	18.08	0.13	0.071	0.099	0.064	0.01
218	18.17	0.13	0.071	0.098	0.064	0.01
219	18.25	0.13	0.071	0.098	0.064	0.01
220	18.33	0.13	0.071	0.097	0.064	0.01
221	18.42	0.13	0.071	0.097	0.064	0.01
222	18.50	0.13	0.071	0.097	0.064	0.01
223	18.58	0.10	0.053	0.096	0.048	0.01
224	18.67	0.10	0.053	0.096	0.048	0.01
225	18.75	0.10	0.053	0.095	0.048	0.01
226	18.83	0.07	0.035	0.095	0.032	0.00
227	18.92	0.07	0.035	0.094	0.032	0.00
228	19.00	0.07	0.035	0.094	0.032	0.00
229	19.08	0.10	0.053	0.093	0.048	0.01
230	19.17	0.10	0.053	0.093	0.048	0.01
231	19.25	0.10	0.053	0.092	0.048	0.01
232	19.33	0.13	0.071	0.092	0.064	0.01
233	19.42	0.13	0.071	0.092	0.064	0.01
234	19.50	0.13	0.071	0.091	0.064	0.01
235	19.58	0.10	0.053	0.091	0.048	0.01
236	19.67	0.10	0.053	0.090	0.048	0.01
237	19.75	0.10	0.053	0.090	0.048	0.01
238	19.83	0.07	0.035	0.090	0.032	0.00
239	19.92	0.07	0.035	0.089	0.032	0.00
240	20.00	0.07	0.035	0.089	0.032	0.00
241	20.08	0.10	0.053	0.088	0.048	0.01
242	20.17	0.10	0.053	0.088	0.048	0.01
243	20.25	0.10	0.053	0.088	0.048	0.01
244	20.33	0.10	0.053	0.087	0.048	0.01
245	20.42	0.10	0.053	0.087	0.048	0.01
246	20.50	0.10	0.053	0.086	0.048	0.01
247	20.58	0.10	0.053	0.086	0.048	0.01
248	20.67	0.10	0.053	0.086	0.048	0.01
249	20.75	0.10	0.053	0.085	0.048	0.01
250	20.83	0.07	0.035	0.085	0.032	0.00
251	20.92	0.07	0.035	0.085	0.032	0.00
252	21.00	0.07	0.035	0.084	0.032	0.00
253	21.08	0.10	0.053	0.084	0.048	0.01
254	21.17	0.10	0.053	0.084	0.048	0.01
255	21.25	0.10	0.053	0.083	0.048	0.01
256	21.33	0.07	0.035	0.083	0.032	0.00
257	21.42	0.07	0.035	0.083	0.032	0.00
258	21.50	0.07	0.035	0.082	0.032	0.00
259	21.58	0.10	0.053	0.082	0.048	0.01
260	21.67	0.10	0.053	0.082	0.048	0.01
261	21.75	0.10	0.053	0.082	0.048	0.01
262	21.83	0.07	0.035	0.081	0.032	0.00
263	21.92	0.07	0.035	0.081	0.032	0.00
264	22.00	0.07	0.035	0.081	0.032	0.00
265	22.08	0.10	0.053	0.080	0.048	0.01
266	22.17	0.10	0.053	0.080	0.048	0.01
267	22.25	0.10	0.053	0.080	0.048	0.01
268	22.33	0.07	0.035	0.080	0.032	0.00

269	22.42	0.07	0.035	0.079	0.032	0.00
270	22.50	0.07	0.035	0.079	0.032	0.00
271	22.58	0.07	0.035	0.079	0.032	0.00
272	22.67	0.07	0.035	0.079	0.032	0.00
273	22.75	0.07	0.035	0.079	0.032	0.00
274	22.83	0.07	0.035	0.078	0.032	0.00
275	22.92	0.07	0.035	0.078	0.032	0.00
276	23.00	0.07	0.035	0.078	0.032	0.00
277	23.08	0.07	0.035	0.078	0.032	0.00
278	23.17	0.07	0.035	0.078	0.032	0.00
279	23.25	0.07	0.035	0.077	0.032	0.00
280	23.33	0.07	0.035	0.077	0.032	0.00
281	23.42	0.07	0.035	0.077	0.032	0.00
282	23.50	0.07	0.035	0.077	0.032	0.00
283	23.58	0.07	0.035	0.077	0.032	0.00
284	23.67	0.07	0.035	0.077	0.032	0.00
285	23.75	0.07	0.035	0.077	0.032	0.00
286	23.83	0.07	0.035	0.077	0.032	0.00
287	23.92	0.07	0.035	0.076	0.032	0.00
288	24.00	0.07	0.035	0.076	0.032	0.00
Sum =		100.0			Sum =	24.8

Flood volume = Effective rainfall 2.07(In)
times area 43.3(Ac.)/[(In)/(Ft.)] = 7.5(Ac.Ft)
Total soil loss = 2.34(In)
Total soil loss = 8.452(Ac.Ft)
Total rainfall = 4.41(In)
Flood volume = 324971.6 Cubic Feet
Total soil loss = 368159.9 Cubic Feet

Peak flow rate of this hydrograph = 20.347(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0001	0.01	Q	|	|	|	|
0+10	0.0007	0.08	Q	|	|	|	|
0+15	0.0015	0.12	Q	|	|	|	|
0+20	0.0025	0.15	Q	|	|	|	|
0+25	0.0038	0.19	Q	|	|	|	|
0+30	0.0053	0.21	Q	|	|	|	|
0+35	0.0068	0.22	Q	|	|	|	|
0+40	0.0084	0.23	Q	|	|	|	|
0+45	0.0100	0.23	Q	|	|	|	|
0+50	0.0116	0.24	Q	|	|	|	|
0+55	0.0135	0.27	Q	|	|	|	|
1+ 0	0.0155	0.29	Q	|	|	|	|
1+ 5	0.0175	0.29	Q	|	|	|	|
1+10	0.0193	0.26	Q	|	|	|	|
1+15	0.0210	0.24	Q	|	|	|	|
1+20	0.0227	0.24	Q	|	|	|	|
1+25	0.0243	0.23	Q	|	|	|	|
1+30	0.0259	0.23	Q	|	|	|	|
1+35	0.0275	0.23	Q	|	|	|	|
1+40	0.0291	0.23	Q	|	|	|	|
1+45	0.0306	0.23	Q	|	|	|	|
1+50	0.0323	0.24	Q	|	|	|	|
1+55	0.0342	0.27	Q	|	|	|	|
2+ 0	0.0362	0.29	Q	|	|	|	|
2+ 5	0.0383	0.30	Q	|	|	|	|
2+10	0.0404	0.30	Q	|	|	|	|
2+15	0.0425	0.31	Q	|	|	|	|
2+20	0.0446	0.31	Q	|	|	|	|
2+25	0.0467	0.31	Q	|	|	|	|
2+30	0.0488	0.31	Q	|	|	|	|
2+35	0.0510	0.31	Q	|	|	|	|
2+40	0.0534	0.35	Q	|	|	|	|
2+45	0.0559	0.37	Q	|	|	|	|
2+50	0.0585	0.38	Q	|	|	|	|
2+55	0.0612	0.38	Q	|	|	|	|

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3+ 0       0.0638      0.38  Q          |          |          |          |
3+ 5       0.0665      0.38  Q          |          |          |          |
3+10       0.0691      0.38  Q          |          |          |          |
3+15       0.0718      0.38  Q          |          |          |          |
3+20       0.0744      0.39  Q          |          |          |          |
3+25       0.0771      0.39  Q          |          |          |          |
3+30       0.0797      0.39  Q          |          |          |          |
3+35       0.0824      0.39  Q          |          |          |          |
3+40       0.0850      0.39  Q          |          |          |          |
3+45       0.0877      0.39  Q          |          |          |          |
3+50       0.0904      0.39  Q          |          |          |          |
3+55       0.0933      0.43  Q          |          |          |          |
4+ 0       0.0964      0.45  Q          |          |          |          |
4+ 5       0.0995      0.45  Q          |          |          |          |
4+10       0.1027      0.46  Q          |          |          |          |
4+15       0.1059      0.46  Q          |          |          |          |
4+20       0.1091      0.47  Q          |          |          |          |
4+25       0.1125      0.50  Q          |          |          |          |
4+30       0.1162      0.52  Q          |          |          |          |
4+35       0.1198      0.53  Q          |          |          |          |
4+40       0.1235      0.54  Q          |          |          |          |
4+45       0.1272      0.54  Q          |          |          |          |
4+50       0.1310      0.54  Q          |          |          |          |
4+55       0.1350      0.58  Q          |          |          |          |
5+ 0       0.1391      0.60  Q          |          |          |          |
5+ 5       0.1432      0.60  Q          |          |          |          |
5+10       0.1469      0.53  Q          |          |          |          |
5+15       0.1502      0.49  Q          |          |          |          |
5+20       0.1536      0.48  Q          |          |          |          |
5+25       0.1571      0.51  Q          |          |          |          |
5+30       0.1607      0.53  Q          |          |          |          |
5+35       0.1644      0.54  Q          |          |          |          |
5+40       0.1684      0.58  Q          |          |          |          |
5+45       0.1725      0.60  Q          |          |          |          |
5+50       0.1767      0.61  Q          |          |          |          |
5+55       0.1809      0.61  Q          |          |          |          |
6+ 0       0.1852      0.61  Q          |          |          |          |
6+ 5       0.1894      0.62  QV         |          |          |          |
6+10       0.1940      0.66  QV         |          |          |          |
6+15       0.1986      0.68  QV         |          |          |          |
6+20       0.2034      0.69  QV         |          |          |          |
6+25       0.2081      0.69  QV         |          |          |          |
6+30       0.2129      0.69  QV         |          |          |          |
6+35       0.2177      0.70  QV         |          |          |          |
6+40       0.2228      0.73  QV         |          |          |          |
6+45       0.2280      0.75  |Q         |          |          |          |
6+50       0.2332      0.76  |Q         |          |          |          |
6+55       0.2385      0.77  |Q         |          |          |          |
7+ 0       0.2438      0.77  |Q         |          |          |          |
7+ 5       0.2491      0.77  |Q         |          |          |          |
7+10       0.2544      0.77  |Q         |          |          |          |
7+15       0.2597      0.77  |Q         |          |          |          |
7+20       0.2647      0.73  QV         |          |          |          |
7+25       0.2682      0.51  QV         |          |          |          |
7+30       0.2709      0.40  QV         |          |          |          |
7+35       0.2740      0.44  QV         |          |          |          |
7+40       0.2796      0.81  |Q         |          |          |          |
7+45       0.2867      1.03  |Q         |          |          |          |
7+50       0.2950      1.21  |Q         |          |          |          |
7+55       0.3062      1.64  |VQ        |          |          |          |
8+ 0       0.3192      1.89  |VQ        |          |          |          |
8+ 5       0.3339      2.14  |VQ        |          |          |          |
8+10       0.3541      2.93  |V Q       |          |          |          |
8+15       0.3774      3.39  | V Q      |          |          |          |
8+20       0.4021      3.59  | V Q      |          |          |          |
8+25       0.4277      3.71  | V Q      |          |          |          |
8+30       0.4537      3.78  | V  Q     |          |          |          |
8+35       0.4806      3.90  | V  Q     |          |          |          |
8+40       0.5101      4.30  | V  Q     |          |          |          |
8+45       0.5414      4.54  | V   Q    |          |          |          |
8+50       0.5739      4.72  |  V  Q    |          |          |          |
8+55       0.6094      5.15  |  V  Q    |          |          |          |
9+ 0       0.6466      5.40  |  V   Q   |          |          |          |
9+ 5       0.6855      5.65  |  V   Q   |          |          |          |
9+10       0.7299      6.44  |  V    Q  |          |          |          |
```

9+15	0.7774	6.90	V Q				
9+20	0.8267	7.16	V Q				
9+25	0.8793	7.64	V Q				
9+30	0.9338	7.91	V Q				
9+35	0.9896	8.10	V Q				
9+40	1.0484	8.54	V |Q				
9+45	1.1090	8.80	V |Q				
9+50	1.1708	8.98	V |Q				
9+55	1.2357	9.42	V | Q				
10+ 0	1.3023	9.67	V | Q				
10+ 5	1.3667	9.34	V | Q				
10+10	1.4144	6.93	V Q|				
10+15	1.4529	5.59	Q |				
10+20	1.4879	5.08	QV |				
10+25	1.5212	4.84	Q V |				
10+30	1.5540	4.75	Q V |				
10+35	1.5888	5.06	Q V |				
10+40	1.6360	6.84	VQ|				
10+45	1.6901	7.86	VQ				
10+50	1.7470	8.27	V|Q				
10+55	1.8056	8.51	V|Q				
11+ 0	1.8651	8.63	VQ				
11+ 5	1.9245	8.63	VQ				
11+10	1.9819	8.33	VQ				
11+15	2.0382	8.18	Q				
11+20	2.0942	8.14	QV				
11+25	2.1502	8.13	QV				
11+30	2.2063	8.14	QV				
11+35	2.2616	8.04	Q V				
11+40	2.3123	7.36	Q| V				
11+45	2.3604	6.99	Q| V				
11+50	2.4081	6.93	Q| V				
11+55	2.4579	7.23	Q| V				
12+ 0	2.5091	7.43	Q| V				
12+ 5	2.5640	7.97	Q V				
12+10	2.6365	10.52	| Q				
12+15	2.7189	11.97	| VQ				
12+20	2.8057	12.61	| VQ				
12+25	2.8972	13.29	| V Q				
12+30	2.9912	13.64	| V Q				
12+35	3.0871	13.93	| V Q				
12+40	3.1886	14.74	| V Q|			
12+45	3.2934	15.21	| V Q				
12+50	3.3999	15.47	| V Q				
12+55	3.5097	15.94	| V |Q				
13+ 0	3.6214	16.21	| V|Q				
13+ 5	3.7360	16.65	| V Q				
13+10	3.8635	18.51	| V Q				
13+15	3.9982	19.56	| |V Q				
13+20	4.1359	19.99	| | V Q				
13+25	4.2752	20.23	| | V Q				
13+30	4.4153	20.35	| | V Q				
13+35	4.5510	19.70	| | V Q				
13+40	4.6601	15.84	| |Q V				
13+45	4.7544	13.69	| Q | V				
13+50	4.8430	12.86	| Q | V				
13+55	4.9287	12.45	| Q | V				
14+ 0	5.0133	12.28	| Q | V				
14+ 5	5.0994	12.50	| Q | V				
14+10	5.1951	13.90	| Q | V				
14+15	5.2963	14.69	| Q| V				
14+20	5.3993	14.96	| Q| V				
14+25	5.5012	14.80	| Q| V				
14+30	5.6025	14.69	| Q| V				
14+35	5.7035	14.67	| Q| V				
14+40	5.8045	14.67	| Q| |V				
14+45	5.9057	14.70	| Q| |V				
14+50	6.0067	14.66	| Q| | V				
14+55	6.1053	14.32	| Q| | V				
15+ 0	6.2028	14.15	| Q | | V				
15+ 5	6.2994	14.03	| Q | | V				
15+10	6.3935	13.66	| Q | | V				
15+15	6.4863	13.47	| Q | | V				
15+20	6.5782	13.35	| Q | | V				
15+25	6.6676	12.98	| Q | | V				

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15+30       6.7556     12.78  |          |       Q  |          |     V    |
15+35       6.8415     12.47  |          |      Q   |          |     V    |
15+40       6.9174     11.03  |          |    Q     |          |      V   |
15+45       6.9879     10.23  |          |   Q      |          |      V   |
15+50       7.0563      9.94  |          |   Q      |          |      V   |
15+55       7.1238      9.80  |          |   Q      |          |       V  |
16+ 0       7.1909      9.75  |          |  Q       |          |       V  |
16+ 5       7.2526      8.96  |          |Q         |          |       V  |
16+10       7.2843      4.60  |      Q   |          |          |        V |
16+15       7.2991      2.15  | Q        |          |          |        V |
16+20       7.3074      1.20  |Q         |          |          |        V |
16+25       7.3122      0.70  Q          |          |          |        V |
16+30       7.3155      0.48  Q          |          |          |        V |
16+35       7.3183      0.40  Q          |          |          |        V |
16+40       7.3204      0.31  Q          |          |          |        V |
16+45       7.3222      0.26  Q          |          |          |        V |
16+50       7.3239      0.24  Q          |          |          |        V |
16+55       7.3255      0.23  Q          |          |          |        V |
17+ 0       7.3271      0.23  Q          |          |          |        V |
17+ 5       7.3288      0.24  Q          |          |          |        V |
17+10       7.3309      0.32  Q          |          |          |        V |
17+15       7.3334      0.36  Q          |          |          |        V |
17+20       7.3359      0.37  Q          |          |          |        V |
17+25       7.3385      0.38  Q          |          |          |        V |
17+30       7.3412      0.38  Q          |          |          |        V |
17+35       7.3438      0.38  Q          |          |          |        V |
17+40       7.3464      0.38  Q          |          |          |        V |
17+45       7.3491      0.38  Q          |          |          |        V |
17+50       7.3517      0.38  Q          |          |          |        V |
17+55       7.3541      0.34  Q          |          |          |        V |
18+ 0       7.3563      0.32  Q          |          |          |        V |
18+ 5       7.3585      0.32  Q          |          |          |        V |
18+10       7.3606      0.31  Q          |          |          |        V |
18+15       7.3627      0.31  Q          |          |          |        V |
18+20       7.3649      0.31  Q          |          |          |        V |
18+25       7.3670      0.31  Q          |          |          |        V |
18+30       7.3691      0.31  Q          |          |          |        V |
18+35       7.3712      0.30  Q          |          |          |        V |
18+40       7.3730      0.27  Q          |          |          |        V |
18+45       7.3747      0.25  Q          |          |          |        V |
18+50       7.3763      0.23  Q          |          |          |        V |
18+55       7.3776      0.19  Q          |          |          |        V |
19+ 0       7.3788      0.17  Q          |          |          |        V |
19+ 5       7.3800      0.17  Q          |          |          |        V |
19+10       7.3814      0.20  Q          |          |          |        V |
19+15       7.3828      0.22  Q          |          |          |        V |
19+20       7.3844      0.23  Q          |          |          |        V |
19+25       7.3863      0.27  Q          |          |          |        V |
19+30       7.3883      0.29  Q          |          |          |        V |
19+35       7.3903      0.29  Q          |          |          |        V |
19+40       7.3921      0.26  Q          |          |          |        V |
19+45       7.3938      0.24  Q          |          |          |        V |
19+50       7.3954      0.23  Q          |          |          |        V |
19+55       7.3967      0.19  Q          |          |          |        V |
20+ 0       7.3979      0.17  Q          |          |          |        V |
20+ 5       7.3991      0.17  Q          |          |          |        V |
20+10       7.4004      0.20  Q          |          |          |        V |
20+15       7.4019      0.22  Q          |          |          |        V |
20+20       7.4035      0.22  Q          |          |          |        V |
20+25       7.4051      0.23  Q          |          |          |        V |
20+30       7.4066      0.23  Q          |          |          |        V |
20+35       7.4082      0.23  Q          |          |          |        V |
20+40       7.4098      0.23  Q          |          |          |        V |
20+45       7.4114      0.23  Q          |          |          |        V |
20+50       7.4130      0.22  Q          |          |          |        V |
20+55       7.4143      0.19  Q          |          |          |        V |
21+ 0       7.4154      0.17  Q          |          |          |        V |
21+ 5       7.4166      0.17  Q          |          |          |        V |
21+10       7.4179      0.20  Q          |          |          |        V |
21+15       7.4194      0.22  Q          |          |          |        V |
21+20       7.4209      0.22  Q          |          |          |        V |
21+25       7.4222      0.19  Q          |          |          |        V |
21+30       7.4234      0.17  Q          |          |          |        V |
21+35       7.4245      0.17  Q          |          |          |        V |
21+40       7.4259      0.20  Q          |          |          |        V |
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21+45	7.4274	0.22	Q	|	|	|	V|
21+50	7.4289	0.22	Q	|	|	|	V|
21+55	7.4302	0.19	Q	|	|	|	V|
22+ 0	7.4313	0.17	Q	|	|	|	V|
22+ 5	7.4325	0.17	Q	|	|	|	V|
22+10	7.4339	0.20	Q	|	|	|	V|
22+15	7.4354	0.22	Q	|	|	|	V|
22+20	7.4369	0.22	Q	|	|	|	V|
22+25	7.4381	0.19	Q	|	|	|	V|
22+30	7.4393	0.17	Q	|	|	|	V|
22+35	7.4404	0.16	Q	|	|	|	V|
22+40	7.4415	0.16	Q	|	|	|	V|
22+45	7.4426	0.16	Q	|	|	|	V|
22+50	7.4436	0.15	Q	|	|	|	V|
22+55	7.4447	0.15	Q	|	|	|	V|
23+ 0	7.4457	0.15	Q	|	|	|	V|
23+ 5	7.4468	0.15	Q	|	|	|	V|
23+10	7.4479	0.15	Q	|	|	|	V|
23+15	7.4489	0.15	Q	|	|	|	V|
23+20	7.4500	0.15	Q	|	|	|	V|
23+25	7.4511	0.15	Q	|	|	|	V|
23+30	7.4521	0.15	Q	|	|	|	V|
23+35	7.4532	0.15	Q	|	|	|	V|
23+40	7.4542	0.15	Q	|	|	|	V|
23+45	7.4553	0.15	Q	|	|	|	V|
23+50	7.4564	0.15	Q	|	|	|	V|
23+55	7.4574	0.15	Q	|	|	|	V|
24+ 0	7.4585	0.15	Q	|	|	|	V|
24+ 5	7.4594	0.14	Q	|	|	|	V|
24+10	7.4599	0.07	Q	|	|	|	V|
24+15	7.4601	0.03	Q	|	|	|	V|
24+20	7.4602	0.01	Q	|	|	|	V|
24+25	7.4603	0.01	Q	|	|	|	V|
24+30	7.4603	0.00	Q	|	|	|	V|
24+35	7.4603	0.00	Q	|	|	|	V|
24+40	7.4603	0.00	Q	|	|	|	V|
24+45	7.4603	0.00	Q	|	|	|	V

UNIT HYDROGRAPH
DMA A
PROPOSED CONDITIONS
2-YEAR 24-HOUR

U n i t H y d r o g r a p h A n a l y s i s

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Study date 10/21/14 File: APROP242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

14-0213 SHOPOFF
UNIT HYDROGRAPH
DMA A
EXISTING CONDITIONS
2-YEAR 24-HOUR

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 43.30(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.30(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 3310.00(Ft.)
Length along longest watercourse measured to centroid = 970.00(Ft.)
Length along longest watercourse = 0.627 Mi.
Length along longest watercourse measured to centroid = 0.184 Mi.
Difference in elevation = 30.00(Ft.)
Slope along watercourse = 47.8550 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.076 Hr.
Lag time = 4.56 Min.
25% of lag time = 1.14 Min.
40% of lag time = 1.82 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
43.30	2.60	112.58

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
43.30	7.00	303.10

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 2.600(In)
Area Averaged 100-Year Rainfall = 7.000(In)

Point rain (area averaged) = 2.600(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 2.600(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
0.000	62.00	0.900
43.300	62.00	0.900

Total Area Entered = 43.30(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
62.0	42.0	0.650	0.900	0.124	0.000	0.000
62.0	42.0	0.650	0.900	0.124	1.000	0.124
					Sum (F) =	0.124

Area averaged mean soil loss (F) (In/Hr) = 0.124
Minimum soil loss rate ((In/Hr)) = 0.062
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	109.748	17.877	7.801
2	0.167	219.496	56.181	24.516
3	0.250	329.244	16.899	7.374
4	0.333	438.992	6.258	2.731
5	0.417	548.740	1.680	0.733
6	0.500	658.488	0.772	0.337
7	0.583	768.235	0.334	0.146
			Sum = 100.000 Sum=	43.638

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.021	0.219	0.004	0.02
2	0.17	0.07	0.021	0.218	0.004	0.02
3	0.25	0.07	0.021	0.217	0.004	0.02
4	0.33	0.10	0.031	0.217	0.006	0.03
5	0.42	0.10	0.031	0.216	0.006	0.03
6	0.50	0.10	0.031	0.215	0.006	0.03
7	0.58	0.10	0.031	0.214	0.006	0.03
8	0.67	0.10	0.031	0.213	0.006	0.03
9	0.75	0.10	0.031	0.212	0.006	0.03
10	0.83	0.13	0.042	0.212	0.007	0.03
11	0.92	0.13	0.042	0.211	0.007	0.03
12	1.00	0.13	0.042	0.210	0.007	0.03
13	1.08	0.10	0.031	0.209	0.006	0.03
14	1.17	0.10	0.031	0.208	0.006	0.03
15	1.25	0.10	0.031	0.207	0.006	0.03
16	1.33	0.10	0.031	0.207	0.006	0.03
17	1.42	0.10	0.031	0.206	0.006	0.03
18	1.50	0.10	0.031	0.205	0.006	0.03
19	1.58	0.10	0.031	0.204	0.006	0.03
20	1.67	0.10	0.031	0.203	0.006	0.03
21	1.75	0.10	0.031	0.202	0.006	0.03
22	1.83	0.13	0.042	0.202	0.007	0.03
23	1.92	0.13	0.042	0.201	0.007	0.03
24	2.00	0.13	0.042	0.200	0.007	0.03
25	2.08	0.13	0.042	0.199	0.007	0.03
26	2.17	0.13	0.042	0.198	0.007	0.03
27	2.25	0.13	0.042	0.198	0.007	0.03
28	2.33	0.13	0.042	0.197	0.007	0.03
29	2.42	0.13	0.042	0.196	0.007	0.03
30	2.50	0.13	0.042	0.195	0.007	0.03
31	2.58	0.17	0.052	0.194	0.009	0.04
32	2.67	0.17	0.052	0.194	0.009	0.04
33	2.75	0.17	0.052	0.193	0.009	0.04
34	2.83	0.17	0.052	0.192	0.009	0.04
35	2.92	0.17	0.052	0.191	0.009	0.04
36	3.00	0.17	0.052	0.190	0.009	0.04
37	3.08	0.17	0.052	0.190	0.009	0.04
38	3.17	0.17	0.052	0.189	0.009	0.04
39	3.25	0.17	0.052	0.188	0.009	0.04
40	3.33	0.17	0.052	0.187	0.009	0.04
41	3.42	0.17	0.052	0.186	0.009	0.04
42	3.50	0.17	0.052	0.186	0.009	0.04
43	3.58	0.17	0.052	0.185	0.009	0.04

44	3.67	0.17	0.052	0.184	0.009	0.04
45	3.75	0.17	0.052	0.183	0.009	0.04
46	3.83	0.20	0.062	0.183	0.011	0.05
47	3.92	0.20	0.062	0.182	0.011	0.05
48	4.00	0.20	0.062	0.181	0.011	0.05
49	4.08	0.20	0.062	0.180	0.011	0.05
50	4.17	0.20	0.062	0.180	0.011	0.05
51	4.25	0.20	0.062	0.179	0.011	0.05
52	4.33	0.23	0.073	0.178	0.013	0.06
53	4.42	0.23	0.073	0.177	0.013	0.06
54	4.50	0.23	0.073	0.176	0.013	0.06
55	4.58	0.23	0.073	0.176	0.013	0.06
56	4.67	0.23	0.073	0.175	0.013	0.06
57	4.75	0.23	0.073	0.174	0.013	0.06
58	4.83	0.27	0.083	0.173	0.015	0.07
59	4.92	0.27	0.083	0.173	0.015	0.07
60	5.00	0.27	0.083	0.172	0.015	0.07
61	5.08	0.20	0.062	0.171	0.011	0.05
62	5.17	0.20	0.062	0.170	0.011	0.05
63	5.25	0.20	0.062	0.170	0.011	0.05
64	5.33	0.23	0.073	0.169	0.013	0.06
65	5.42	0.23	0.073	0.168	0.013	0.06
66	5.50	0.23	0.073	0.168	0.013	0.06
67	5.58	0.27	0.083	0.167	0.015	0.07
68	5.67	0.27	0.083	0.166	0.015	0.07
69	5.75	0.27	0.083	0.165	0.015	0.07
70	5.83	0.27	0.083	0.165	0.015	0.07
71	5.92	0.27	0.083	0.164	0.015	0.07
72	6.00	0.27	0.083	0.163	0.015	0.07
73	6.08	0.30	0.094	0.162	0.017	0.08
74	6.17	0.30	0.094	0.162	0.017	0.08
75	6.25	0.30	0.094	0.161	0.017	0.08
76	6.33	0.30	0.094	0.160	0.017	0.08
77	6.42	0.30	0.094	0.160	0.017	0.08
78	6.50	0.30	0.094	0.159	0.017	0.08
79	6.58	0.33	0.104	0.158	0.019	0.09
80	6.67	0.33	0.104	0.157	0.019	0.09
81	6.75	0.33	0.104	0.157	0.019	0.09
82	6.83	0.33	0.104	0.156	0.019	0.09
83	6.92	0.33	0.104	0.155	0.019	0.09
84	7.00	0.33	0.104	0.155	0.019	0.09
85	7.08	0.33	0.104	0.154	0.019	0.09
86	7.17	0.33	0.104	0.153	0.019	0.09
87	7.25	0.33	0.104	0.152	0.019	0.09
88	7.33	0.37	0.114	0.152	0.021	0.09
89	7.42	0.37	0.114	0.151	0.021	0.09
90	7.50	0.37	0.114	0.150	0.021	0.09
91	7.58	0.40	0.125	0.150	0.022	0.10
92	7.67	0.40	0.125	0.149	0.022	0.10
93	7.75	0.40	0.125	0.148	0.022	0.10
94	7.83	0.43	0.135	0.148	0.024	0.11
95	7.92	0.43	0.135	0.147	0.024	0.11
96	8.00	0.43	0.135	0.146	0.024	0.11
97	8.08	0.50	0.156	0.146	---	0.01
98	8.17	0.50	0.156	0.145	---	0.01
99	8.25	0.50	0.156	0.144	---	0.01
100	8.33	0.50	0.156	0.144	---	0.01
101	8.42	0.50	0.156	0.143	---	0.01
102	8.50	0.50	0.156	0.142	---	0.01
103	8.58	0.53	0.166	0.142	---	0.02
104	8.67	0.53	0.166	0.141	---	0.03
105	8.75	0.53	0.166	0.140	---	0.03
106	8.83	0.57	0.177	0.140	---	0.04
107	8.92	0.57	0.177	0.139	---	0.04
108	9.00	0.57	0.177	0.138	---	0.04
109	9.08	0.63	0.198	0.138	---	0.06
110	9.17	0.63	0.198	0.137	---	0.06
111	9.25	0.63	0.198	0.136	---	0.06
112	9.33	0.67	0.208	0.136	---	0.07
113	9.42	0.67	0.208	0.135	---	0.07
114	9.50	0.67	0.208	0.134	---	0.07
115	9.58	0.70	0.218	0.134	---	0.08
116	9.67	0.70	0.218	0.133	---	0.09
117	9.75	0.70	0.218	0.132	---	0.09
118	9.83	0.73	0.229	0.132	---	0.10

119	9.92	0.73	0.229	0.131	---	0.10
120	10.00	0.73	0.229	0.130	---	0.10
121	10.08	0.50	0.156	0.130	---	0.03
122	10.17	0.50	0.156	0.129	---	0.03
123	10.25	0.50	0.156	0.129	---	0.03
124	10.33	0.50	0.156	0.128	---	0.03
125	10.42	0.50	0.156	0.127	---	0.03
126	10.50	0.50	0.156	0.127	---	0.03
127	10.58	0.67	0.208	0.126	---	0.08
128	10.67	0.67	0.208	0.126	---	0.08
129	10.75	0.67	0.208	0.125	---	0.08
130	10.83	0.67	0.208	0.124	---	0.08
131	10.92	0.67	0.208	0.124	---	0.08
132	11.00	0.67	0.208	0.123	---	0.08
133	11.08	0.63	0.198	0.122	---	0.08
134	11.17	0.63	0.198	0.122	---	0.08
135	11.25	0.63	0.198	0.121	---	0.08
136	11.33	0.63	0.198	0.121	---	0.08
137	11.42	0.63	0.198	0.120	---	0.08
138	11.50	0.63	0.198	0.119	---	0.08
139	11.58	0.57	0.177	0.119	---	0.06
140	11.67	0.57	0.177	0.118	---	0.06
141	11.75	0.57	0.177	0.118	---	0.06
142	11.83	0.60	0.187	0.117	---	0.07
143	11.92	0.60	0.187	0.117	---	0.07
144	12.00	0.60	0.187	0.116	---	0.07
145	12.08	0.83	0.260	0.115	---	0.14
146	12.17	0.83	0.260	0.115	---	0.15
147	12.25	0.83	0.260	0.114	---	0.15
148	12.33	0.87	0.270	0.114	---	0.16
149	12.42	0.87	0.270	0.113	---	0.16
150	12.50	0.87	0.270	0.112	---	0.16
151	12.58	0.93	0.291	0.112	---	0.18
152	12.67	0.93	0.291	0.111	---	0.18
153	12.75	0.93	0.291	0.111	---	0.18
154	12.83	0.97	0.302	0.110	---	0.19
155	12.92	0.97	0.302	0.110	---	0.19
156	13.00	0.97	0.302	0.109	---	0.19
157	13.08	1.13	0.354	0.109	---	0.24
158	13.17	1.13	0.354	0.108	---	0.25
159	13.25	1.13	0.354	0.107	---	0.25
160	13.33	1.13	0.354	0.107	---	0.25
161	13.42	1.13	0.354	0.106	---	0.25
162	13.50	1.13	0.354	0.106	---	0.25
163	13.58	0.77	0.239	0.105	---	0.13
164	13.67	0.77	0.239	0.105	---	0.13
165	13.75	0.77	0.239	0.104	---	0.13
166	13.83	0.77	0.239	0.104	---	0.14
167	13.92	0.77	0.239	0.103	---	0.14
168	14.00	0.77	0.239	0.103	---	0.14
169	14.08	0.90	0.281	0.102	---	0.18
170	14.17	0.90	0.281	0.102	---	0.18
171	14.25	0.90	0.281	0.101	---	0.18
172	14.33	0.87	0.270	0.101	---	0.17
173	14.42	0.87	0.270	0.100	---	0.17
174	14.50	0.87	0.270	0.100	---	0.17
175	14.58	0.87	0.270	0.099	---	0.17
176	14.67	0.87	0.270	0.099	---	0.17
177	14.75	0.87	0.270	0.098	---	0.17
178	14.83	0.83	0.260	0.098	---	0.16
179	14.92	0.83	0.260	0.097	---	0.16
180	15.00	0.83	0.260	0.097	---	0.16
181	15.08	0.80	0.250	0.096	---	0.15
182	15.17	0.80	0.250	0.096	---	0.15
183	15.25	0.80	0.250	0.095	---	0.15
184	15.33	0.77	0.239	0.095	---	0.14
185	15.42	0.77	0.239	0.094	---	0.15
186	15.50	0.77	0.239	0.094	---	0.15
187	15.58	0.63	0.198	0.093	---	0.10
188	15.67	0.63	0.198	0.093	---	0.10
189	15.75	0.63	0.198	0.092	---	0.11
190	15.83	0.63	0.198	0.092	---	0.11
191	15.92	0.63	0.198	0.091	---	0.11
192	16.00	0.63	0.198	0.091	---	0.11
193	16.08	0.13	0.042	0.090	0.007	0.03

194	16.17	0.13	0.042	0.090	0.007	0.03
195	16.25	0.13	0.042	0.089	0.007	0.03
196	16.33	0.13	0.042	0.089	0.007	0.03
197	16.42	0.13	0.042	0.088	0.007	0.03
198	16.50	0.13	0.042	0.088	0.007	0.03
199	16.58	0.10	0.031	0.088	0.006	0.03
200	16.67	0.10	0.031	0.087	0.006	0.03
201	16.75	0.10	0.031	0.087	0.006	0.03
202	16.83	0.10	0.031	0.086	0.006	0.03
203	16.92	0.10	0.031	0.086	0.006	0.03
204	17.00	0.10	0.031	0.085	0.006	0.03
205	17.08	0.17	0.052	0.085	0.009	0.04
206	17.17	0.17	0.052	0.085	0.009	0.04
207	17.25	0.17	0.052	0.084	0.009	0.04
208	17.33	0.17	0.052	0.084	0.009	0.04
209	17.42	0.17	0.052	0.083	0.009	0.04
210	17.50	0.17	0.052	0.083	0.009	0.04
211	17.58	0.17	0.052	0.082	0.009	0.04
212	17.67	0.17	0.052	0.082	0.009	0.04
213	17.75	0.17	0.052	0.082	0.009	0.04
214	17.83	0.13	0.042	0.081	0.007	0.03
215	17.92	0.13	0.042	0.081	0.007	0.03
216	18.00	0.13	0.042	0.080	0.007	0.03
217	18.08	0.13	0.042	0.080	0.007	0.03
218	18.17	0.13	0.042	0.080	0.007	0.03
219	18.25	0.13	0.042	0.079	0.007	0.03
220	18.33	0.13	0.042	0.079	0.007	0.03
221	18.42	0.13	0.042	0.078	0.007	0.03
222	18.50	0.13	0.042	0.078	0.007	0.03
223	18.58	0.10	0.031	0.078	0.006	0.03
224	18.67	0.10	0.031	0.077	0.006	0.03
225	18.75	0.10	0.031	0.077	0.006	0.03
226	18.83	0.07	0.021	0.077	0.004	0.02
227	18.92	0.07	0.021	0.076	0.004	0.02
228	19.00	0.07	0.021	0.076	0.004	0.02
229	19.08	0.10	0.031	0.075	0.006	0.03
230	19.17	0.10	0.031	0.075	0.006	0.03
231	19.25	0.10	0.031	0.075	0.006	0.03
232	19.33	0.13	0.042	0.074	0.007	0.03
233	19.42	0.13	0.042	0.074	0.007	0.03
234	19.50	0.13	0.042	0.074	0.007	0.03
235	19.58	0.10	0.031	0.073	0.006	0.03
236	19.67	0.10	0.031	0.073	0.006	0.03
237	19.75	0.10	0.031	0.073	0.006	0.03
238	19.83	0.07	0.021	0.072	0.004	0.02
239	19.92	0.07	0.021	0.072	0.004	0.02
240	20.00	0.07	0.021	0.072	0.004	0.02
241	20.08	0.10	0.031	0.071	0.006	0.03
242	20.17	0.10	0.031	0.071	0.006	0.03
243	20.25	0.10	0.031	0.071	0.006	0.03
244	20.33	0.10	0.031	0.071	0.006	0.03
245	20.42	0.10	0.031	0.070	0.006	0.03
246	20.50	0.10	0.031	0.070	0.006	0.03
247	20.58	0.10	0.031	0.070	0.006	0.03
248	20.67	0.10	0.031	0.069	0.006	0.03
249	20.75	0.10	0.031	0.069	0.006	0.03
250	20.83	0.07	0.021	0.069	0.004	0.02
251	20.92	0.07	0.021	0.068	0.004	0.02
252	21.00	0.07	0.021	0.068	0.004	0.02
253	21.08	0.10	0.031	0.068	0.006	0.03
254	21.17	0.10	0.031	0.068	0.006	0.03
255	21.25	0.10	0.031	0.067	0.006	0.03
256	21.33	0.07	0.021	0.067	0.004	0.02
257	21.42	0.07	0.021	0.067	0.004	0.02
258	21.50	0.07	0.021	0.067	0.004	0.02
259	21.58	0.10	0.031	0.066	0.006	0.03
260	21.67	0.10	0.031	0.066	0.006	0.03
261	21.75	0.10	0.031	0.066	0.006	0.03
262	21.83	0.07	0.021	0.066	0.004	0.02
263	21.92	0.07	0.021	0.065	0.004	0.02
264	22.00	0.07	0.021	0.065	0.004	0.02
265	22.08	0.10	0.031	0.065	0.006	0.03
266	22.17	0.10	0.031	0.065	0.006	0.03
267	22.25	0.10	0.031	0.065	0.006	0.03
268	22.33	0.07	0.021	0.064	0.004	0.02

269	22.42	0.07	0.021	0.064	0.004	0.02
270	22.50	0.07	0.021	0.064	0.004	0.02
271	22.58	0.07	0.021	0.064	0.004	0.02
272	22.67	0.07	0.021	0.064	0.004	0.02
273	22.75	0.07	0.021	0.063	0.004	0.02
274	22.83	0.07	0.021	0.063	0.004	0.02
275	22.92	0.07	0.021	0.063	0.004	0.02
276	23.00	0.07	0.021	0.063	0.004	0.02
277	23.08	0.07	0.021	0.063	0.004	0.02
278	23.17	0.07	0.021	0.063	0.004	0.02
279	23.25	0.07	0.021	0.063	0.004	0.02
280	23.33	0.07	0.021	0.062	0.004	0.02
281	23.42	0.07	0.021	0.062	0.004	0.02
282	23.50	0.07	0.021	0.062	0.004	0.02
283	23.58	0.07	0.021	0.062	0.004	0.02
284	23.67	0.07	0.021	0.062	0.004	0.02
285	23.75	0.07	0.021	0.062	0.004	0.02
286	23.83	0.07	0.021	0.062	0.004	0.02
287	23.92	0.07	0.021	0.062	0.004	0.02
288	24.00	0.07	0.021	0.062	0.004	0.02
Sum =		100.0			Sum =	18.3

Flood volume = Effective rainfall 1.53(In)
times area 43.3(Ac.)/[(In)/(Ft.)] = 5.5(Ac.Ft)
Total soil loss = 1.07(In)
Total soil loss = 3.871(Ac.Ft)
Total rainfall = 2.60(In)
Flood volume = 240002.7 Cubic Feet
Total soil loss = 168628.2 Cubic Feet

Peak flow rate of this hydrograph = 10.780(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0009	0.13	Q				
0+10	0.0047	0.55	VQ				
0+15	0.0094	0.68	VQ				
0+20	0.0148	0.79	VQ				
0+25	0.0218	1.01	V Q				
0+30	0.0292	1.08	V Q				
0+35	0.0369	1.11	V Q				
0+40	0.0445	1.11	V Q				
0+45	0.0522	1.12	V Q				
0+50	0.0604	1.18	V Q				
0+55	0.0699	1.39	V Q				
1+ 0	0.0800	1.46	V Q				
1+ 5	0.0897	1.41	V Q				
1+10	0.0980	1.21	V Q				
1+15	0.1059	1.15	V Q				
1+20	0.1137	1.13	V Q				
1+25	0.1214	1.12	V Q				
1+30	0.1291	1.12	V Q				
1+35	0.1368	1.12	V Q				
1+40	0.1445	1.12	|VQ				
1+45	0.1522	1.12	|VQ				
1+50	0.1604	1.18	|VQ				
1+55	0.1699	1.39	|VQ				
2+ 0	0.1800	1.46	|VQ				
2+ 5	0.1902	1.48	|VQ				
2+10	0.2004	1.49	|VQ				
2+15	0.2106	1.49	|VQ				
2+20	0.2209	1.49	|VQ				
2+25	0.2311	1.49	|VQ				
2+30	0.2414	1.49	|VQ				
2+35	0.2521	1.56	|V Q				
2+40	0.2643	1.76	|V Q				
2+45	0.2769	1.83	| VQ				
2+50	0.2896	1.85	| VQ				
2+55	0.3024	1.86	| VQ				

3+ 0	0.3152	1.86	VQ				
3+ 5	0.3280	1.86	VQ				
3+10	0.3409	1.86	VQ				
3+15	0.3537	1.86	VQ				
3+20	0.3665	1.86	VQ				
3+25	0.3793	1.86	VQ				
3+30	0.3921	1.86	VQ				
3+35	0.4050	1.86	VQ				
3+40	0.4178	1.86	Q				
3+45	0.4306	1.86	Q				
3+50	0.4439	1.93	Q				
3+55	0.4586	2.14	VQ				
4+ 0	0.4737	2.20	VQ				
4+ 5	0.4891	2.22	VQ				
4+10	0.5044	2.23	VQ				
4+15	0.5198	2.23	VQ				
4+20	0.5356	2.30	VQ				
4+25	0.5529	2.51	VQ				
4+30	0.5706	2.57	VQ				
4+35	0.5885	2.60	VQ				
4+40	0.6064	2.60	VQ				
4+45	0.6244	2.60	VQ				
4+50	0.6428	2.67	VQ				
4+55	0.6626	2.88	VQ				
5+ 0	0.6829	2.94	VQ				
5+ 5	0.7024	2.83	Q				
5+10	0.7191	2.42	QV				
5+15	0.7350	2.30	QV				
5+20	0.7509	2.32	QV				
5+25	0.7683	2.52	Q				
5+30	0.7860	2.57	Q				
5+35	0.8044	2.66	Q				
5+40	0.8242	2.88	Q				
5+45	0.8445	2.94	QV				
5+50	0.8649	2.97	QV				
5+55	0.8854	2.97	QV				
6+ 0	0.9059	2.98	QV				
6+ 5	0.9269	3.05	Q				
6+10	0.9493	3.25	Q				
6+15	0.9721	3.32	QV				
6+20	0.9951	3.34	QV				
6+25	1.0182	3.35	QV				
6+30	1.0412	3.35	QV				
6+35	1.0648	3.42	QV				
6+40	1.0897	3.63	Q				
6+45	1.1152	3.69	QV				
6+50	1.1407	3.71	QV				
6+55	1.1663	3.72	QV				
7+ 0	1.1920	3.72	QV				
7+ 5	1.2176	3.72	QV				
7+10	1.2432	3.72	Q V				
7+15	1.2689	3.72	Q V				
7+20	1.2950	3.79	Q V				
7+25	1.3225	4.00	Q V				
7+30	1.3505	4.06	QV				
7+35	1.3791	4.15	Q V				
7+40	1.4092	4.37	Q V				
7+45	1.4397	4.43	Q V				
7+50	1.4709	4.52	QV				
7+55	1.5035	4.74	QV				
8+ 0	1.5366	4.81	Q|V				
8+ 5	1.5645	4.05	Q |V				
8+10	1.5754	1.59	Q |V				
8+15	1.5815	0.88	Q |V				
8+20	1.5858	0.63	Q |V				
8+25	1.5899	0.59	Q |V				
8+30	1.5939	0.58	Q |V				
8+35	1.5985	0.68	Q |V				
8+40	1.6051	0.96	Q |V				
8+45	1.6125	1.07	Q |V				
8+50	1.6208	1.21	Q |V				
8+55	1.6311	1.50	Q |V				
9+ 0	1.6422	1.61	Q |V				
9+ 5	1.6547	1.83	Q | V				
9+10	1.6711	2.37	Q | V				

9+15	1.6887	2.56	Q	V			
9+20	1.7075	2.73	Q	V			
9+25	1.7283	3.03	Q	V			
9+30	1.7499	3.14	Q	V			
9+35	1.7725	3.28	Q	V			
9+40	1.7971	3.57	Q	V			
9+45	1.8224	3.68	Q	V			
9+50	1.8487	3.82	Q	V			
9+55	1.8770	4.11	Q	V			
10+ 0	1.9060	4.22	Q	V			
10+ 5	1.9315	3.70	Q	V			
10+10	1.9450	1.95	Q	V			
10+15	1.9550	1.45	Q	V			
10+20	1.9638	1.28	Q	V			
10+25	1.9724	1.25	Q	V			
10+30	1.9810	1.25	Q	V			
10+35	1.9926	1.68	Q	V			
10+40	2.0131	2.98	Q	V			
10+45	2.0364	3.39	Q	V			
10+50	2.0609	3.56	Q	V			
10+55	2.0859	3.62	Q	V			
11+ 0	2.1112	3.67	Q	V			
11+ 5	2.1361	3.62	Q	V			
11+10	2.1595	3.39	Q	V			
11+15	2.1825	3.34	Q	V			
11+20	2.2055	3.34	Q	V			
11+25	2.2286	3.36	Q	V			
11+30	2.2519	3.38	Q	V			
11+35	2.2742	3.24	Q	V			
11+40	2.2932	2.76	Q	V			
11+45	2.3113	2.63	Q	V			
11+50	2.3298	2.68	Q	V			
11+55	2.3501	2.95	Q	V			
12+ 0	2.3711	3.04	Q	V			
12+ 5	2.3963	3.66	Q	V			
12+10	2.4340	5.48	Q	V			
12+15	2.4756	6.05	Q	V			
12+20	2.5194	6.35	Q	V			
12+25	2.5654	6.69	Q	V			
12+30	2.6123	6.81	Q	V			
12+35	2.6608	7.04	Q	V			
12+40	2.7130	7.58	Q	V			
12+45	2.7665	7.76	Q	V			
12+50	2.8211	7.93	Q	V			
12+55	2.8777	8.22	Q	V			
13+ 0	2.9350	8.33	Q	V			
13+ 5	2.9956	8.79	Q	V			
13+10	3.0651	10.10	Q	V			
13+15	3.1375	10.51	Q	V			
13+20	3.2110	10.68	Q	V			
13+25	3.2850	10.74	Q	V			
13+30	3.3592	10.78	Q	V			
13+35	3.4275	9.92	Q	V			
13+40	3.4767	7.14	Q	V			
13+45	3.5202	6.32	Q	V			
13+50	3.5617	6.03	Q	V			
13+55	3.6027	5.97	Q	V			
14+ 0	3.6437	5.95	Q	V			
14+ 5	3.6870	6.28	Q	V			
14+10	3.7374	7.32	Q	V			
14+15	3.7901	7.65	Q	V			
14+20	3.8432	7.71	Q	V			
14+25	3.8949	7.51	Q	V			
14+30	3.9463	7.47	Q	V			
14+35	3.9978	7.47	Q	V			
14+40	4.0493	7.48	Q	V			
14+45	4.1009	7.50	Q	V			
14+50	4.1522	7.44	Q	V			
14+55	4.2018	7.21	Q	V			
15+ 0	4.2511	7.15	Q	V			
15+ 5	4.2997	7.06	Q	V			
15+10	4.3467	6.82	Q	V			
15+15	4.3933	6.76	Q	V			
15+20	4.4392	6.67	Q	V			
15+25	4.4835	6.43	Q	V			

15+30	4.5274	6.37	|		| Q	|		| V	|
15+35	4.5690	6.04	|		| Q	|		| V	|
15+40	4.6037	5.03	|		Q	|		| V	|
15+45	4.6364	4.74	|		Q|	|		| V	|
15+50	4.6684	4.65	|		Q|	|		| V	|
15+55	4.7003	4.64	|		Q|	|		| V	|
16+ 0	4.7323	4.65	|		Q|	|		| V	|
16+ 5	4.7605	4.09	|		Q |	|		| V	|
16+10	4.7764	2.31	|	Q	|	|		| V	|
16+15	4.7886	1.78	|	Q	|	|		| V	|
16+20	4.7995	1.58	|	Q	|	|		| V	|
16+25	4.8100	1.52	|	Q	|	|		| V	|
16+30	4.8203	1.50	| Q		|	|		| V	|
16+35	4.8301	1.42	| Q		|	|		| V	|
16+40	4.8385	1.21	| Q		|	|		| V	|
16+45	4.8464	1.15	| Q		|	|		| V	|
16+50	4.8542	1.13	| Q		|	|		| V	|
16+55	4.8619	1.12	| Q		|	|		| V	|
17+ 0	4.8696	1.12	| Q		|	|		| V	|
17+ 5	4.8782	1.25	| Q		|	|		| V	|
17+10	4.8897	1.67	|	Q	|	|		| V	|
17+15	4.9021	1.79	|	Q	|	|		| V	|
17+20	4.9147	1.84	|	Q	|	|		| V	|
17+25	4.9275	1.85	|	Q	|	|		| V	|
17+30	4.9403	1.86	|	Q	|	|		| V	|
17+35	4.9531	1.86	|	Q	|	|		| V	|
17+40	4.9659	1.86	|	Q	|	|		| V	|
17+45	4.9788	1.86	|	Q	|	|		| V	|
17+50	4.9911	1.79	|	Q	|	|		| V	|
17+55	5.0020	1.59	|	Q	|	|		| V	|
18+ 0	5.0125	1.52	|	Q	|	|		| V	|
18+ 5	5.0229	1.50	| Q		|	|		| V	|
18+10	5.0331	1.49	| Q		|	|		| V	|
18+15	5.0434	1.49	| Q		|	|		| V	|
18+20	5.0537	1.49	| Q		|	|		| V	|
18+25	5.0639	1.49	| Q		|	|		| V	|
18+30	5.0742	1.49	| Q		|	|		| V	|
18+35	5.0840	1.42	| Q		|	|		| V	|
18+40	5.0923	1.21	| Q		|	|		| V	|
18+45	5.1003	1.15	| Q		|	|		| V	|
18+50	5.1076	1.06	| Q		|	|		| V	|
18+55	5.1134	0.85	|Q		|	|		| V	|
19+ 0	5.1188	0.78	|Q		|	|		| V	|
19+ 5	5.1244	0.82	|Q		|	|		| V	|
19+10	5.1315	1.02	| Q		|	|		| V	|
19+15	5.1389	1.08	| Q		|	|		| V	|
19+20	5.1470	1.17	| Q		|	|		| V	|
19+25	5.1566	1.39	| Q		|	|		| V	|
19+30	5.1666	1.45	| Q		|	|		| V	|
19+35	5.1763	1.41	| Q		|	|		| V	|
19+40	5.1847	1.21	| Q		|	|		| V	|
19+45	5.1926	1.15	| Q		|	|		| V	|
19+50	5.1999	1.06	| Q		|	|		| V	|
19+55	5.2057	0.85	|Q		|	|		| V	|
20+ 0	5.2111	0.78	|Q		|	|		| V	|
20+ 5	5.2167	0.82	|Q		|	|		| V	|
20+10	5.2238	1.02	| Q		|	|		| V	|
20+15	5.2312	1.08	| Q		|	|		| V	|
20+20	5.2389	1.11	| Q		|	|		| V	|
20+25	5.2465	1.11	| Q		|	|		| V	|
20+30	5.2542	1.12	| Q		|	|		| V	|
20+35	5.2619	1.12	| Q		|	|		| V	|
20+40	5.2696	1.12	| Q		|	|		| V	|
20+45	5.2773	1.12	| Q		|	|		| V	|
20+50	5.2845	1.05	| Q		|	|		| V	|
20+55	5.2903	0.84	|Q		|	|		| V	|
21+ 0	5.2957	0.78	|Q		|	|		| V	|
21+ 5	5.3013	0.82	|Q		|	|		| V	|
21+10	5.3084	1.02	| Q		|	|		| V	|
21+15	5.3159	1.08	| Q		|	|		| V	|
21+20	5.3230	1.04	| Q		|	|		| V	|
21+25	5.3288	0.84	|Q		|	|		| V	|
21+30	5.3341	0.78	|Q		|	|		| V	|
21+35	5.3398	0.82	|Q		|	|		| V	|
21+40	5.3469	1.02	| Q		|	|		| V	|

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  21+45       5.3543      1.08  | Q       |         |         |       V |
  21+50       5.3615      1.04  | Q       |         |         |       V |
  21+55       5.3673      0.84  |Q        |         |         |       V |
  22+ 0       5.3726      0.78  |Q        |         |         |        V|
  22+ 5       5.3783      0.82  |Q        |         |         |        V|
  22+10       5.3853      1.02  | Q       |         |         |        V|
  22+15       5.3928      1.08  | Q       |         |         |        V|
  22+20       5.3999      1.04  | Q       |         |         |        V|
  22+25       5.4057      0.84  |Q        |         |         |        V|
  22+30       5.4111      0.78  |Q        |         |         |        V|
  22+35       5.4163      0.75  |Q        |         |         |        V|
  22+40       5.4214      0.75  |Q        |         |         |        V|
  22+45       5.4266      0.75  |Q        |         |         |        V|
  22+50       5.4317      0.74  |Q        |         |         |        V|
  22+55       5.4368      0.74  |Q        |         |         |        V|
  23+ 0       5.4419      0.74  |Q        |         |         |        V|
  23+ 5       5.4471      0.74  |Q        |         |         |        V|
  23+10       5.4522      0.74  |Q        |         |         |        V|
  23+15       5.4573      0.74  |Q        |         |         |        V|
  23+20       5.4625      0.74  |Q        |         |         |        V|
  23+25       5.4676      0.74  |Q        |         |         |        V|
  23+30       5.4727      0.74  |Q        |         |         |        V|
  23+35       5.4778      0.74  |Q        |         |         |        V|
  23+40       5.4830      0.74  |Q        |         |         |        V|
  23+45       5.4881      0.74  |Q        |         |         |        V|
  23+50       5.4932      0.74  |Q        |         |         |        V|
  23+55       5.4984      0.74  |Q        |         |         |        V|
  24+ 0       5.5035      0.74  |Q        |         |         |        V|
  24+ 5       5.5077      0.61  |Q        |         |         |        V|
  24+10       5.5090      0.19  Q         |         |         |        V|
  24+15       5.5095      0.07  Q         |         |         |        V|
  24+20       5.5096      0.02  Q         |         |         |        V|
  24+25       5.5097      0.01  Q         |         |         |        V|
  24+30       5.5097      0.00  Q         |         |         |         V
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UNIT HYDROGRAPH
DMA A
PROPOSED CONDITIONS
10-YEAR 24-HOUR

U n i t H y d r o g r a p h A n a l y s i s

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Study date 10/21/14 File: APROP2410.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

14-0213 SHOPOFF
UNIT HYDROGRAPH
DMA A
EXISTING CONDITIONS
10-YEAR 24-HOUR

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 43.30(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.30(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 3310.00(Ft.)
Length along longest watercourse measured to centroid = 970.00(Ft.)
Length along longest watercourse = 0.627 Mi.
Length along longest watercourse measured to centroid = 0.184 Mi.
Difference in elevation = 30.00(Ft.)
Slope along watercourse = 47.8550 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.076 Hr.
Lag time = 4.56 Min.
25% of lag time = 1.14 Min.
40% of lag time = 1.82 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
43.30	2.60	112.58

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
43.30	7.00	303.10

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.600(In)
Area Averaged 100-Year Rainfall = 7.000(In)

Point rain (area averaged) = 4.410(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 4.410(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
43.300	62.00	0.900

Total Area Entered = 43.30(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F

AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
62.0	42.0	0.650	0.900	0.124	1.000	0.124
					Sum (F) =	0.124

Area averaged mean soil loss (F) (In/Hr) = 0.124
Minimum soil loss rate ((In/Hr)) = 0.062
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	109.748	17.877	7.801
2	0.167	219.496	56.181	24.516
3	0.250	329.244	16.899	7.374
4	0.333	438.992	6.258	2.731
5	0.417	548.740	1.680	0.733
6	0.500	658.488	0.772	0.337
7	0.583	768.235	0.334	0.146
			Sum = 100.000 Sum=	43.638

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.035	0.219	0.006	0.03
2	0.17	0.07	0.035	0.218	0.006	0.03
3	0.25	0.07	0.035	0.217	0.006	0.03
4	0.33	0.10	0.053	0.217	0.010	0.04
5	0.42	0.10	0.053	0.216	0.010	0.04
6	0.50	0.10	0.053	0.215	0.010	0.04
7	0.58	0.10	0.053	0.214	0.010	0.04
8	0.67	0.10	0.053	0.213	0.010	0.04
9	0.75	0.10	0.053	0.212	0.010	0.04
10	0.83	0.13	0.071	0.212	0.013	0.06
11	0.92	0.13	0.071	0.211	0.013	0.06
12	1.00	0.13	0.071	0.210	0.013	0.06
13	1.08	0.10	0.053	0.209	0.010	0.04
14	1.17	0.10	0.053	0.208	0.010	0.04
15	1.25	0.10	0.053	0.207	0.010	0.04
16	1.33	0.10	0.053	0.207	0.010	0.04
17	1.42	0.10	0.053	0.206	0.010	0.04
18	1.50	0.10	0.053	0.205	0.010	0.04
19	1.58	0.10	0.053	0.204	0.010	0.04
20	1.67	0.10	0.053	0.203	0.010	0.04
21	1.75	0.10	0.053	0.202	0.010	0.04
22	1.83	0.13	0.071	0.202	0.013	0.06
23	1.92	0.13	0.071	0.201	0.013	0.06
24	2.00	0.13	0.071	0.200	0.013	0.06
25	2.08	0.13	0.071	0.199	0.013	0.06
26	2.17	0.13	0.071	0.198	0.013	0.06
27	2.25	0.13	0.071	0.198	0.013	0.06
28	2.33	0.13	0.071	0.197	0.013	0.06
29	2.42	0.13	0.071	0.196	0.013	0.06
30	2.50	0.13	0.071	0.195	0.013	0.06
31	2.58	0.17	0.088	0.194	0.016	0.07
32	2.67	0.17	0.088	0.194	0.016	0.07
33	2.75	0.17	0.088	0.193	0.016	0.07
34	2.83	0.17	0.088	0.192	0.016	0.07
35	2.92	0.17	0.088	0.191	0.016	0.07
36	3.00	0.17	0.088	0.190	0.016	0.07
37	3.08	0.17	0.088	0.190	0.016	0.07
38	3.17	0.17	0.088	0.189	0.016	0.07
39	3.25	0.17	0.088	0.188	0.016	0.07
40	3.33	0.17	0.088	0.187	0.016	0.07
41	3.42	0.17	0.088	0.186	0.016	0.07
42	3.50	0.17	0.088	0.186	0.016	0.07
43	3.58	0.17	0.088	0.185	0.016	0.07
44	3.67	0.17	0.088	0.184	0.016	0.07
45	3.75	0.17	0.088	0.183	0.016	0.07

46	3.83	0.20	0.106	0.183	0.019	0.09
47	3.92	0.20	0.106	0.182	0.019	0.09
48	4.00	0.20	0.106	0.181	0.019	0.09
49	4.08	0.20	0.106	0.180	0.019	0.09
50	4.17	0.20	0.106	0.180	0.019	0.09
51	4.25	0.20	0.106	0.179	0.019	0.09
52	4.33	0.23	0.123	0.178	0.022	0.10
53	4.42	0.23	0.123	0.177	0.022	0.10
54	4.50	0.23	0.123	0.176	0.022	0.10
55	4.58	0.23	0.123	0.176	0.022	0.10
56	4.67	0.23	0.123	0.175	0.022	0.10
57	4.75	0.23	0.123	0.174	0.022	0.10
58	4.83	0.27	0.141	0.173	0.025	0.12
59	4.92	0.27	0.141	0.173	0.025	0.12
60	5.00	0.27	0.141	0.172	0.025	0.12
61	5.08	0.20	0.106	0.171	0.019	0.09
62	5.17	0.20	0.106	0.170	0.019	0.09
63	5.25	0.20	0.106	0.170	0.019	0.09
64	5.33	0.23	0.123	0.169	0.022	0.10
65	5.42	0.23	0.123	0.168	0.022	0.10
66	5.50	0.23	0.123	0.168	0.022	0.10
67	5.58	0.27	0.141	0.167	0.025	0.12
68	5.67	0.27	0.141	0.166	0.025	0.12
69	5.75	0.27	0.141	0.165	0.025	0.12
70	5.83	0.27	0.141	0.165	0.025	0.12
71	5.92	0.27	0.141	0.164	0.025	0.12
72	6.00	0.27	0.141	0.163	0.025	0.12
73	6.08	0.30	0.159	0.162	0.029	0.13
74	6.17	0.30	0.159	0.162	0.029	0.13
75	6.25	0.30	0.159	0.161	0.029	0.13
76	6.33	0.30	0.159	0.160	0.029	0.13
77	6.42	0.30	0.159	0.160	0.029	0.13
78	6.50	0.30	0.159	0.159	0.029	0.13
79	6.58	0.33	0.176	0.158	---	0.02
80	6.67	0.33	0.176	0.157	---	0.02
81	6.75	0.33	0.176	0.157	---	0.02
82	6.83	0.33	0.176	0.156	---	0.02
83	6.92	0.33	0.176	0.155	---	0.02
84	7.00	0.33	0.176	0.155	---	0.02
85	7.08	0.33	0.176	0.154	---	0.02
86	7.17	0.33	0.176	0.153	---	0.02
87	7.25	0.33	0.176	0.152	---	0.02
88	7.33	0.37	0.194	0.152	---	0.04
89	7.42	0.37	0.194	0.151	---	0.04
90	7.50	0.37	0.194	0.150	---	0.04
91	7.58	0.40	0.212	0.150	---	0.06
92	7.67	0.40	0.212	0.149	---	0.06
93	7.75	0.40	0.212	0.148	---	0.06
94	7.83	0.43	0.229	0.148	---	0.08
95	7.92	0.43	0.229	0.147	---	0.08
96	8.00	0.43	0.229	0.146	---	0.08
97	8.08	0.50	0.265	0.146	---	0.12
98	8.17	0.50	0.265	0.145	---	0.12
99	8.25	0.50	0.265	0.144	---	0.12
100	8.33	0.50	0.265	0.144	---	0.12
101	8.42	0.50	0.265	0.143	---	0.12
102	8.50	0.50	0.265	0.142	---	0.12
103	8.58	0.53	0.282	0.142	---	0.14
104	8.67	0.53	0.282	0.141	---	0.14
105	8.75	0.53	0.282	0.140	---	0.14
106	8.83	0.57	0.300	0.140	---	0.16
107	8.92	0.57	0.300	0.139	---	0.16
108	9.00	0.57	0.300	0.138	---	0.16
109	9.08	0.63	0.335	0.138	---	0.20
110	9.17	0.63	0.335	0.137	---	0.20
111	9.25	0.63	0.335	0.136	---	0.20
112	9.33	0.67	0.353	0.136	---	0.22
113	9.42	0.67	0.353	0.135	---	0.22
114	9.50	0.67	0.353	0.134	---	0.22
115	9.58	0.70	0.370	0.134	---	0.24
116	9.67	0.70	0.370	0.133	---	0.24
117	9.75	0.70	0.370	0.132	---	0.24
118	9.83	0.73	0.388	0.132	---	0.26
119	9.92	0.73	0.388	0.131	---	0.26
120	10.00	0.73	0.388	0.130	---	0.26

121	10.08	0.50	0.265	0.130	---	0.13
122	10.17	0.50	0.265	0.129	---	0.14
123	10.25	0.50	0.265	0.129	---	0.14
124	10.33	0.50	0.265	0.128	---	0.14
125	10.42	0.50	0.265	0.127	---	0.14
126	10.50	0.50	0.265	0.127	---	0.14
127	10.58	0.67	0.353	0.126	---	0.23
128	10.67	0.67	0.353	0.126	---	0.23
129	10.75	0.67	0.353	0.125	---	0.23
130	10.83	0.67	0.353	0.124	---	0.23
131	10.92	0.67	0.353	0.124	---	0.23
132	11.00	0.67	0.353	0.123	---	0.23
133	11.08	0.63	0.335	0.122	---	0.21
134	11.17	0.63	0.335	0.122	---	0.21
135	11.25	0.63	0.335	0.121	---	0.21
136	11.33	0.63	0.335	0.121	---	0.21
137	11.42	0.63	0.335	0.120	---	0.22
138	11.50	0.63	0.335	0.119	---	0.22
139	11.58	0.57	0.300	0.119	---	0.18
140	11.67	0.57	0.300	0.118	---	0.18
141	11.75	0.57	0.300	0.118	---	0.18
142	11.83	0.60	0.318	0.117	---	0.20
143	11.92	0.60	0.318	0.117	---	0.20
144	12.00	0.60	0.318	0.116	---	0.20
145	12.08	0.83	0.441	0.115	---	0.33
146	12.17	0.83	0.441	0.115	---	0.33
147	12.25	0.83	0.441	0.114	---	0.33
148	12.33	0.87	0.459	0.114	---	0.34
149	12.42	0.87	0.459	0.113	---	0.35
150	12.50	0.87	0.459	0.112	---	0.35
151	12.58	0.93	0.494	0.112	---	0.38
152	12.67	0.93	0.494	0.111	---	0.38
153	12.75	0.93	0.494	0.111	---	0.38
154	12.83	0.97	0.512	0.110	---	0.40
155	12.92	0.97	0.512	0.110	---	0.40
156	13.00	0.97	0.512	0.109	---	0.40
157	13.08	1.13	0.600	0.109	---	0.49
158	13.17	1.13	0.600	0.108	---	0.49
159	13.25	1.13	0.600	0.107	---	0.49
160	13.33	1.13	0.600	0.107	---	0.49
161	13.42	1.13	0.600	0.106	---	0.49
162	13.50	1.13	0.600	0.106	---	0.49
163	13.58	0.77	0.406	0.105	---	0.30
164	13.67	0.77	0.406	0.105	---	0.30
165	13.75	0.77	0.406	0.104	---	0.30
166	13.83	0.77	0.406	0.104	---	0.30
167	13.92	0.77	0.406	0.103	---	0.30
168	14.00	0.77	0.406	0.103	---	0.30
169	14.08	0.90	0.476	0.102	---	0.37
170	14.17	0.90	0.476	0.102	---	0.37
171	14.25	0.90	0.476	0.101	---	0.38
172	14.33	0.87	0.459	0.101	---	0.36
173	14.42	0.87	0.459	0.100	---	0.36
174	14.50	0.87	0.459	0.100	---	0.36
175	14.58	0.87	0.459	0.099	---	0.36
176	14.67	0.87	0.459	0.099	---	0.36
177	14.75	0.87	0.459	0.098	---	0.36
178	14.83	0.83	0.441	0.098	---	0.34
179	14.92	0.83	0.441	0.097	---	0.34
180	15.00	0.83	0.441	0.097	---	0.34
181	15.08	0.80	0.423	0.096	---	0.33
182	15.17	0.80	0.423	0.096	---	0.33
183	15.25	0.80	0.423	0.095	---	0.33
184	15.33	0.77	0.406	0.095	---	0.31
185	15.42	0.77	0.406	0.094	---	0.31
186	15.50	0.77	0.406	0.094	---	0.31
187	15.58	0.63	0.335	0.093	---	0.24
188	15.67	0.63	0.335	0.093	---	0.24
189	15.75	0.63	0.335	0.092	---	0.24
190	15.83	0.63	0.335	0.092	---	0.24
191	15.92	0.63	0.335	0.091	---	0.24
192	16.00	0.63	0.335	0.091	---	0.24
193	16.08	0.13	0.071	0.090	0.013	0.06
194	16.17	0.13	0.071	0.090	0.013	0.06
195	16.25	0.13	0.071	0.089	0.013	0.06

196	16.33	0.13	0.071	0.089	0.013	0.06
197	16.42	0.13	0.071	0.088	0.013	0.06
198	16.50	0.13	0.071	0.088	0.013	0.06
199	16.58	0.10	0.053	0.088	0.010	0.04
200	16.67	0.10	0.053	0.087	0.010	0.04
201	16.75	0.10	0.053	0.087	0.010	0.04
202	16.83	0.10	0.053	0.086	0.010	0.04
203	16.92	0.10	0.053	0.086	0.010	0.04
204	17.00	0.10	0.053	0.085	0.010	0.04
205	17.08	0.17	0.088	0.085	---	0.00
206	17.17	0.17	0.088	0.085	---	0.00
207	17.25	0.17	0.088	0.084	---	0.00
208	17.33	0.17	0.088	0.084	---	0.00
209	17.42	0.17	0.088	0.083	---	0.00
210	17.50	0.17	0.088	0.083	---	0.01
211	17.58	0.17	0.088	0.082	---	0.01
212	17.67	0.17	0.088	0.082	---	0.01
213	17.75	0.17	0.088	0.082	---	0.01
214	17.83	0.13	0.071	0.081	0.013	0.06
215	17.92	0.13	0.071	0.081	0.013	0.06
216	18.00	0.13	0.071	0.080	0.013	0.06
217	18.08	0.13	0.071	0.080	0.013	0.06
218	18.17	0.13	0.071	0.080	0.013	0.06
219	18.25	0.13	0.071	0.079	0.013	0.06
220	18.33	0.13	0.071	0.079	0.013	0.06
221	18.42	0.13	0.071	0.078	0.013	0.06
222	18.50	0.13	0.071	0.078	0.013	0.06
223	18.58	0.10	0.053	0.078	0.010	0.04
224	18.67	0.10	0.053	0.077	0.010	0.04
225	18.75	0.10	0.053	0.077	0.010	0.04
226	18.83	0.07	0.035	0.077	0.006	0.03
227	18.92	0.07	0.035	0.076	0.006	0.03
228	19.00	0.07	0.035	0.076	0.006	0.03
229	19.08	0.10	0.053	0.075	0.010	0.04
230	19.17	0.10	0.053	0.075	0.010	0.04
231	19.25	0.10	0.053	0.075	0.010	0.04
232	19.33	0.13	0.071	0.074	0.013	0.06
233	19.42	0.13	0.071	0.074	0.013	0.06
234	19.50	0.13	0.071	0.074	0.013	0.06
235	19.58	0.10	0.053	0.073	0.010	0.04
236	19.67	0.10	0.053	0.073	0.010	0.04
237	19.75	0.10	0.053	0.073	0.010	0.04
238	19.83	0.07	0.035	0.072	0.006	0.03
239	19.92	0.07	0.035	0.072	0.006	0.03
240	20.00	0.07	0.035	0.072	0.006	0.03
241	20.08	0.10	0.053	0.071	0.010	0.04
242	20.17	0.10	0.053	0.071	0.010	0.04
243	20.25	0.10	0.053	0.071	0.010	0.04
244	20.33	0.10	0.053	0.071	0.010	0.04
245	20.42	0.10	0.053	0.070	0.010	0.04
246	20.50	0.10	0.053	0.070	0.010	0.04
247	20.58	0.10	0.053	0.070	0.010	0.04
248	20.67	0.10	0.053	0.069	0.010	0.04
249	20.75	0.10	0.053	0.069	0.010	0.04
250	20.83	0.07	0.035	0.069	0.006	0.03
251	20.92	0.07	0.035	0.068	0.006	0.03
252	21.00	0.07	0.035	0.068	0.006	0.03
253	21.08	0.10	0.053	0.068	0.010	0.04
254	21.17	0.10	0.053	0.068	0.010	0.04
255	21.25	0.10	0.053	0.067	0.010	0.04
256	21.33	0.07	0.035	0.067	0.006	0.03
257	21.42	0.07	0.035	0.067	0.006	0.03
258	21.50	0.07	0.035	0.067	0.006	0.03
259	21.58	0.10	0.053	0.066	0.010	0.04
260	21.67	0.10	0.053	0.066	0.010	0.04
261	21.75	0.10	0.053	0.066	0.010	0.04
262	21.83	0.07	0.035	0.066	0.006	0.03
263	21.92	0.07	0.035	0.065	0.006	0.03
264	22.00	0.07	0.035	0.065	0.006	0.03
265	22.08	0.10	0.053	0.065	0.010	0.04
266	22.17	0.10	0.053	0.065	0.010	0.04
267	22.25	0.10	0.053	0.065	0.010	0.04
268	22.33	0.07	0.035	0.064	0.006	0.03
269	22.42	0.07	0.035	0.064	0.006	0.03
270	22.50	0.07	0.035	0.064	0.006	0.03

271	22.58	0.07	0.035	0.064	0.006	0.03
272	22.67	0.07	0.035	0.064	0.006	0.03
273	22.75	0.07	0.035	0.063	0.006	0.03
274	22.83	0.07	0.035	0.063	0.006	0.03
275	22.92	0.07	0.035	0.063	0.006	0.03
276	23.00	0.07	0.035	0.063	0.006	0.03
277	23.08	0.07	0.035	0.063	0.006	0.03
278	23.17	0.07	0.035	0.063	0.006	0.03
279	23.25	0.07	0.035	0.063	0.006	0.03
280	23.33	0.07	0.035	0.062	0.006	0.03
281	23.42	0.07	0.035	0.062	0.006	0.03
282	23.50	0.07	0.035	0.062	0.006	0.03
283	23.58	0.07	0.035	0.062	0.006	0.03
284	23.67	0.07	0.035	0.062	0.006	0.03
285	23.75	0.07	0.035	0.062	0.006	0.03
286	23.83	0.07	0.035	0.062	0.006	0.03
287	23.92	0.07	0.035	0.062	0.006	0.03
288	24.00	0.07	0.035	0.062	0.006	0.03
Sum =		100.0			Sum =	36.2

Flood volume = Effective rainfall 3.01(In)
times area 43.3(Ac.)/[(In)/(Ft.)] = 10.9(Ac.Ft)
Total soil loss = 1.40(In)
Total soil loss = 5.042(Ac.Ft)
Total rainfall = 4.41(In)
Flood volume = 473516.0 Cubic Feet
Total soil loss = 219615.5 Cubic Feet

Peak flow rate of this hydrograph = 21.522(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0016	0.23	Q				
0+10	0.0080	0.94	VQ				
0+15	0.0159	1.15	VQ				
0+20	0.0251	1.34	VQ				
0+25	0.0370	1.72	V Q				
0+30	0.0496	1.83	V Q				
0+35	0.0625	1.88	V Q				
0+40	0.0755	1.89	V Q				
0+45	0.0886	1.89	V Q				
0+50	0.1024	2.01	V Q				
0+55	0.1186	2.36	V Q				
1+ 0	0.1356	2.47	V Q				
1+ 5	0.1521	2.40	V Q				
1+10	0.1663	2.05	V Q				
1+15	0.1797	1.95	V Q				
1+20	0.1929	1.91	V Q				
1+25	0.2060	1.90	V Q				
1+30	0.2190	1.90	V Q				
1+35	0.2321	1.89	V Q				
1+40	0.2451	1.89	V Q				
1+45	0.2582	1.89	V Q				
1+50	0.2720	2.01	|VQ				
1+55	0.2883	2.36	|V Q				
2+ 0	0.3053	2.47	|V Q				
2+ 5	0.3225	2.51	|V Q				
2+10	0.3399	2.52	|V Q				
2+15	0.3573	2.52	|V Q				
2+20	0.3747	2.53	|V Q				
2+25	0.3921	2.53	|V Q				
2+30	0.4095	2.53	|V Q				
2+35	0.4276	2.64	|V Q				
2+40	0.4483	2.99	|V Q				
2+45	0.4696	3.10	|V Q				
2+50	0.4912	3.14	|V Q				
2+55	0.5129	3.15	|V Q				
3+ 0	0.5347	3.16	|V Q				
3+ 5	0.5564	3.16	| V Q				

3+10	0.5782	3.16	V Q			
3+15	0.5999	3.16	V Q			
3+20	0.6217	3.16	V Q			
3+25	0.6434	3.16	V Q			
3+30	0.6652	3.16	V Q			
3+35	0.6869	3.16	V Q			
3+40	0.7086	3.16	V Q			
3+45	0.7304	3.16	V Q			
3+50	0.7529	3.27	V Q			
3+55	0.7779	3.63	V Q			
4+ 0	0.8036	3.73	V Q			
4+ 5	0.8296	3.77	V Q			
4+10	0.8556	3.78	V Q			
4+15	0.8817	3.79	V Q			
4+20	0.9086	3.90	V Q			
4+25	0.9379	4.26	V Q			
4+30	0.9679	4.36	V Q			
4+35	0.9983	4.40	V Q			
4+40	1.0287	4.41	V Q			
4+45	1.0591	4.42	V Q			
4+50	1.0903	4.53	V Q			
4+55	1.1240	4.89	V Q			
5+ 0	1.1584	5.00	V Q			
5+ 5	1.1915	4.81	V Q			
5+10	1.2198	4.11	VQ			
5+15	1.2467	3.90	VQ			
5+20	1.2738	3.94	VQ			
5+25	1.3032	4.27	VQ			
5+30	1.3333	4.37	VQ			
5+35	1.3644	4.52	VQ			
5+40	1.3980	4.88	VQ			
5+45	1.4324	4.99	VQ			
5+50	1.4671	5.03	VQ			
5+55	1.5018	5.05	VQ			
6+ 0	1.5366	5.05	VQ			
6+ 5	1.5722	5.17	VQ			
6+10	1.6102	5.52	V Q			
6+15	1.6489	5.63	VQ			
6+20	1.6879	5.67	VQ			
6+25	1.7270	5.68	VQ			
6+30	1.7662	5.68	VQ			
6+35	1.7993	4.81	Q			
6+40	1.8136	2.07	Q V			
6+45	1.8223	1.27	Q V			
6+50	1.8291	0.99	Q V			
6+55	1.8356	0.94	Q V			
7+ 0	1.8420	0.93	Q V			
7+ 5	1.8486	0.95	Q V			
7+10	1.8553	0.98	Q V			
7+15	1.8622	1.01	Q V			
7+20	1.8704	1.18	Q V			
7+25	1.8816	1.64	Q V			
7+30	1.8940	1.80	Q V			
7+35	1.9079	2.02	Q V			
7+40	1.9251	2.49	Q V			
7+45	1.9434	2.66	Q V			
7+50	1.9632	2.88	Q V			
7+55	1.9863	3.35	Q V			
8+ 0	2.0105	3.52	Q V			
8+ 5	2.0372	3.87	Q V			
8+10	2.0701	4.78	QV			
8+15	2.1051	5.08	QV			
8+20	2.1410	5.21	QV			
8+25	2.1772	5.26	QV			
8+30	2.2137	5.30	QV			
8+35	2.2514	5.47	QV			
8+40	2.2923	5.94	QV			
8+45	2.3343	6.10	Q			
8+50	2.3778	6.31	Q			
8+55	2.4245	6.79	VQ			
9+ 0	2.4724	6.95	Q			
9+ 5	2.5227	7.31	Q			
9+10	2.5792	8.21	VQ			
9+15	2.6378	8.51	V Q			
9+20	2.6982	8.77	V Q			

9+25	2.7620	9.26	| V Q |	|	|	|
9+30	2.8269	9.43	| V Q |	|	|	|
9+35	2.8934	9.65	| V Q |	|	|	|
9+40	2.9631	10.12	| V Q |	|	|	|
9+45	3.0339	10.29	| V Q |	|	|	|
9+50	3.1063	10.50	| V Q |	|	|	|
9+55	3.1819	10.98	| V Q |	|	|	|
10+ 0	3.2586	11.14	| V Q |	|	|	|
10+ 5	3.3292	10.25	| VQ |	|	|	|
10+10	3.3793	7.27	| Q | V |	|	|	|
10+15	3.4233	6.39	| Q | V |	|	|	|
10+20	3.4651	6.08	| Q | V |	|	|	|
10+25	3.5066	6.02	| Q | V |	|	|	|
10+30	3.5479	6.00	| Q | V |	|	|	|
10+35	3.5941	6.70	| Q | V |	|	|	|
10+40	3.6553	8.89	| Q V |	|	|	|
10+45	3.7212	9.57	| QV |	|	|	|
10+50	3.7890	9.84	| Q |	|	|	|
10+55	3.8573	9.93	| QV |	|	|	|
11+ 0	3.9261	9.98	| QV |	|	|	|
11+ 5	3.9942	9.89	| QV |	|	|	|
11+10	4.0595	9.48	| Q V |	|	|	|
11+15	4.1241	9.38	| Q V |	|	|	|
11+20	4.1885	9.35	| Q V |	|	|	|
11+25	4.2530	9.37	| Q V |	|	|	|
11+30	4.3177	9.39	| Q V |	|	|	|
11+35	4.3806	9.14	| Q V |	|	|	|
11+40	4.4377	8.30	| Q V |	|	|	|
11+45	4.4933	8.06	| Q V |	|	|	|
11+50	4.5492	8.13	| Q V |	|	|	|
11+55	4.6082	8.56	| Q V |	|	|	|
12+ 0	4.6682	8.71	| Q V |	|	|	|
12+ 5	4.7352	9.74	| Q V |	|	|	|
12+10	4.8234	12.80	| Q |	|	|	|
12+15	4.9181	13.75	| Q |	|	|	|
12+20	5.0162	14.25	| Q |	|	|	|
12+25	5.1181	14.80	| VQ |	|	|	|
12+30	5.2214	14.99	| Q |	|	|	|
12+35	5.3272	15.36	| VQ |	|	|	|
12+40	5.4392	16.26	| VQ |	|	|	|
12+45	5.5532	16.55	| V Q |	|	|	|
12+50	5.6690	16.82	| V Q |	|	|	|
12+55	5.7882	17.30	| V Q |	|	|	|
13+ 0	5.9085	17.47	| V Q |	|	|	|
13+ 5	6.0340	18.23	| V Q |	|	|	|
13+10	6.1747	20.43	| V Q |	|	|	|
13+15	6.3201	21.11	| V Q |	|	|	|
13+20	6.4674	21.38	| V Q |	|	|	|
13+25	6.6152	21.47	| V Q |	|	|	|
13+30	6.7635	21.52	| V Q |	|	|	|
13+35	6.9015	20.04	| VQ |	|	|	|
13+40	7.0069	15.31	| Q V |	|	|	|
13+45	7.1027	13.90	| Q V |	|	|	|
13+50	7.1949	13.39	| Q V |	|	|	|
13+55	7.2863	13.27	| Q V |	|	|	|
14+ 0	7.3775	13.23	| Q V |	|	|	|
14+ 5	7.4723	13.78	| Q V |	|	|	|
14+10	7.5793	15.53	| Q V |	|	|	|
14+15	7.6900	16.07	| Q V |	|	|	|
14+20	7.8013	16.15	| Q V |	|	|	|
14+25	7.9100	15.79	| Q V |	|	|	|
14+30	8.0182	15.71	| Q V |	|	|	|
14+35	8.1263	15.69	| Q V |	|	|	|
14+40	8.2345	15.70	| Q V |	|	|	|
14+45	8.3427	15.72	| Q V |	|	|	|
14+50	8.4502	15.60	| Q V |	|	|	|
14+55	8.5548	15.19	| Q V |	|	|	|
15+ 0	8.6587	15.08	| Q V |	|	|	|
15+ 5	8.7614	14.92	| Q | V |	|	|	|
15+10	8.8613	14.49	| Q | V |	|	|	|
15+15	8.9603	14.38	| Q | V |	|	|	|
15+20	9.0582	14.21	| Q V |	|	|	|
15+25	9.1531	13.79	| Q V |	|	|	|
15+30	9.2473	13.67	| Q V |	|	|	|
15+35	9.3375	13.09	| Q V |	|	|	|

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15+40       9.4158     11.37  |          |    Q     |          |   V      |
15+45       9.4906     10.87  |          |   Q      |          |   V      |
15+50       9.5643     10.69  |          |   Q      |          |    V     |
15+55       9.6377     10.66  |          |   Q      |          |    V     |
16+ 0       9.7111     10.66  |          |   Q      |          |    V     |
16+ 5       9.7745      9.21  |          | Q        |          |    V     |
16+10       9.8064      4.64  |      Q   |          |          |     V    |
16+15       9.8289      3.26  |    Q     |          |          |     V    |
16+20       9.8478      2.75  |  Q       |          |          |     V    |
16+25       9.8658      2.62  |  Q       |          |          |     V    |
16+30       9.8834      2.55  |  Q       |          |          |     V    |
16+35       9.9000      2.41  |  Q       |          |          |     V    |
16+40       9.9142      2.06  | Q        |          |          |     V    |
16+45       9.9277      1.95  | Q        |          |          |     V    |
16+50       9.9408      1.91  | Q        |          |          |     V    |
16+55       9.9539      1.90  | Q        |          |          |     V    |
17+ 0       9.9670      1.90  | Q        |          |          |     V    |
17+ 5       9.9779      1.58  | Q        |          |          |     V    |
17+10       9.9820      0.60  Q          |          |          |     V    |
17+15       9.9842      0.32  Q          |          |          |     V    |
17+20       9.9858      0.23  Q          |          |          |     V    |
17+25       9.9872      0.21  Q          |          |          |     V    |
17+30       9.9887      0.22  Q          |          |          |     V    |
17+35       9.9903      0.23  Q          |          |          |     V    |
17+40       9.9920      0.25  Q          |          |          |     V    |
17+45       9.9939      0.27  Q          |          |          |     V    |
17+50       9.9986      0.68  Q          |          |          |     V    |
17+55      10.0120      1.94  | Q        |          |          |     V    |
18+ 0      10.0280      2.32  |  Q       |          |          |     V    |
18+ 5      10.0449      2.46  |  Q       |          |          |     V    |
18+10      10.0621      2.50  |  Q       |          |          |      V   |
18+15      10.0795      2.52  |  Q       |          |          |      V   |
18+20      10.0969      2.53  |  Q       |          |          |      V   |
18+25      10.1143      2.53  |  Q       |          |          |      V   |
18+30      10.1317      2.53  |  Q       |          |          |      V   |
18+35      10.1483      2.41  |  Q       |          |          |      V   |
18+40      10.1625      2.06  | Q        |          |          |      V   |
18+45      10.1759      1.95  | Q        |          |          |      V   |
18+50      10.1883      1.80  | Q        |          |          |      V   |
18+55      10.1982      1.43  |Q         |          |          |      V   |
19+ 0      10.2073      1.32  |Q         |          |          |      V   |
19+ 5      10.2169      1.39  |Q         |          |          |      V   |
19+10      10.2289      1.74  | Q        |          |          |      V   |
19+15      10.2415      1.84  | Q        |          |          |      V   |
19+20      10.2552      1.99  | Q        |          |          |      V   |
19+25      10.2715      2.36  |  Q       |          |          |      V   |
19+30      10.2884      2.47  |  Q       |          |          |      V   |
19+35      10.3049      2.40  |  Q       |          |          |      V   |
19+40      10.3191      2.05  | Q        |          |          |      V   |
19+45      10.3325      1.95  | Q        |          |          |       V  |
19+50      10.3449      1.80  | Q        |          |          |       V  |
19+55      10.3548      1.43  |Q         |          |          |       V  |
20+ 0      10.3639      1.32  |Q         |          |          |       V  |
20+ 5      10.3735      1.39  |Q         |          |          |       V  |
20+10      10.3854      1.74  | Q        |          |          |       V  |
20+15      10.3981      1.84  | Q        |          |          |       V  |
20+20      10.4110      1.88  | Q        |          |          |       V  |
20+25      10.4240      1.89  | Q        |          |          |       V  |
20+30      10.4371      1.89  | Q        |          |          |       V  |
20+35      10.4501      1.89  | Q        |          |          |       V  |
20+40      10.4632      1.89  | Q        |          |          |       V  |
20+45      10.4762      1.89  | Q        |          |          |       V  |
20+50      10.4885      1.78  | Q        |          |          |       V  |
20+55      10.4983      1.43  |Q         |          |          |       V  |
21+ 0      10.5074      1.32  |Q         |          |          |       V  |
21+ 5      10.5170      1.39  |Q         |          |          |       V  |
21+10      10.5290      1.74  | Q        |          |          |       V  |
21+15      10.5416      1.84  | Q        |          |          |       V  |
21+20      10.5538      1.76  | Q        |          |          |       V  |
21+25      10.5636      1.42  |Q         |          |          |       V  |
21+30      10.5726      1.32  |Q         |          |          |       V  |
21+35      10.5822      1.39  |Q         |          |          |       V  |
21+40      10.5942      1.74  | Q        |          |          |       V  |
21+45      10.6069      1.84  | Q        |          |          |        V|
21+50      10.6190      1.76  | Q        |          |          |        V|
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   21+55      10.6288      1.42  |Q        |         |         |        V|
   22+ 0      10.6379      1.32  |Q        |         |         |        V|
   22+ 5      10.6475      1.39  |Q        |         |         |        V|
   22+10      10.6594      1.74  | Q       |         |         |        V|
   22+15      10.6721      1.84  | Q       |         |         |        V|
   22+20      10.6843      1.76  | Q       |         |         |        V|
   22+25      10.6940      1.42  |Q        |         |         |        V|
   22+30      10.7031      1.32  |Q        |         |         |        V|
   22+35      10.7119      1.28  |Q        |         |         |        V|
   22+40      10.7207      1.27  |Q        |         |         |        V|
   22+45      10.7294      1.27  |Q        |         |         |        V|
   22+50      10.7381      1.26  |Q        |         |         |        V|
   22+55      10.7468      1.26  |Q        |         |         |        V|
   23+ 0      10.7555      1.26  |Q        |         |         |        V|
   23+ 5      10.7642      1.26  |Q        |         |         |        V|
   23+10      10.7729      1.26  |Q        |         |         |        V|
   23+15      10.7816      1.26  |Q        |         |         |        V|
   23+20      10.7903      1.26  |Q        |         |         |        V|
   23+25      10.7990      1.26  |Q        |         |         |        V|
   23+30      10.8077      1.26  |Q        |         |         |        V|
   23+35      10.8164      1.26  |Q        |         |         |        V|
   23+40      10.8251      1.26  |Q        |         |         |        V|
   23+45      10.8338      1.26  |Q        |         |         |        V|
   23+50      10.8425      1.26  |Q        |         |         |        V|
   23+55      10.8512      1.26  |Q        |         |         |        V|
   24+ 0      10.8599      1.26  |Q        |         |         |        V|
   24+ 5      10.8670      1.04  |Q        |         |         |        V|
   24+10      10.8693      0.33  Q         |         |         |        V|
   24+15      10.8701      0.11  Q         |         |         |        V|
   24+20      10.8703      0.04  Q         |         |         |        V|
   24+25      10.8704      0.01  Q         |         |         |        V|
   24+30      10.8704      0.00  Q         |         |         |        V|
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UNIT HYDROGRAPH
DMA A
PROPOSED CONDITIONS
100-YEAR 1-HOUR

U n i t H y d r o g r a p h A n a l y s i s

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Study date 10/28/14 File: APROP1100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

14-0213 SHOPOFF
UNIT HYDROGRAPH
DMA A
PROPOSED CONDITIONS
100-YEAR 1-HOUR

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 43.30(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.30(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 3310.00(Ft.)
Length along longest watercourse measured to centroid = 970.00(Ft.)
Length along longest watercourse = 0.627 Mi.
Length along longest watercourse measured to centroid = 0.184 Mi.
Difference in elevation = 30.00(Ft.)
Slope along watercourse = 47.8550 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.076 Hr.
Lag time = 4.56 Min.
25% of lag time = 1.14 Min.
40% of lag time = 1.82 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
43.30	0.57	24.68

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
43.30	1.30	56.29

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.570(In)
Area Averaged 100-Year Rainfall = 1.300(In)

Point rain (area averaged) = 1.300(In)
Areal adjustment factor = 99.96 %
Adjusted average point rain = 1.299(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
43.300	62.00	0.900

Total Area Entered = 43.30(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
62.0	62.0	0.448	0.900	0.085	1.000	0.085

Sum (F) = 0.085

Area averaged mean soil loss (F) (In/Hr) = 0.085
Minimum soil loss rate ((In/Hr)) = 0.043
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

Slope of intensity-duration curve for a 1 hour storm =0.5500

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	109.748	17.877	7.801
2	0.167	219.496	56.181	24.516
3	0.250	329.244	16.899	7.374
4	0.333	438.992	6.258	2.731
5	0.417	548.740	1.680	0.733
6	0.500	658.488	0.772	0.337
7	0.583	768.235	0.334	0.146
		Sum = 100.000	Sum=	43.638

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	3.30	0.515	0.085	---	0.43
2	0.17	4.20	0.655	0.085	---	0.57
3	0.25	4.40	0.686	0.085	---	0.60
4	0.33	4.80	0.749	0.085	---	0.66
5	0.42	5.20	0.811	0.085	---	0.73
6	0.50	6.20	0.967	0.085	---	0.88
7	0.58	6.80	1.060	0.085	---	0.98
8	0.67	8.80	1.372	0.085	---	1.29
9	0.75	13.90	2.168	0.085	---	2.08
10	0.83	31.40	4.896	0.085	---	4.81
11	0.92	7.20	1.123	0.085	---	1.04
12	1.00	3.80	0.593	0.085	---	0.51
	Sum =	100.0			Sum =	14.6

Flood volume = Effective rainfall 1.21(In)
times area 43.3(Ac.)/[(In)/(Ft.)] = 4.4(Ac.Ft)
Total soil loss = 0.09(In)
Total soil loss = 0.307(Ac.Ft)
Total rainfall = 1.30(In)
Flood volume = 190861.5 Cubic Feet
Total soil loss = 13391.0 Cubic Feet

Peak flow rate of this hydrograph = 146.113(CFS)

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1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	50.0	100.0	150.0	200.0
0+ 5	0.0231	3.35	Q				
0+10	0.1262	14.98	VQ				
0+15	0.2766	21.83	V Q				
0+20	0.4508	25.29	VQ				
0+25	0.6453	28.24	Q				
0+30	0.8642	31.78	QV				
0+35	1.1197	37.10	Q V				
0+40	1.4174	43.23	Q V				
0+45	1.8187	58.27	Q V				
0+50	2.5197	101.78	Q V				
0+55	3.5259	146.11	Q V				
1+ 0	4.0218	72.00	Q			V	
1+ 5	4.2653	35.35	Q			V	

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    1+10       4.3410     11.00  | Q       |         |         |        V|
    1+15       4.3690      4.07  Q         |         |         |        V|
    1+20       4.3788      1.42  Q         |         |         |        V|
    1+25       4.3811      0.32  Q         |         |         |        V|
    1+30       4.3816      0.07  Q         |         |         |        V|
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UNIT HYDROGRAPH
DMA A
PROPOSED CONDITIONS
100-YEAR 3-HOUR

U n i t H y d r o g r a p h A n a l y s i s

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Study date 10/21/14 File: APROP3100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

14-0213 SHOPOFF
UNIT HYDROGRAPH
DMA A
PROPOSED CONDITIONS
100-YEAR 3-HOUR

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 43.30(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.30(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 3310.00(Ft.)
Length along longest watercourse measured to centroid = 970.00(Ft.)
Length along longest watercourse = 0.627 Mi.
Length along longest watercourse measured to centroid = 0.184 Mi.
Difference in elevation = 30.00(Ft.)
Slope along watercourse = 47.8550 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.076 Hr.
Lag time = 4.56 Min.
25% of lag time = 1.14 Min.
40% of lag time = 1.82 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
0.00	1.00	0.00
43.30	1.00	43.30

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
43.30	2.20	95.26

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.000(In)
Area Averaged 100-Year Rainfall = 2.200(In)

Point rain (area averaged) = 2.200(In)
Areal adjustment factor = 99.98 %
Adjusted average point rain = 2.200(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
43.300	62.00	0.900

Total Area Entered = 43.30(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
62.0	62.0	0.448	0.900	0.085	1.000	0.085
					Sum (F) =	0.085

Area averaged mean soil loss (F) (In/Hr) = 0.085
Minimum soil loss rate ((In/Hr)) = 0.043
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	109.748	17.877	7.801
2	0.167	219.496	56.181	24.516
3	0.250	329.244	16.899	7.374
4	0.333	438.992	6.258	2.731
5	0.417	548.740	1.680	0.733
6	0.500	658.488	0.772	0.337
7	0.583	768.235	0.334	0.146
			Sum = 100.000	Sum= 43.638

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.343	0.085	---	0.26
2	0.17	1.30	0.343	0.085	---	0.26
3	0.25	1.10	0.290	0.085	---	0.21
4	0.33	1.50	0.396	0.085	---	0.31
5	0.42	1.50	0.396	0.085	---	0.31
6	0.50	1.80	0.475	0.085	---	0.39
7	0.58	1.50	0.396	0.085	---	0.31
8	0.67	1.80	0.475	0.085	---	0.39
9	0.75	1.80	0.475	0.085	---	0.39
10	0.83	1.50	0.396	0.085	---	0.31
11	0.92	1.60	0.422	0.085	---	0.34
12	1.00	1.80	0.475	0.085	---	0.39
13	1.08	2.20	0.581	0.085	---	0.50
14	1.17	2.20	0.581	0.085	---	0.50
15	1.25	2.20	0.581	0.085	---	0.50
16	1.33	2.00	0.528	0.085	---	0.44
17	1.42	2.60	0.686	0.085	---	0.60
18	1.50	2.70	0.713	0.085	---	0.63
19	1.58	2.40	0.633	0.085	---	0.55
20	1.67	2.70	0.713	0.085	---	0.63
21	1.75	3.30	0.871	0.085	---	0.79
22	1.83	3.10	0.818	0.085	---	0.73
23	1.92	2.90	0.765	0.085	---	0.68
24	2.00	3.00	0.792	0.085	---	0.71
25	2.08	3.10	0.818	0.085	---	0.73
26	2.17	4.20	1.109	0.085	---	1.02
27	2.25	5.00	1.320	0.085	---	1.23
28	2.33	3.50	0.924	0.085	---	0.84
29	2.42	6.80	1.795	0.085	---	1.71
30	2.50	7.30	1.927	0.085	---	1.84
31	2.58	8.20	2.164	0.085	---	2.08
32	2.67	5.90	1.557	0.085	---	1.47
33	2.75	2.00	0.528	0.085	---	0.44
34	2.83	1.80	0.475	0.085	---	0.39
35	2.92	1.80	0.475	0.085	---	0.39
36	3.00	0.60	0.158	0.085	---	0.07
	Sum =	100.0			Sum =	23.3

Flood volume = Effective rainfall 1.94(In)
times area 43.3(Ac.)/[(In)/(Ft.)] = 7.0(Ac.Ft)
Total soil loss = 0.26(In)
Total soil loss = 0.922(Ac.Ft)
Total rainfall = 2.20(In)
Flood volume = 305555.2 Cubic Feet
Total soil loss = 40173.1 Cubic Feet

Peak flow rate of this hydrograph = 81.930(CFS)

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	22.5	45.0	67.5	90.0
0+ 5	0.0139	2.01	Q				
0+10	0.0713	8.34	V Q				
0+15	0.1390	9.83	V Q				
0+20	0.2083	10.07	V Q				
0+25	0.2941	12.45	V Q				
0+30	0.3891	13.79	V Q				
0+35	0.4952	15.41	V Q				
0+40	0.5966	14.73	V Q				
0+45	0.7091	16.33	V Q				
0+50	0.8203	16.15	V Q				
0+55	0.9209	14.60	VQ				
1+ 0	1.0250	15.12	VQ				
1+ 5	1.1437	17.23	VQ				
1+10	1.2830	20.24	VQ				
1+15	1.4287	21.15	VQ				
1+20	1.5738	21.06	VQ				
1+25	1.7191	21.10	Q				
1+30	1.8902	24.85	VQ				
1+35	2.0687	25.92	Q				
1+40	2.2422	25.18	QV				
1+45	2.4346	27.95	QV				
1+50	2.6540	31.85	QV				
1+55	2.8710	31.50	Q V				
2+ 0	3.0810	30.49	Q V				
2+ 5	3.2941	30.94	Q V				
2+10	3.5278	33.94	Q V				
2+15	3.8235	42.94	Q V				
2+20	4.1489	47.24	Q V				
2+25	4.4704	46.69	Q V				
2+30	4.9317	66.97	VQ				
2+35	5.4666	77.66	V Q				
2+40	6.0308	81.93	V Q				
2+45	6.4554	61.65	Q V				
2+50	6.6792	32.49	Q V				
2+55	6.8327	22.29	Q V				
3+ 0	6.9448	16.27	Q V				
3+ 5	6.9921	6.86	Q V				
3+10	7.0076	2.26	Q V				
3+15	7.0123	0.68	Q V				
3+20	7.0139	0.24	Q V				
3+25	7.0145	0.08	Q V				
3+30	7.0146	0.01	Q V				

UNIT HYDROGRAPH
DMA A
PROPOSED CONDITIONS
100-YEAR 6-HOUR

U n i t H y d r o g r a p h A n a l y s i s

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Study date 10/21/14 File: APROP6100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

14-0213 SHOPOFF
UNIT HYDROGRAPH
DMA A
PROPOSED CONDITIONS
100-YEAR 6-HOUR

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 43.30(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.30(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 3310.00(Ft.)
Length along longest watercourse measured to centroid = 970.00(Ft.)
Length along longest watercourse = 0.627 Mi.
Length along longest watercourse measured to centroid = 0.184 Mi.
Difference in elevation = 30.00(Ft.)
Slope along watercourse = 47.8550 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.076 Hr.
Lag time = 4.56 Min.
25% of lag time = 1.14 Min.
40% of lag time = 1.82 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
43.30	1.40	60.62

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
43.30	3.20	138.56

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.400(In)
Area Averaged 100-Year Rainfall = 3.200(In)

Point rain (area averaged) = 3.200(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 3.200(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
43.300	62.00	0.900

Total Area Entered = 43.30(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F

AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
62.0	62.0	0.448	0.900	0.085	1.000	0.085
					Sum (F) =	0.085

Area averaged mean soil loss (F) (In/Hr) = 0.085
Minimum soil loss rate ((In/Hr)) = 0.043
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	109.748	17.877	7.801
2	0.167	219.496	56.181	24.516
3	0.250	329.244	16.899	7.374
4	0.333	438.992	6.258	2.731
5	0.417	548.740	1.680	0.733
6	0.500	658.488	0.772	0.337
7	0.583	768.235	0.334	0.146
			Sum = 100.000 Sum=	43.638

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.192	0.085	---	0.11
2	0.17	0.60	0.230	0.085	---	0.15
3	0.25	0.60	0.230	0.085	---	0.15
4	0.33	0.60	0.230	0.085	---	0.15
5	0.42	0.60	0.230	0.085	---	0.15
6	0.50	0.70	0.269	0.085	---	0.18
7	0.58	0.70	0.269	0.085	---	0.18
8	0.67	0.70	0.269	0.085	---	0.18
9	0.75	0.70	0.269	0.085	---	0.18
10	0.83	0.70	0.269	0.085	---	0.18
11	0.92	0.70	0.269	0.085	---	0.18
12	1.00	0.80	0.307	0.085	---	0.22
13	1.08	0.80	0.307	0.085	---	0.22
14	1.17	0.80	0.307	0.085	---	0.22
15	1.25	0.80	0.307	0.085	---	0.22
16	1.33	0.80	0.307	0.085	---	0.22
17	1.42	0.80	0.307	0.085	---	0.22
18	1.50	0.80	0.307	0.085	---	0.22
19	1.58	0.80	0.307	0.085	---	0.22
20	1.67	0.80	0.307	0.085	---	0.22
21	1.75	0.80	0.307	0.085	---	0.22
22	1.83	0.80	0.307	0.085	---	0.22
23	1.92	0.80	0.307	0.085	---	0.22
24	2.00	0.90	0.346	0.085	---	0.26
25	2.08	0.80	0.307	0.085	---	0.22
26	2.17	0.90	0.346	0.085	---	0.26
27	2.25	0.90	0.346	0.085	---	0.26
28	2.33	0.90	0.346	0.085	---	0.26
29	2.42	0.90	0.346	0.085	---	0.26
30	2.50	0.90	0.346	0.085	---	0.26
31	2.58	0.90	0.346	0.085	---	0.26
32	2.67	0.90	0.346	0.085	---	0.26
33	2.75	1.00	0.384	0.085	---	0.30
34	2.83	1.00	0.384	0.085	---	0.30
35	2.92	1.00	0.384	0.085	---	0.30
36	3.00	1.00	0.384	0.085	---	0.30
37	3.08	1.00	0.384	0.085	---	0.30
38	3.17	1.10	0.422	0.085	---	0.34
39	3.25	1.10	0.422	0.085	---	0.34
40	3.33	1.10	0.422	0.085	---	0.34
41	3.42	1.20	0.461	0.085	---	0.38
42	3.50	1.30	0.499	0.085	---	0.41
43	3.58	1.40	0.538	0.085	---	0.45
44	3.67	1.40	0.538	0.085	---	0.45
45	3.75	1.50	0.576	0.085	---	0.49

46	3.83	1.50	0.576	0.085	---	0.49
47	3.92	1.60	0.614	0.085	---	0.53
48	4.00	1.60	0.614	0.085	---	0.53
49	4.08	1.70	0.653	0.085	---	0.57
50	4.17	1.80	0.691	0.085	---	0.61
51	4.25	1.90	0.729	0.085	---	0.64
52	4.33	2.00	0.768	0.085	---	0.68
53	4.42	2.10	0.806	0.085	---	0.72
54	4.50	2.10	0.806	0.085	---	0.72
55	4.58	2.20	0.845	0.085	---	0.76
56	4.67	2.30	0.883	0.085	---	0.80
57	4.75	2.40	0.921	0.085	---	0.84
58	4.83	2.40	0.921	0.085	---	0.84
59	4.92	2.50	0.960	0.085	---	0.87
60	5.00	2.60	0.998	0.085	---	0.91
61	5.08	3.10	1.190	0.085	---	1.11
62	5.17	3.60	1.382	0.085	---	1.30
63	5.25	3.90	1.497	0.085	---	1.41
64	5.33	4.20	1.613	0.085	---	1.53
65	5.42	4.70	1.805	0.085	---	1.72
66	5.50	5.60	2.150	0.085	---	2.06
67	5.58	1.90	0.729	0.085	---	0.64
68	5.67	0.90	0.346	0.085	---	0.26
69	5.75	0.60	0.230	0.085	---	0.15
70	5.83	0.50	0.192	0.085	---	0.11
71	5.92	0.30	0.115	0.085	---	0.03
72	6.00	0.20	0.077	0.085	0.014	0.06
Sum =		100.0			Sum =	32.3

Flood volume = Effective rainfall 2.69(In)
times area 43.3(Ac.)/[(In)/(Ft.)] = 9.7(Ac.Ft)
Total soil loss = 0.51(In)
Total soil loss = 1.823(Ac.Ft)
Total rainfall = 3.20(In)
Flood volume = 423486.7 Cubic Feet
Total soil loss = 79411.3 Cubic Feet

Peak flow rate of this hydrograph = 74.875(CFS)

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6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	20.0	40.0	60.0	80.0
0+ 5	0.0057	0.83	Q	|	|	|	|
0+10	0.0316	3.75	VQ	|	|	|	|
0+15	0.0693	5.48	V Q	|	|	|	|
0+20	0.1110	6.06	V Q	|	|	|	|
0+25	0.1540	6.24	V Q	|	|	|	|
0+30	0.1995	6.60	V Q	|	|	|	|
0+35	0.2517	7.57	|V Q	|	|	|	|
0+40	0.3058	7.86	|V Q	|	|	|	|
0+45	0.3607	7.97	|V Q	|	|	|	|
0+50	0.4158	8.00	|V Q	|	|	|	|
0+55	0.4709	8.01	|V Q	|	|	|	|
1+ 0	0.5282	8.31	| V Q	|	|	|	|
1+ 5	0.5919	9.26	| V Q	|	|	|	|
1+10	0.6576	9.54	| V Q	|	|	|	|
1+15	0.7240	9.64	| V Q	|	|	|	|
1+20	0.7907	9.67	| VQ	|	|	|	|
1+25	0.8574	9.69	| VQ	|	|	|	|
1+30	0.9241	9.69	| VQ	|	|	|	|
1+35	0.9908	9.69	| Q	|	|	|	|
1+40	1.0576	9.69	| Q	|	|	|	|
1+45	1.1243	9.69	| Q	|	|	|	|
1+50	1.1911	9.69	| Q	|	|	|	|
1+55	1.2578	9.69	| QV	|	|	|	|
2+ 0	1.3266	9.99	| QV	|	|	|	|
2+ 5	1.3998	10.63	| Q	|	|	|	|
2+10	1.4706	10.27	| QV	|	|	|	|
2+15	1.5466	11.04	| QV	|	|	|	|
2+20	1.6241	11.24	| QV	|	|	|	|

2+25	1.7021	11.33		Q V			
2+30	1.7803	11.35		Q V			
2+35	1.8586	11.36		Q V			
2+40	1.9368	11.37		Q V			
2+45	2.0172	11.67		Q V			
2+50	2.1040	12.61		Q V			
2+55	2.1928	12.89		Q V			
3+ 0	2.2823	13.00		Q V			
3+ 5	2.3720	13.03		Q V			
3+10	2.4639	13.34		Q V			
3+15	2.5623	14.28		Q V			
3+20	2.6626	14.57		Q V			
3+25	2.7657	14.97		Q V			
3+30	2.8776	16.24		Q V			
3+35	3.0000	17.78		Q V			
3+40	3.1317	19.12		Q V			
3+45	3.2683	19.83		Q V			
3+50	3.4123	20.92		Q V			
3+55	3.5607	21.55		Q V			
4+ 0	3.7165	22.61		Q V			
4+ 5	3.8765	23.23		Q V			
4+10	4.0458	24.59		Q V			
4+15	4.2259	26.15		Q V			
4+20	4.4173	27.79		Q V			
4+25	4.6202	29.45		Q V			
4+30	4.8325	30.83		Q V			
4+35	5.0498	31.56		Q V			
4+40	5.2768	32.95		Q V			
4+45	5.5146	34.52		Q V			
4+50	5.7616	35.87		Q V			
4+55	6.0137	36.59		Q V			
5+ 0	6.2752	37.98		Q V			
5+ 5	6.5559	40.75		Q V			
5+10	6.8821	47.37		Q V			
5+15	7.2577	54.53		Q V			
5+20	7.6725	60.24		QV			
5+25	8.1277	66.09		Q			
5+30	8.6434	74.87		V Q			
5+35	9.1542	74.17		Q			
5+40	9.4266	39.55		Q			V
5+45	9.5636	19.90		Q			V
5+50	9.6352	10.39	Q				V
5+55	9.6769	6.05	Q				V
6+ 0	9.6984	3.12	Q				V
6+ 5	9.7146	2.35	Q				V
6+10	9.7195	0.71	Q				V
6+15	9.7212	0.25	Q				V
6+20	9.7217	0.07	Q				V
6+25	9.7219	0.03	Q				V
6+30	9.7219	0.01	Q				V

UNIT HYDROGRAPH
DMA A
PROPOSED CONDITIONS
100-YEAR 24-HOUR

U n i t H y d r o g r a p h A n a l y s i s

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Study date 10/21/14 File: APROP24100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

14-0213 SHOPOFF
UNIT HYDROGRAPH
DMA A
PROPOSED CONDITIONS
100-YEAR 24-HOUR

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 43.30(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.30(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 3310.00(Ft.)
Length along longest watercourse measured to centroid = 970.00(Ft.)
Length along longest watercourse = 0.627 Mi.
Length along longest watercourse measured to centroid = 0.184 Mi.
Difference in elevation = 30.00(Ft.)
Slope along watercourse = 47.8550 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.076 Hr.
Lag time = 4.56 Min.
25% of lag time = 1.14 Min.
40% of lag time = 1.82 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
43.30	2.60	112.58

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
43.30	7.00	303.10

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 2.600(In)
Area Averaged 100-Year Rainfall = 7.000(In)

Point rain (area averaged) = 7.000(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 6.999(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
43.300	62.00	0.900

Total Area Entered = 43.30(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F

AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
62.0	62.0	0.448	0.900	0.085	1.000	0.085
					Sum (F) =	0.085

Area averaged mean soil loss (F) (In/Hr) = 0.085
Minimum soil loss rate ((In/Hr)) = 0.043
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %		Unit Hydrograph (CFS)
1	0.083	109.748	17.877		7.801
2	0.167	219.496	56.181		24.516
3	0.250	329.244	16.899		7.374
4	0.333	438.992	6.258		2.731
5	0.417	548.740	1.680		0.733
6	0.500	658.488	0.772		0.337
7	0.583	768.235	0.334		0.146
			Sum = 100.000	Sum=	43.638

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.056	0.151	0.010	0.05
2	0.17	0.07	0.056	0.150	0.010	0.05
3	0.25	0.07	0.056	0.150	0.010	0.05
4	0.33	0.10	0.084	0.149	0.015	0.07
5	0.42	0.10	0.084	0.149	0.015	0.07
6	0.50	0.10	0.084	0.148	0.015	0.07
7	0.58	0.10	0.084	0.148	0.015	0.07
8	0.67	0.10	0.084	0.147	0.015	0.07
9	0.75	0.10	0.084	0.146	0.015	0.07
10	0.83	0.13	0.112	0.146	0.020	0.09
11	0.92	0.13	0.112	0.145	0.020	0.09
12	1.00	0.13	0.112	0.145	0.020	0.09
13	1.08	0.10	0.084	0.144	0.015	0.07
14	1.17	0.10	0.084	0.144	0.015	0.07
15	1.25	0.10	0.084	0.143	0.015	0.07
16	1.33	0.10	0.084	0.142	0.015	0.07
17	1.42	0.10	0.084	0.142	0.015	0.07
18	1.50	0.10	0.084	0.141	0.015	0.07
19	1.58	0.10	0.084	0.141	0.015	0.07
20	1.67	0.10	0.084	0.140	0.015	0.07
21	1.75	0.10	0.084	0.140	0.015	0.07
22	1.83	0.13	0.112	0.139	0.020	0.09
23	1.92	0.13	0.112	0.138	0.020	0.09
24	2.00	0.13	0.112	0.138	0.020	0.09
25	2.08	0.13	0.112	0.137	0.020	0.09
26	2.17	0.13	0.112	0.137	0.020	0.09
27	2.25	0.13	0.112	0.136	0.020	0.09
28	2.33	0.13	0.112	0.136	0.020	0.09
29	2.42	0.13	0.112	0.135	0.020	0.09
30	2.50	0.13	0.112	0.135	0.020	0.09
31	2.58	0.17	0.140	0.134	---	0.01
32	2.67	0.17	0.140	0.133	---	0.01
33	2.75	0.17	0.140	0.133	---	0.01
34	2.83	0.17	0.140	0.132	---	0.01
35	2.92	0.17	0.140	0.132	---	0.01
36	3.00	0.17	0.140	0.131	---	0.01
37	3.08	0.17	0.140	0.131	---	0.01
38	3.17	0.17	0.140	0.130	---	0.01
39	3.25	0.17	0.140	0.130	---	0.01
40	3.33	0.17	0.140	0.129	---	0.01
41	3.42	0.17	0.140	0.129	---	0.01
42	3.50	0.17	0.140	0.128	---	0.01
43	3.58	0.17	0.140	0.127	---	0.01
44	3.67	0.17	0.140	0.127	---	0.01
45	3.75	0.17	0.140	0.126	---	0.01

46	3.83	0.20	0.168	0.126	---	0.04
47	3.92	0.20	0.168	0.125	---	0.04
48	4.00	0.20	0.168	0.125	---	0.04
49	4.08	0.20	0.168	0.124	---	0.04
50	4.17	0.20	0.168	0.124	---	0.04
51	4.25	0.20	0.168	0.123	---	0.04
52	4.33	0.23	0.196	0.123	---	0.07
53	4.42	0.23	0.196	0.122	---	0.07
54	4.50	0.23	0.196	0.122	---	0.07
55	4.58	0.23	0.196	0.121	---	0.07
56	4.67	0.23	0.196	0.121	---	0.08
57	4.75	0.23	0.196	0.120	---	0.08
58	4.83	0.27	0.224	0.120	---	0.10
59	4.92	0.27	0.224	0.119	---	0.10
60	5.00	0.27	0.224	0.119	---	0.11
61	5.08	0.20	0.168	0.118	---	0.05
62	5.17	0.20	0.168	0.118	---	0.05
63	5.25	0.20	0.168	0.117	---	0.05
64	5.33	0.23	0.196	0.116	---	0.08
65	5.42	0.23	0.196	0.116	---	0.08
66	5.50	0.23	0.196	0.115	---	0.08
67	5.58	0.27	0.224	0.115	---	0.11
68	5.67	0.27	0.224	0.114	---	0.11
69	5.75	0.27	0.224	0.114	---	0.11
70	5.83	0.27	0.224	0.113	---	0.11
71	5.92	0.27	0.224	0.113	---	0.11
72	6.00	0.27	0.224	0.112	---	0.11
73	6.08	0.30	0.252	0.112	---	0.14
74	6.17	0.30	0.252	0.111	---	0.14
75	6.25	0.30	0.252	0.111	---	0.14
76	6.33	0.30	0.252	0.110	---	0.14
77	6.42	0.30	0.252	0.110	---	0.14
78	6.50	0.30	0.252	0.109	---	0.14
79	6.58	0.33	0.280	0.109	---	0.17
80	6.67	0.33	0.280	0.108	---	0.17
81	6.75	0.33	0.280	0.108	---	0.17
82	6.83	0.33	0.280	0.108	---	0.17
83	6.92	0.33	0.280	0.107	---	0.17
84	7.00	0.33	0.280	0.107	---	0.17
85	7.08	0.33	0.280	0.106	---	0.17
86	7.17	0.33	0.280	0.106	---	0.17
87	7.25	0.33	0.280	0.105	---	0.17
88	7.33	0.37	0.308	0.105	---	0.20
89	7.42	0.37	0.308	0.104	---	0.20
90	7.50	0.37	0.308	0.104	---	0.20
91	7.58	0.40	0.336	0.103	---	0.23
92	7.67	0.40	0.336	0.103	---	0.23
93	7.75	0.40	0.336	0.102	---	0.23
94	7.83	0.43	0.364	0.102	---	0.26
95	7.92	0.43	0.364	0.101	---	0.26
96	8.00	0.43	0.364	0.101	---	0.26
97	8.08	0.50	0.420	0.100	---	0.32
98	8.17	0.50	0.420	0.100	---	0.32
99	8.25	0.50	0.420	0.099	---	0.32
100	8.33	0.50	0.420	0.099	---	0.32
101	8.42	0.50	0.420	0.098	---	0.32
102	8.50	0.50	0.420	0.098	---	0.32
103	8.58	0.53	0.448	0.098	---	0.35
104	8.67	0.53	0.448	0.097	---	0.35
105	8.75	0.53	0.448	0.097	---	0.35
106	8.83	0.57	0.476	0.096	---	0.38
107	8.92	0.57	0.476	0.096	---	0.38
108	9.00	0.57	0.476	0.095	---	0.38
109	9.08	0.63	0.532	0.095	---	0.44
110	9.17	0.63	0.532	0.094	---	0.44
111	9.25	0.63	0.532	0.094	---	0.44
112	9.33	0.67	0.560	0.093	---	0.47
113	9.42	0.67	0.560	0.093	---	0.47
114	9.50	0.67	0.560	0.093	---	0.47
115	9.58	0.70	0.588	0.092	---	0.50
116	9.67	0.70	0.588	0.092	---	0.50
117	9.75	0.70	0.588	0.091	---	0.50
118	9.83	0.73	0.616	0.091	---	0.53
119	9.92	0.73	0.616	0.090	---	0.53
120	10.00	0.73	0.616	0.090	---	0.53

121	10.08	0.50	0.420	0.090	---	0.33
122	10.17	0.50	0.420	0.089	---	0.33
123	10.25	0.50	0.420	0.089	---	0.33
124	10.33	0.50	0.420	0.088	---	0.33
125	10.42	0.50	0.420	0.088	---	0.33
126	10.50	0.50	0.420	0.087	---	0.33
127	10.58	0.67	0.560	0.087	---	0.47
128	10.67	0.67	0.560	0.087	---	0.47
129	10.75	0.67	0.560	0.086	---	0.47
130	10.83	0.67	0.560	0.086	---	0.47
131	10.92	0.67	0.560	0.085	---	0.47
132	11.00	0.67	0.560	0.085	---	0.48
133	11.08	0.63	0.532	0.084	---	0.45
134	11.17	0.63	0.532	0.084	---	0.45
135	11.25	0.63	0.532	0.084	---	0.45
136	11.33	0.63	0.532	0.083	---	0.45
137	11.42	0.63	0.532	0.083	---	0.45
138	11.50	0.63	0.532	0.082	---	0.45
139	11.58	0.57	0.476	0.082	---	0.39
140	11.67	0.57	0.476	0.082	---	0.39
141	11.75	0.57	0.476	0.081	---	0.39
142	11.83	0.60	0.504	0.081	---	0.42
143	11.92	0.60	0.504	0.080	---	0.42
144	12.00	0.60	0.504	0.080	---	0.42
145	12.08	0.83	0.700	0.080	---	0.62
146	12.17	0.83	0.700	0.079	---	0.62
147	12.25	0.83	0.700	0.079	---	0.62
148	12.33	0.87	0.728	0.078	---	0.65
149	12.42	0.87	0.728	0.078	---	0.65
150	12.50	0.87	0.728	0.078	---	0.65
151	12.58	0.93	0.784	0.077	---	0.71
152	12.67	0.93	0.784	0.077	---	0.71
153	12.75	0.93	0.784	0.076	---	0.71
154	12.83	0.97	0.812	0.076	---	0.74
155	12.92	0.97	0.812	0.076	---	0.74
156	13.00	0.97	0.812	0.075	---	0.74
157	13.08	1.13	0.952	0.075	---	0.88
158	13.17	1.13	0.952	0.074	---	0.88
159	13.25	1.13	0.952	0.074	---	0.88
160	13.33	1.13	0.952	0.074	---	0.88
161	13.42	1.13	0.952	0.073	---	0.88
162	13.50	1.13	0.952	0.073	---	0.88
163	13.58	0.77	0.644	0.073	---	0.57
164	13.67	0.77	0.644	0.072	---	0.57
165	13.75	0.77	0.644	0.072	---	0.57
166	13.83	0.77	0.644	0.071	---	0.57
167	13.92	0.77	0.644	0.071	---	0.57
168	14.00	0.77	0.644	0.071	---	0.57
169	14.08	0.90	0.756	0.070	---	0.69
170	14.17	0.90	0.756	0.070	---	0.69
171	14.25	0.90	0.756	0.070	---	0.69
172	14.33	0.87	0.728	0.069	---	0.66
173	14.42	0.87	0.728	0.069	---	0.66
174	14.50	0.87	0.728	0.069	---	0.66
175	14.58	0.87	0.728	0.068	---	0.66
176	14.67	0.87	0.728	0.068	---	0.66
177	14.75	0.87	0.728	0.068	---	0.66
178	14.83	0.83	0.700	0.067	---	0.63
179	14.92	0.83	0.700	0.067	---	0.63
180	15.00	0.83	0.700	0.067	---	0.63
181	15.08	0.80	0.672	0.066	---	0.61
182	15.17	0.80	0.672	0.066	---	0.61
183	15.25	0.80	0.672	0.066	---	0.61
184	15.33	0.77	0.644	0.065	---	0.58
185	15.42	0.77	0.644	0.065	---	0.58
186	15.50	0.77	0.644	0.065	---	0.58
187	15.58	0.63	0.532	0.064	---	0.47
188	15.67	0.63	0.532	0.064	---	0.47
189	15.75	0.63	0.532	0.064	---	0.47
190	15.83	0.63	0.532	0.063	---	0.47
191	15.92	0.63	0.532	0.063	---	0.47
192	16.00	0.63	0.532	0.063	---	0.47
193	16.08	0.13	0.112	0.062	---	0.05
194	16.17	0.13	0.112	0.062	---	0.05
195	16.25	0.13	0.112	0.062	---	0.05

196	16.33	0.13	0.112	0.061	---	0.05
197	16.42	0.13	0.112	0.061	---	0.05
198	16.50	0.13	0.112	0.061	---	0.05
199	16.58	0.10	0.084	0.060	---	0.02
200	16.67	0.10	0.084	0.060	---	0.02
201	16.75	0.10	0.084	0.060	---	0.02
202	16.83	0.10	0.084	0.059	---	0.02
203	16.92	0.10	0.084	0.059	---	0.02
204	17.00	0.10	0.084	0.059	---	0.03
205	17.08	0.17	0.140	0.059	---	0.08
206	17.17	0.17	0.140	0.058	---	0.08
207	17.25	0.17	0.140	0.058	---	0.08
208	17.33	0.17	0.140	0.058	---	0.08
209	17.42	0.17	0.140	0.057	---	0.08
210	17.50	0.17	0.140	0.057	---	0.08
211	17.58	0.17	0.140	0.057	---	0.08
212	17.67	0.17	0.140	0.057	---	0.08
213	17.75	0.17	0.140	0.056	---	0.08
214	17.83	0.13	0.112	0.056	---	0.06
215	17.92	0.13	0.112	0.056	---	0.06
216	18.00	0.13	0.112	0.055	---	0.06
217	18.08	0.13	0.112	0.055	---	0.06
218	18.17	0.13	0.112	0.055	---	0.06
219	18.25	0.13	0.112	0.055	---	0.06
220	18.33	0.13	0.112	0.054	---	0.06
221	18.42	0.13	0.112	0.054	---	0.06
222	18.50	0.13	0.112	0.054	---	0.06
223	18.58	0.10	0.084	0.054	---	0.03
224	18.67	0.10	0.084	0.053	---	0.03
225	18.75	0.10	0.084	0.053	---	0.03
226	18.83	0.07	0.056	0.053	---	0.00
227	18.92	0.07	0.056	0.053	---	0.00
228	19.00	0.07	0.056	0.052	---	0.00
229	19.08	0.10	0.084	0.052	---	0.03
230	19.17	0.10	0.084	0.052	---	0.03
231	19.25	0.10	0.084	0.052	---	0.03
232	19.33	0.13	0.112	0.051	---	0.06
233	19.42	0.13	0.112	0.051	---	0.06
234	19.50	0.13	0.112	0.051	---	0.06
235	19.58	0.10	0.084	0.051	---	0.03
236	19.67	0.10	0.084	0.050	---	0.03
237	19.75	0.10	0.084	0.050	---	0.03
238	19.83	0.07	0.056	0.050	---	0.01
239	19.92	0.07	0.056	0.050	---	0.01
240	20.00	0.07	0.056	0.049	---	0.01
241	20.08	0.10	0.084	0.049	---	0.03
242	20.17	0.10	0.084	0.049	---	0.03
243	20.25	0.10	0.084	0.049	---	0.04
244	20.33	0.10	0.084	0.049	---	0.04
245	20.42	0.10	0.084	0.048	---	0.04
246	20.50	0.10	0.084	0.048	---	0.04
247	20.58	0.10	0.084	0.048	---	0.04
248	20.67	0.10	0.084	0.048	---	0.04
249	20.75	0.10	0.084	0.048	---	0.04
250	20.83	0.07	0.056	0.047	---	0.01
251	20.92	0.07	0.056	0.047	---	0.01
252	21.00	0.07	0.056	0.047	---	0.01
253	21.08	0.10	0.084	0.047	---	0.04
254	21.17	0.10	0.084	0.047	---	0.04
255	21.25	0.10	0.084	0.046	---	0.04
256	21.33	0.07	0.056	0.046	---	0.01
257	21.42	0.07	0.056	0.046	---	0.01
258	21.50	0.07	0.056	0.046	---	0.01
259	21.58	0.10	0.084	0.046	---	0.04
260	21.67	0.10	0.084	0.046	---	0.04
261	21.75	0.10	0.084	0.045	---	0.04
262	21.83	0.07	0.056	0.045	---	0.01
263	21.92	0.07	0.056	0.045	---	0.01
264	22.00	0.07	0.056	0.045	---	0.01
265	22.08	0.10	0.084	0.045	---	0.04
266	22.17	0.10	0.084	0.045	---	0.04
267	22.25	0.10	0.084	0.045	---	0.04
268	22.33	0.07	0.056	0.044	---	0.01
269	22.42	0.07	0.056	0.044	---	0.01
270	22.50	0.07	0.056	0.044	---	0.01

271	22.58	0.07	0.056	0.044	---	0.01
272	22.67	0.07	0.056	0.044	---	0.01
273	22.75	0.07	0.056	0.044	---	0.01
274	22.83	0.07	0.056	0.044	---	0.01
275	22.92	0.07	0.056	0.044	---	0.01
276	23.00	0.07	0.056	0.043	---	0.01
277	23.08	0.07	0.056	0.043	---	0.01
278	23.17	0.07	0.056	0.043	---	0.01
279	23.25	0.07	0.056	0.043	---	0.01
280	23.33	0.07	0.056	0.043	---	0.01
281	23.42	0.07	0.056	0.043	---	0.01
282	23.50	0.07	0.056	0.043	---	0.01
283	23.58	0.07	0.056	0.043	---	0.01
284	23.67	0.07	0.056	0.043	---	0.01
285	23.75	0.07	0.056	0.043	---	0.01
286	23.83	0.07	0.056	0.043	---	0.01
287	23.92	0.07	0.056	0.043	---	0.01
288	24.00	0.07	0.056	0.043	---	0.01
Sum =		100.0			Sum =	63.2

Flood volume = Effective rainfall 5.27(In)
times area 43.3(Ac.)/[(In)/(Ft.)] = 19.0(Ac.Ft)
Total soil loss = 1.73(In)
Total soil loss = 6.244(Ac.Ft)
Total rainfall = 7.00(In)
Flood volume = 828174.2 Cubic Feet
Total soil loss = 271985.8 Cubic Feet

Peak flow rate of this hydrograph = 38.335(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	10.0	20.0	30.0	40.0
0+ 5	0.0025	0.36	Q	|	|	|	|
0+10	0.0127	1.48	VQ	|	|	|	|
0+15	0.0253	1.82	VQ	|	|	|	|
0+20	0.0399	2.13	V Q	|	|	|	|
0+25	0.0587	2.72	V Q	|	|	|	|
0+30	0.0787	2.91	V Q	|	|	|	|
0+35	0.0992	2.98	V Q	|	|	|	|
0+40	0.1199	3.00	V Q	|	|	|	|
0+45	0.1406	3.00	V Q	|	|	|	|
0+50	0.1625	3.19	V Q	|	|	|	|
0+55	0.1883	3.75	V Q	|	|	|	|
1+ 0	0.2153	3.92	V Q	|	|	|	|
1+ 5	0.2415	3.80	V Q	|	|	|	|
1+10	0.2639	3.26	V Q	|	|	|	|
1+15	0.2852	3.09	V Q	|	|	|	|
1+20	0.3061	3.04	V Q	|	|	|	|
1+25	0.3269	3.02	V Q	|	|	|	|
1+30	0.3477	3.01	V Q	|	|	|	|
1+35	0.3684	3.01	V Q	|	|	|	|
1+40	0.3891	3.01	V Q	|	|	|	|
1+45	0.4098	3.01	V Q	|	|	|	|
1+50	0.4317	3.19	V Q	|	|	|	|
1+55	0.4575	3.75	V Q	|	|	|	|
2+ 0	0.4845	3.92	|V Q	|	|	|	|
2+ 5	0.5120	3.98	|V Q	|	|	|	|
2+10	0.5395	4.00	|V Q	|	|	|	|
2+15	0.5671	4.01	|V Q	|	|	|	|
2+20	0.5947	4.01	|V Q	|	|	|	|
2+25	0.6223	4.01	|V Q	|	|	|	|
2+30	0.6499	4.01	|V Q	|	|	|	|
2+35	0.6729	3.34	|V Q	|	|	|	|
2+40	0.6815	1.24	|Q	|	|	|	|
2+45	0.6857	0.62	QV	|	|	|	|
2+50	0.6886	0.41	QV	|	|	|	|
2+55	0.6911	0.37	QV	|	|	|	|
3+ 0	0.6936	0.36	QV	|	|	|	|
3+ 5	0.6962	0.38	QV	|	|	|	|

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3+10       0.6990      0.40  QV        |         |         |         |
3+15       0.7019      0.42  QV        |         |         |         |
3+20       0.7049      0.45  QV        |         |         |         |
3+25       0.7082      0.47  QV        |         |         |         |
3+30       0.7116      0.49  QV        |         |         |         |
3+35       0.7152      0.52  QV        |         |         |         |
3+40       0.7189      0.54  QV        |         |         |         |
3+45       0.7228      0.56  QV        |         |         |         |
3+50       0.7283      0.81  QV        |         |         |         |
3+55       0.7388      1.52  |Q        |         |         |         |
4+ 0       0.7508      1.75  |Q        |         |         |         |
4+ 5       0.7635      1.85  |Q        |         |         |         |
4+10       0.7765      1.89  |Q        |         |         |         |
4+15       0.7897      1.92  |Q        |         |         |         |
4+20       0.8047      2.17  |VQ       |         |         |         |
4+25       0.8245      2.88  |VQ       |         |         |         |
4+30       0.8459      3.11  |V Q      |         |         |         |
4+35       0.8680      3.21  |V Q      |         |         |         |
4+40       0.8903      3.25  |V Q      |         |         |         |
4+45       0.9129      3.28  |V Q      |         |         |         |
4+50       0.9372      3.53  |V Q      |         |         |         |
4+55       0.9664      4.24  | V Q     |         |         |         |
5+ 0       0.9971      4.47  | V Q     |         |         |         |
5+ 5       1.0256      4.13  | V Q     |         |         |         |
5+10       1.0448      2.80  | Q       |         |         |         |
5+15       1.0615      2.42  | Q       |         |         |         |
5+20       1.0787      2.51  | Q       |         |         |         |
5+25       1.1006      3.18  | VQ      |         |         |         |
5+30       1.1239      3.39  | VQ      |         |         |         |
5+35       1.1494      3.69  | VQ      |         |         |         |
5+40       1.1798      4.42  | V Q     |         |         |         |
5+45       1.2119      4.66  | V Q     |         |         |         |
5+50       1.2448      4.76  | V Q     |         |         |         |
5+55       1.2779      4.81  | V Q     |         |         |         |
6+ 0       1.3112      4.84  | V Q     |         |         |         |
6+ 5       1.3462      5.08  | V  Q    |         |         |         |
6+10       1.3861      5.79  | V  Q    |         |         |         |
6+15       1.4275      6.02  |  V  Q   |         |         |         |
6+20       1.4697      6.12  |  V  Q   |         |         |         |
6+25       1.5121      6.16  |  V  Q   |         |         |         |
6+30       1.5547      6.19  |  V  Q   |         |         |         |
6+35       1.5991      6.44  |  V  Q   |         |         |         |
6+40       1.6483      7.14  |  V   Q  |         |         |         |
6+45       1.6990      7.37  |  V   Q  |         |         |         |
6+50       1.7505      7.47  |  V   Q  |         |         |         |
6+55       1.8022      7.51  |  V   Q  |         |         |         |
7+ 0       1.8542      7.54  |  V   Q  |         |         |         |
7+ 5       1.9063      7.57  |   V  Q  |         |         |         |
7+10       1.9585      7.59  |   V  Q  |         |         |         |
7+15       2.0109      7.61  |   V  Q  |         |         |         |
7+20       2.0650      7.85  |   V  Q  |         |         |         |
7+25       2.1239      8.56  |   V   Q |         |         |         |
7+30       2.1844      8.78  |   V   Q |         |         |         |
7+35       2.2471      9.10  |   V    Q|         |         |         |
7+40       2.3148      9.83  |   V    Q|         |         |         |
7+45       2.3841     10.07  |    V    Q         |         |         |
7+50       2.4556     10.39  |    V    Q         |         |         |
7+55       2.5322     11.11  |    V    |Q        |         |         |
8+ 0       2.6103     11.35  |    V    |Q        |         |         |
8+ 5       2.6922     11.89  |    V    |Q        |         |         |
8+10       2.7838     13.30  |    V    |  Q      |         |         |
8+15       2.8785     13.75  |     V   |  Q      |         |         |
8+20       2.9744     13.92  |     V   |  Q      |         |         |
8+25       3.0707     13.98  |     V   |  Q      |         |         |
8+30       3.1673     14.02  |     V   |   Q     |         |         |
8+35       3.2655     14.27  |     V   |   Q     |         |         |
8+40       3.3687     14.98  |      V  |   Q     |         |         |
8+45       3.4734     15.20  |      V  |    Q    |         |         |
8+50       3.5803     15.52  |      V  |    Q    |         |         |
8+55       3.6921     16.25  |      V  |     Q   |         |         |
9+ 0       3.8057     16.48  |       V |     Q   |         |         |
9+ 5       3.9229     17.02  |       V |      Q  |         |         |
9+10       4.0498     18.43  |       V |       Q |         |         |
9+15       4.1798     18.87  |       V |       Q |         |         |
9+20       4.3125     19.27  |        V|        Q|         |         |
```

9+25	4.4504	20.02	|	V|	Q	|	|
9+30	4.5899	20.26	|	V|	Q	|	|
9+35	4.7317	20.59	|	V|	Q	|	|
9+40	4.8785	21.31	|	V	|Q	|	|
9+45	5.0269	21.55	|	V	|Q	|	|
9+50	5.1775	21.87	|	V	|Q	|	|
9+55	5.3330	22.59	|	|V	| Q	|	|
10+ 0	5.4903	22.83	|	|V	| Q	|	|
10+ 5	5.6376	21.40	|	|V	|Q	|	|
10+10	5.7521	16.63	|	| V Q	|	|	|
10+15	5.8569	15.21	|	| V Q	|	|	|
10+20	5.9581	14.70	|	| V Q	|	|	|
10+25	6.0585	14.57	|	| V Q	|	|	|
10+30	6.1586	14.53	|	| V Q	|	|	|
10+35	6.2661	15.61	|	| V Q	|	|	|
10+40	6.3973	19.06	|	| V	Q|	|	|
10+45	6.5359	20.11	|	| V	Q	|	|
10+50	6.6772	20.51	|	| V	Q	|	|
10+55	6.8193	20.64	|	| V	Q	|	|
11+ 0	6.9618	20.70	|	| V	Q	|	|
11+ 5	7.1032	20.52	|	| V	Q	|	|
11+10	7.2399	19.85	|	| V	Q|	|	|
11+15	7.3753	19.66	|	| V	Q|	|	|
11+20	7.5104	19.61	|	| V	Q|	|	|
11+25	7.6454	19.60	|	| V	Q|	|	|
11+30	7.7804	19.61	|	| V	Q|	|	|
11+35	7.9126	19.19	|	| V	Q|	|	|
11+40	8.0354	17.83	|	| VQ	|	|	|
11+45	8.1555	17.44	|	| Q	|	|	|
11+50	8.2762	17.52	|	| Q	|	|	|
11+55	8.4014	18.18	|	| VQ	|	|	|
12+ 0	8.5281	18.39	|	| VQ	|	|	|
12+ 5	8.6658	20.01	|	| V	Q |	|	|
12+10	8.8370	24.85	|	| V	| Q	|	|
12+15	9.0183	26.32	|	| V	| Q	|	|
12+20	9.2049	27.10	|	| V	| Q	|	|
12+25	9.3974	27.95	|	| V	| Q	|	|
12+30	9.5918	28.24	|	| V	Q	|	|
12+35	9.7902	28.80	|	| V	Q	|	|
12+40	9.9982	30.21	|	| V	Q	|	|
12+45	10.2093	30.65	|	| V	Q	|	|
12+50	10.4230	31.04	|	| V	|Q	|	|
12+55	10.6419	31.78	|	| V	|Q	|	|
13+ 0	10.8625	32.03	|	| V	| Q	|	|
13+ 5	11.0913	33.22	|	| V	| Q	|	|
13+10	11.3440	36.69	|	| V	| Q	|	|
13+15	11.6039	37.75	|	| V	| Q	|	|
13+20	11.8667	38.15	|	| V	| Q	|	|
13+25	12.1303	38.27	|	| V	| Q	|	|
13+30	12.3943	38.34	|	| V	| Q	|	|
13+35	12.6420	35.97	|	| V	| Q	|	|
13+40	12.8378	28.43	|	| VQ	|	|	|
13+45	13.0181	26.17	|	| QV	|	|	|
13+50	13.1927	25.35	|	| Q V	|	|	|
13+55	13.3658	25.14	|	| Q V	|	|	|
14+ 0	13.5383	25.05	|	| Q V	|	|	|
14+ 5	13.7167	25.90	|	| Q V	|	|	|
14+10	13.9140	28.66	|	| QV	|	|	|
14+15	14.1172	29.50	|	| Q	|	|	|
14+20	14.3211	29.60	|	| QV	|	|	|
14+25	14.5209	29.01	|	| QV	|	|	|
14+30	14.7197	28.86	|	| Q V	|	|	|
14+35	14.9182	28.82	|	| Q	|V	|	|
14+40	15.1166	28.81	|	| Q	|V	|	|
14+45	15.3151	28.82	|	| Q	| V	|	|
14+50	15.5121	28.61	|	| Q	| V	|	|
14+55	15.7045	27.94	|	| Q	| V	|	|
15+ 0	15.8956	27.75	|	| Q	| V	|	|
15+ 5	16.0848	27.47	|	| Q	| V	|	|
15+10	16.2692	26.77	|	| Q	| V	|	|
15+15	16.4522	26.57	|	| Q	| V	|	|
15+20	16.6332	26.29	|	| Q	| V	|	|
15+25	16.8095	25.60	|	| Q	| V	|	|
15+30	16.9844	25.40	|	| Q	| V	|	|
15+35	17.1529	24.46	|	| Q	| V	|	|

```
15+40      17.3023     21.70  |          |          |Q         |      V   |
15+45      17.4461     20.88  |          |          Q          |      V   |
15+50      17.5879     20.58  |          |          Q          |       V  |
15+55      17.7292     20.52  |          |          Q          |       V  |
16+ 0      17.8703     20.49  |          |          Q          |       V  |
16+ 5      17.9889     17.21  |          |       Q  |          |       V  |
16+10      18.0366      6.93  |      Q   |          |          |       V  |
16+15      18.0630      3.84  |   Q      |          |          |        V |
16+20      18.0817      2.71  |  Q       |          |          |        V |
16+25      18.0983      2.41  |  Q       |          |          |        V |
16+30      18.1140      2.29  |  Q       |          |          |        V |
16+35      18.1279      2.02  |  Q       |          |          |        V |
16+40      18.1372      1.35  |Q         |          |          |        V |
16+45      18.1451      1.15  |Q         |          |          |        V |
16+50      18.1527      1.09  |Q         |          |          |        V |
16+55      18.1601      1.08  |Q         |          |          |        V |
17+ 0      18.1676      1.09  |Q         |          |          |        V |
17+ 5      18.1781      1.53  |Q         |          |          |        V |
17+10      18.1982      2.92  |  Q       |          |          |        V |
17+15      18.2213      3.34  |   Q      |          |          |        V |
17+20      18.2454      3.51  |   Q      |          |          |        V |
17+25      18.2700      3.56  |   Q      |          |          |        V |
17+30      18.2948      3.60  |   Q      |          |          |        V |
17+35      18.3197      3.62  |   Q      |          |          |        V |
17+40      18.3447      3.63  |   Q      |          |          |        V |
17+45      18.3697      3.64  |   Q      |          |          |        V |
17+50      18.3934      3.44  |   Q      |          |          |        V |
17+55      18.4124      2.76  |  Q       |          |          |        V |
18+ 0      18.4301      2.57  |  Q       |          |          |        V |
18+ 5      18.4473      2.50  |  Q       |          |          |        V |
18+10      18.4645      2.49  |  Q       |          |          |        V |
18+15      18.4817      2.50  |  Q       |          |          |        V |
18+20      18.4989      2.50  |  Q       |          |          |        V |
18+25      18.5162      2.51  |  Q       |          |          |        V |
18+30      18.5336      2.53  |  Q       |          |          |        V |
18+35      18.5496      2.32  |  Q       |          |          |         V|
18+40      18.5609      1.64  |Q         |          |          |         V|
18+45      18.5709      1.45  |Q         |          |          |         V|
18+50      18.5789      1.16  |Q         |          |          |         V|
18+55      18.5821      0.47  Q          |          |          |         V|
19+ 0      18.5840      0.26  Q          |          |          |         V|
19+ 5      18.5868      0.41  Q          |          |          |         V|
19+10      18.5943      1.09  |Q         |          |          |         V|
19+15      18.6032      1.30  |Q         |          |          |         V|
19+20      18.6142      1.60  |Q         |          |          |         V|
19+25      18.6302      2.32  |  Q       |          |          |         V|
19+30      18.6477      2.54  |  Q       |          |          |         V|
19+35      18.6643      2.42  |  Q       |          |          |         V|
19+40      18.6765      1.76  |Q         |          |          |         V|
19+45      18.6873      1.57  |Q         |          |          |         V|
19+50      18.6962      1.29  |Q         |          |          |         V|
19+55      18.7003      0.59  Q          |          |          |         V|
20+ 0      18.7029      0.39  Q          |          |          |         V|
20+ 5      18.7066      0.54  Q          |          |          |         V|
20+10      18.7150      1.21  |Q         |          |          |         V|
20+15      18.7247      1.42  |Q         |          |          |         V|
20+20      18.7351      1.50  |Q         |          |          |         V|
20+25      18.7456      1.53  |Q         |          |          |         V|
20+30      18.7563      1.55  |Q         |          |          |         V|
20+35      18.7670      1.56  |Q         |          |          |         V|
20+40      18.7778      1.57  |Q         |          |          |         V|
20+45      18.7887      1.58  |Q         |          |          |         V|
20+50      18.7981      1.37  |Q         |          |          |         V|
20+55      18.8029      0.69  Q          |          |          |         V|
21+ 0      18.8063      0.49  Q          |          |          |         V|
21+ 5      18.8107      0.64  Q          |          |          |         V|
21+10      18.8197      1.32  |Q         |          |          |         V|
21+15      18.8302      1.52  |Q         |          |          |         V|
21+20      18.8398      1.38  |Q         |          |          |         V|
21+25      18.8448      0.73  Q          |          |          |         V|
21+30      18.8485      0.54  Q          |          |          |         V|
21+35      18.8532      0.69  Q          |          |          |         V|
21+40      18.8626      1.36  |Q         |          |          |         V|
21+45      18.8734      1.57  |Q         |          |          |         V|
21+50      18.8832      1.43  |Q         |          |          |         V|
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   21+55      18.8885      0.77  Q         |         |         |         V|
   22+ 0      18.8925      0.58  Q         |         |         |         V|
   22+ 5      18.8976      0.73  Q         |         |         |         V|
   22+10      18.9072      1.40  |Q        |         |         |         V|
   22+15      18.9183      1.61  |Q        |         |         |         V|
   22+20      18.9284      1.47  |Q        |         |         |         V|
   22+25      18.9340      0.81  Q         |         |         |         V|
   22+30      18.9382      0.62  Q         |         |         |         V|
   22+35      18.9420      0.55  Q         |         |         |         V|
   22+40      18.9457      0.54  Q         |         |         |         V|
   22+45      18.9494      0.53  Q         |         |         |         V|
   22+50      18.9530      0.53  Q         |         |         |         V|
   22+55      18.9567      0.54  Q         |         |         |         V|
   23+ 0      18.9605      0.54  Q         |         |         |         V|
   23+ 5      18.9642      0.55  Q         |         |         |         V|
   23+10      18.9680      0.55  Q         |         |         |         V|
   23+15      18.9719      0.56  Q         |         |         |         V|
   23+20      18.9757      0.56  Q         |         |         |         V|
   23+25      18.9796      0.56  Q         |         |         |         V|
   23+30      18.9835      0.57  Q         |         |         |         V|
   23+35      18.9875      0.57  Q         |         |         |         V|
   23+40      18.9914      0.57  Q         |         |         |         V|
   23+45      18.9954      0.58  Q         |         |         |         V|
   23+50      18.9994      0.58  Q         |         |         |         V|
   23+55      19.0034      0.58  Q         |         |         |         V|
   24+ 0      19.0074      0.58  Q         |         |         |         V|
   24+ 5      19.0107      0.48  Q         |         |         |         V|
   24+10      19.0117      0.15  Q         |         |         |         V|
   24+15      19.0121      0.05  Q         |         |         |         V|
   24+20      19.0122      0.02  Q         |         |         |         V|
   24+25      19.0122      0.01  Q         |         |         |         V|
   24+30      19.0123      0.00  Q         |         |         |          V
-------------------------------------------------------------------------
```

DMA B

UNIT HYDROGRAPH EXHIBIT
DMA B

LEGEND

- DRAINAGE BOUNDARY
- DRAINAGE PATH
- SOIL TYPE BOUNDARY
- CENTROID
- 1 / 2582 — NODE NUMBER / ELEVATION (FT)

DMA B
60.7 ACRES
L=2985 FT
LC=1550 FT
ELEV Δ=161 FT

1
2582

2
2421

N
W WEBB E
S

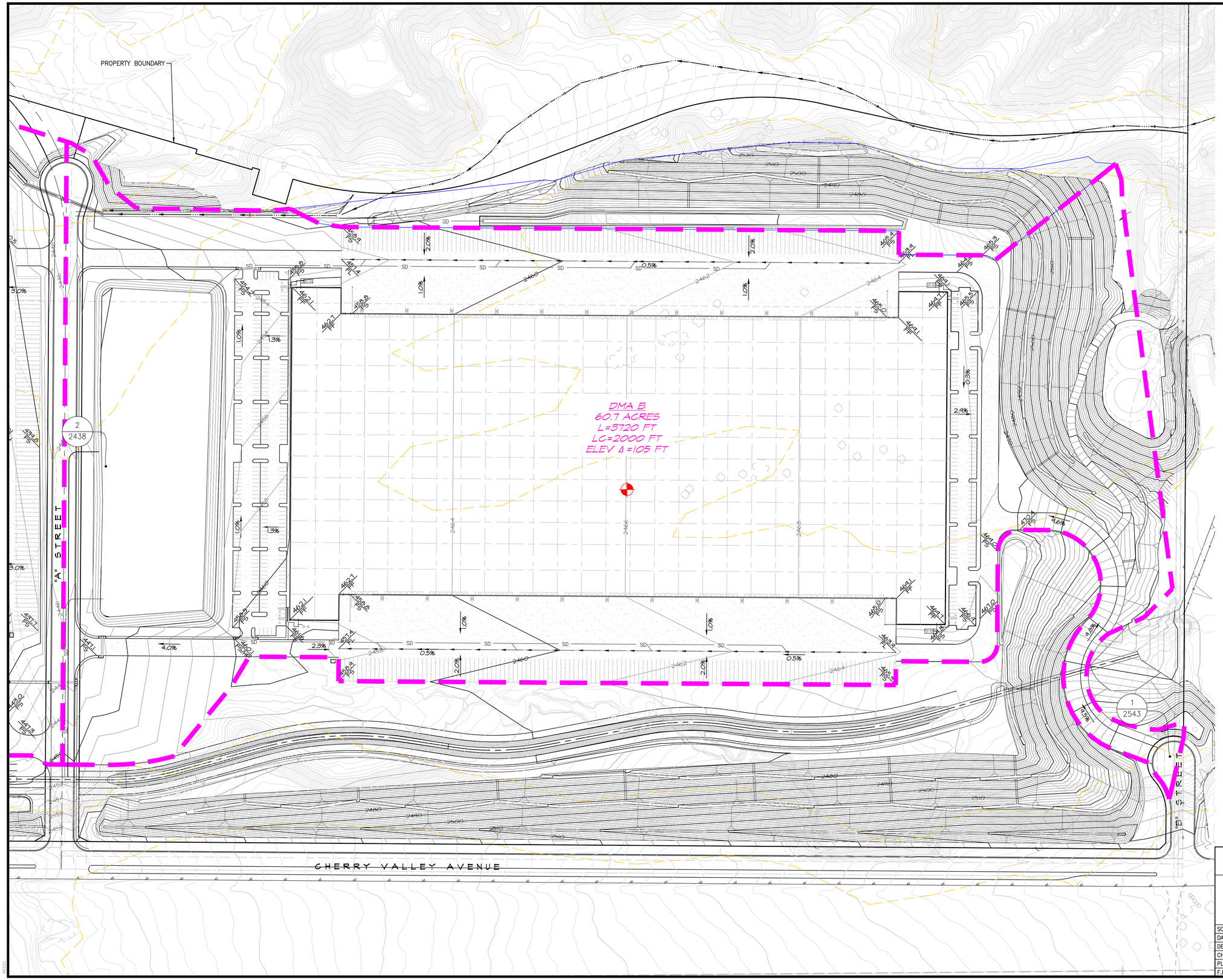
100' 0 100'

COUNTY OF RIVERSIDE
SAN GORGONIO CROSSINGS

HYDROLOGY MAP
UNIT HYDROGRAPH
EXISTING CONDITIONS
DMA B

SCALE: N/A	ALBERT A. WEBB ASSOCIATES — ENGINEERING CONSULTANTS, 3788 McCRAY STREET, RIVERSIDE, CA. 92506, PH. (951) 686-1070, FAX (951) 788-1256	W.O. WO
DATE: DATE		SHEET DMA B
DESIGNED: DESIGNER		OF # SHEETS
CHECKED: CHECKER		DWG. NO.
PLN CK REF: REF		
F.B. F.B.		

CVAR_10461



LEGEND

- DRAINAGE BOUNDARY
- DRAINAGE PATH
- SOIL TYPE BOUNDARY
- CENTROID
- 1 / 2453 — NODE NUMBER / ELEVATION (FT)

N W E S

100' 0 100'

COUNTY OF RIVERSIDE
SHOPOFF REALTY - SAN GORGONIO CROSSINGS

HYDROLOGY MAP
UNIT HYDROGRAPH
PROPOSED CONDITIONS
DMA B

SCALE:	ALBERT A. WEBB ASSOCIATES — ENGINEERING CONSULTANTS, 3788 McCRAY STREET, RIVERSIDE CA. 92506, PH. (951) 686-1070, FAX (951) 788-1256	W.O. WO
DATE: DATE		SHEET DMA B
DESIGNED: DESIGNER		OF # SHEETS
CHECKED: CHECKER		
PLN CK REF: REF		DWG. NO.
F.B. F.B.		

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CVAR_10462

UNIT HYDROGRAPH INPUT DATA
DMA B

14-0213 Date 10/21/2014
SHOPOFF

UNIT HYDROGRAPH INPUT DATA - BASIN B

	EXISTING		DEVELOPED	
TOTAL AREA	60.70		60.70	
L (ft)	2985.00		3720.00	
Lc (ft)	1550.00		2000.00	
DIFFERENCE IN ELEV. (ft)	161.00		105.00	
AVERAGE "N"	0.040		0.015	
LOW LOSS RATE	0.85 (2YR)-0.9 (10YR)		0.18	
AMC	1(2YR) 2 (10YR)			
AMC II SOIL GROUP BREAKDOWN (Plate C-1.18)				
A				
B	0.58		0.58	
C				
D	0.42		0.42	
% IMPERVIOUS	0		90	
RI	89	*	64	**
FOOTHILL				

* Barren (Rockland, eroded, graded land) (Plate D-5.5 Runoff Index Numbers)

A	78
B	86
C	91
D	93

** Urban Residential Landscaping (Plate D-5.5 Runoff Index Numbers)

A	32
B	56
C	69
D	75

2-YR 1-HR	0.57
100-YR 1-HR	1.30
2-YR 3-HR	1.00
100-YR 3-HR	2.20
2-YR 6-HR	1.40
100-YR 6-HR	3.20
2-YR 24-HR	2.60
100-YR 24-HR	7.00

HYDROLOGY RESULTS SUMMARY
DMA B

UNIT HYDROGRAPH/ROUTING SUMMARY

14-0213 SHOPOFF

ON-SITE CONDITIONS

DMA B

Treated Area:	60.7	AC
Vbmp:	116,126	CF
Vbmp Depth:	1.9	FT

		EXISTING CONDITIONS		PROPOSED CONDITIONS		PROPOSED CONDITIONS		
		Unit Hydrograph		Unit Hydrograph		Basin Routing		
STORM YEAR	DURATION HOUR	Peak Flow CFS	Total Volume Ac-Ft	Peak Flow CFS	Total Volume Ac-Ft	Routed Peak CFS	Basin Volume Ac.Ft.	Basin Depth Ft.
2	24	6.1	2.0	15.3	7.9	5.5	5.0	2.4
10	24	28.7	10.9	32.4	15.8	21.0	7.7	3.1
100	1			204.9	6.2	9.5	5.8	2.6
100	3			115.0	9.9	25.6	8.4	3.2
100	6			106.1	13.8	40.5	10.3	3.6
100	24			53.9	27.1	38.7	10.1	3.6

UNIT HYDROGRAPH
DMA B
EXISTING CONDITIONS
2-YEAR 24-HOUR

U n i t H y d r o g r a p h A n a l y s i s

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Study date 10/21/14 File: BEX242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

14-0213 SHOPOFF
UNIT HYDROGRAPH
DMA B
EXISTING CONDITIONS
2-YEAR 24-HOUR

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 60.70(Ac.) = 0.095 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 60.70(Ac.) = 0.095 Sq. Mi.
Length along longest watercourse = 2985.00(Ft.)
Length along longest watercourse measured to centroid = 1550.00(Ft.)
Length along longest watercourse = 0.565 Mi.
Length along longest watercourse measured to centroid = 0.294 Mi.
Difference in elevation = 161.00(Ft.)
Slope along watercourse = 284.7839 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.166 Hr.
Lag time = 9.95 Min.
25% of lag time = 2.49 Min.
40% of lag time = 3.98 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
60.70	2.60	157.82

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
60.70	7.00	424.90

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 2.600(In)
Area Averaged 100-Year Rainfall = 7.000(In)

Point rain (area averaged) = 2.600(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 2.600(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
60.700	89.00	0.000

Total Area Entered = 60.70(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F

AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
89.0	76.4	0.286	0.000	0.286	1.000	0.286
					Sum (F) =	0.286

Area averaged mean soil loss (F) (In/Hr) = 0.286
Minimum soil loss rate ((In/Hr)) = 0.143
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.850

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	50.269	4.313	2.638
2	0.167	100.538	20.593	12.598
3	0.250	150.808	38.182	23.358
4	0.333	201.077	14.582	8.921
5	0.417	251.346	8.338	5.101
6	0.500	301.615	5.421	3.316
7	0.583	351.885	3.568	2.183
8	0.667	402.154	2.195	1.343
9	0.750	452.423	1.035	0.633
10	0.833	502.692	0.548	0.335
11	0.917	552.962	0.392	0.240
12	1.000	603.231	0.357	0.219
13	1.083	653.500	0.289	0.177
14	1.167	703.769	0.187	0.114
			Sum = 100.000 Sum=	61.174

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.021	0.508	0.018	0.00
2	0.17	0.07	0.021	0.506	0.018	0.00
3	0.25	0.07	0.021	0.504	0.018	0.00
4	0.33	0.10	0.031	0.502	0.027	0.00
5	0.42	0.10	0.031	0.500	0.027	0.00
6	0.50	0.10	0.031	0.498	0.027	0.00
7	0.58	0.10	0.031	0.496	0.027	0.00
8	0.67	0.10	0.031	0.494	0.027	0.00
9	0.75	0.10	0.031	0.492	0.027	0.00
10	0.83	0.13	0.042	0.490	0.035	0.01
11	0.92	0.13	0.042	0.488	0.035	0.01
12	1.00	0.13	0.042	0.486	0.035	0.01
13	1.08	0.10	0.031	0.485	0.027	0.00
14	1.17	0.10	0.031	0.483	0.027	0.00
15	1.25	0.10	0.031	0.481	0.027	0.00
16	1.33	0.10	0.031	0.479	0.027	0.00
17	1.42	0.10	0.031	0.477	0.027	0.00
18	1.50	0.10	0.031	0.475	0.027	0.00
19	1.58	0.10	0.031	0.473	0.027	0.00
20	1.67	0.10	0.031	0.471	0.027	0.00
21	1.75	0.10	0.031	0.469	0.027	0.00
22	1.83	0.13	0.042	0.467	0.035	0.01
23	1.92	0.13	0.042	0.466	0.035	0.01
24	2.00	0.13	0.042	0.464	0.035	0.01
25	2.08	0.13	0.042	0.462	0.035	0.01
26	2.17	0.13	0.042	0.460	0.035	0.01
27	2.25	0.13	0.042	0.458	0.035	0.01
28	2.33	0.13	0.042	0.456	0.035	0.01
29	2.42	0.13	0.042	0.454	0.035	0.01
30	2.50	0.13	0.042	0.452	0.035	0.01
31	2.58	0.17	0.052	0.451	0.044	0.01
32	2.67	0.17	0.052	0.449	0.044	0.01
33	2.75	0.17	0.052	0.447	0.044	0.01
34	2.83	0.17	0.052	0.445	0.044	0.01
35	2.92	0.17	0.052	0.443	0.044	0.01
36	3.00	0.17	0.052	0.441	0.044	0.01
37	3.08	0.17	0.052	0.440	0.044	0.01
38	3.17	0.17	0.052	0.438	0.044	0.01

39	3.25	0.17	0.052	0.436	0.044	0.01
40	3.33	0.17	0.052	0.434	0.044	0.01
41	3.42	0.17	0.052	0.432	0.044	0.01
42	3.50	0.17	0.052	0.430	0.044	0.01
43	3.58	0.17	0.052	0.429	0.044	0.01
44	3.67	0.17	0.052	0.427	0.044	0.01
45	3.75	0.17	0.052	0.425	0.044	0.01
46	3.83	0.20	0.062	0.423	0.053	0.01
47	3.92	0.20	0.062	0.422	0.053	0.01
48	4.00	0.20	0.062	0.420	0.053	0.01
49	4.08	0.20	0.062	0.418	0.053	0.01
50	4.17	0.20	0.062	0.416	0.053	0.01
51	4.25	0.20	0.062	0.414	0.053	0.01
52	4.33	0.23	0.073	0.413	0.062	0.01
53	4.42	0.23	0.073	0.411	0.062	0.01
54	4.50	0.23	0.073	0.409	0.062	0.01
55	4.58	0.23	0.073	0.407	0.062	0.01
56	4.67	0.23	0.073	0.406	0.062	0.01
57	4.75	0.23	0.073	0.404	0.062	0.01
58	4.83	0.27	0.083	0.402	0.071	0.01
59	4.92	0.27	0.083	0.400	0.071	0.01
60	5.00	0.27	0.083	0.399	0.071	0.01
61	5.08	0.20	0.062	0.397	0.053	0.01
62	5.17	0.20	0.062	0.395	0.053	0.01
63	5.25	0.20	0.062	0.393	0.053	0.01
64	5.33	0.23	0.073	0.392	0.062	0.01
65	5.42	0.23	0.073	0.390	0.062	0.01
66	5.50	0.23	0.073	0.388	0.062	0.01
67	5.58	0.27	0.083	0.387	0.071	0.01
68	5.67	0.27	0.083	0.385	0.071	0.01
69	5.75	0.27	0.083	0.383	0.071	0.01
70	5.83	0.27	0.083	0.382	0.071	0.01
71	5.92	0.27	0.083	0.380	0.071	0.01
72	6.00	0.27	0.083	0.378	0.071	0.01
73	6.08	0.30	0.094	0.376	0.080	0.01
74	6.17	0.30	0.094	0.375	0.080	0.01
75	6.25	0.30	0.094	0.373	0.080	0.01
76	6.33	0.30	0.094	0.371	0.080	0.01
77	6.42	0.30	0.094	0.370	0.080	0.01
78	6.50	0.30	0.094	0.368	0.080	0.01
79	6.58	0.33	0.104	0.366	0.088	0.02
80	6.67	0.33	0.104	0.365	0.088	0.02
81	6.75	0.33	0.104	0.363	0.088	0.02
82	6.83	0.33	0.104	0.362	0.088	0.02
83	6.92	0.33	0.104	0.360	0.088	0.02
84	7.00	0.33	0.104	0.358	0.088	0.02
85	7.08	0.33	0.104	0.357	0.088	0.02
86	7.17	0.33	0.104	0.355	0.088	0.02
87	7.25	0.33	0.104	0.353	0.088	0.02
88	7.33	0.37	0.114	0.352	0.097	0.02
89	7.42	0.37	0.114	0.350	0.097	0.02
90	7.50	0.37	0.114	0.349	0.097	0.02
91	7.58	0.40	0.125	0.347	0.106	0.02
92	7.67	0.40	0.125	0.345	0.106	0.02
93	7.75	0.40	0.125	0.344	0.106	0.02
94	7.83	0.43	0.135	0.342	0.115	0.02
95	7.92	0.43	0.135	0.341	0.115	0.02
96	8.00	0.43	0.135	0.339	0.115	0.02
97	8.08	0.50	0.156	0.337	0.133	0.02
98	8.17	0.50	0.156	0.336	0.133	0.02
99	8.25	0.50	0.156	0.334	0.133	0.02
100	8.33	0.50	0.156	0.333	0.133	0.02
101	8.42	0.50	0.156	0.331	0.133	0.02
102	8.50	0.50	0.156	0.330	0.133	0.02
103	8.58	0.53	0.166	0.328	0.141	0.02
104	8.67	0.53	0.166	0.327	0.141	0.02
105	8.75	0.53	0.166	0.325	0.141	0.02
106	8.83	0.57	0.177	0.323	0.150	0.03
107	8.92	0.57	0.177	0.322	0.150	0.03
108	9.00	0.57	0.177	0.320	0.150	0.03
109	9.08	0.63	0.198	0.319	0.168	0.03
110	9.17	0.63	0.198	0.317	0.168	0.03
111	9.25	0.63	0.198	0.316	0.168	0.03
112	9.33	0.67	0.208	0.314	0.177	0.03
113	9.42	0.67	0.208	0.313	0.177	0.03

114	9.50	0.67	0.208	0.311	0.177	0.03
115	9.58	0.70	0.218	0.310	0.186	0.03
116	9.67	0.70	0.218	0.308	0.186	0.03
117	9.75	0.70	0.218	0.307	0.186	0.03
118	9.83	0.73	0.229	0.305	0.194	0.03
119	9.92	0.73	0.229	0.304	0.194	0.03
120	10.00	0.73	0.229	0.303	0.194	0.03
121	10.08	0.50	0.156	0.301	0.133	0.02
122	10.17	0.50	0.156	0.300	0.133	0.02
123	10.25	0.50	0.156	0.298	0.133	0.02
124	10.33	0.50	0.156	0.297	0.133	0.02
125	10.42	0.50	0.156	0.295	0.133	0.02
126	10.50	0.50	0.156	0.294	0.133	0.02
127	10.58	0.67	0.208	0.292	0.177	0.03
128	10.67	0.67	0.208	0.291	0.177	0.03
129	10.75	0.67	0.208	0.290	0.177	0.03
130	10.83	0.67	0.208	0.288	0.177	0.03
131	10.92	0.67	0.208	0.287	0.177	0.03
132	11.00	0.67	0.208	0.285	0.177	0.03
133	11.08	0.63	0.198	0.284	0.168	0.03
134	11.17	0.63	0.198	0.282	0.168	0.03
135	11.25	0.63	0.198	0.281	0.168	0.03
136	11.33	0.63	0.198	0.280	0.168	0.03
137	11.42	0.63	0.198	0.278	0.168	0.03
138	11.50	0.63	0.198	0.277	0.168	0.03
139	11.58	0.57	0.177	0.276	0.150	0.03
140	11.67	0.57	0.177	0.274	0.150	0.03
141	11.75	0.57	0.177	0.273	0.150	0.03
142	11.83	0.60	0.187	0.271	0.159	0.03
143	11.92	0.60	0.187	0.270	0.159	0.03
144	12.00	0.60	0.187	0.269	0.159	0.03
145	12.08	0.83	0.260	0.267	0.221	0.04
146	12.17	0.83	0.260	0.266	0.221	0.04
147	12.25	0.83	0.260	0.265	0.221	0.04
148	12.33	0.87	0.270	0.263	---	0.01
149	12.42	0.87	0.270	0.262	---	0.01
150	12.50	0.87	0.270	0.261	---	0.01
151	12.58	0.93	0.291	0.259	---	0.03
152	12.67	0.93	0.291	0.258	---	0.03
153	12.75	0.93	0.291	0.257	---	0.03
154	12.83	0.97	0.302	0.256	---	0.05
155	12.92	0.97	0.302	0.254	---	0.05
156	13.00	0.97	0.302	0.253	---	0.05
157	13.08	1.13	0.354	0.252	---	0.10
158	13.17	1.13	0.354	0.250	---	0.10
159	13.25	1.13	0.354	0.249	---	0.10
160	13.33	1.13	0.354	0.248	---	0.11
161	13.42	1.13	0.354	0.247	---	0.11
162	13.50	1.13	0.354	0.245	---	0.11
163	13.58	0.77	0.239	0.244	0.203	0.04
164	13.67	0.77	0.239	0.243	0.203	0.04
165	13.75	0.77	0.239	0.242	0.203	0.04
166	13.83	0.77	0.239	0.240	0.203	0.04
167	13.92	0.77	0.239	0.239	0.203	0.04
168	14.00	0.77	0.239	0.238	---	0.00
169	14.08	0.90	0.281	0.237	---	0.04
170	14.17	0.90	0.281	0.236	---	0.05
171	14.25	0.90	0.281	0.234	---	0.05
172	14.33	0.87	0.270	0.233	---	0.04
173	14.42	0.87	0.270	0.232	---	0.04
174	14.50	0.87	0.270	0.231	---	0.04
175	14.58	0.87	0.270	0.230	---	0.04
176	14.67	0.87	0.270	0.228	---	0.04
177	14.75	0.87	0.270	0.227	---	0.04
178	14.83	0.83	0.260	0.226	---	0.03
179	14.92	0.83	0.260	0.225	---	0.04
180	15.00	0.83	0.260	0.224	---	0.04
181	15.08	0.80	0.250	0.223	---	0.03
182	15.17	0.80	0.250	0.221	---	0.03
183	15.25	0.80	0.250	0.220	---	0.03
184	15.33	0.77	0.239	0.219	---	0.02
185	15.42	0.77	0.239	0.218	---	0.02
186	15.50	0.77	0.239	0.217	---	0.02
187	15.58	0.63	0.198	0.216	0.168	0.03
188	15.67	0.63	0.198	0.215	0.168	0.03

189	15.75	0.63	0.198	0.214	0.168	0.03
190	15.83	0.63	0.198	0.213	0.168	0.03
191	15.92	0.63	0.198	0.211	0.168	0.03
192	16.00	0.63	0.198	0.210	0.168	0.03
193	16.08	0.13	0.042	0.209	0.035	0.01
194	16.17	0.13	0.042	0.208	0.035	0.01
195	16.25	0.13	0.042	0.207	0.035	0.01
196	16.33	0.13	0.042	0.206	0.035	0.01
197	16.42	0.13	0.042	0.205	0.035	0.01
198	16.50	0.13	0.042	0.204	0.035	0.01
199	16.58	0.10	0.031	0.203	0.027	0.00
200	16.67	0.10	0.031	0.202	0.027	0.00
201	16.75	0.10	0.031	0.201	0.027	0.00
202	16.83	0.10	0.031	0.200	0.027	0.00
203	16.92	0.10	0.031	0.199	0.027	0.00
204	17.00	0.10	0.031	0.198	0.027	0.00
205	17.08	0.17	0.052	0.197	0.044	0.01
206	17.17	0.17	0.052	0.196	0.044	0.01
207	17.25	0.17	0.052	0.195	0.044	0.01
208	17.33	0.17	0.052	0.194	0.044	0.01
209	17.42	0.17	0.052	0.193	0.044	0.01
210	17.50	0.17	0.052	0.192	0.044	0.01
211	17.58	0.17	0.052	0.191	0.044	0.01
212	17.67	0.17	0.052	0.190	0.044	0.01
213	17.75	0.17	0.052	0.189	0.044	0.01
214	17.83	0.13	0.042	0.188	0.035	0.01
215	17.92	0.13	0.042	0.187	0.035	0.01
216	18.00	0.13	0.042	0.186	0.035	0.01
217	18.08	0.13	0.042	0.185	0.035	0.01
218	18.17	0.13	0.042	0.185	0.035	0.01
219	18.25	0.13	0.042	0.184	0.035	0.01
220	18.33	0.13	0.042	0.183	0.035	0.01
221	18.42	0.13	0.042	0.182	0.035	0.01
222	18.50	0.13	0.042	0.181	0.035	0.01
223	18.58	0.10	0.031	0.180	0.027	0.00
224	18.67	0.10	0.031	0.179	0.027	0.00
225	18.75	0.10	0.031	0.178	0.027	0.00
226	18.83	0.07	0.021	0.177	0.018	0.00
227	18.92	0.07	0.021	0.177	0.018	0.00
228	19.00	0.07	0.021	0.176	0.018	0.00
229	19.08	0.10	0.031	0.175	0.027	0.00
230	19.17	0.10	0.031	0.174	0.027	0.00
231	19.25	0.10	0.031	0.173	0.027	0.00
232	19.33	0.13	0.042	0.173	0.035	0.01
233	19.42	0.13	0.042	0.172	0.035	0.01
234	19.50	0.13	0.042	0.171	0.035	0.01
235	19.58	0.10	0.031	0.170	0.027	0.00
236	19.67	0.10	0.031	0.169	0.027	0.00
237	19.75	0.10	0.031	0.169	0.027	0.00
238	19.83	0.07	0.021	0.168	0.018	0.00
239	19.92	0.07	0.021	0.167	0.018	0.00
240	20.00	0.07	0.021	0.166	0.018	0.00
241	20.08	0.10	0.031	0.166	0.027	0.00
242	20.17	0.10	0.031	0.165	0.027	0.00
243	20.25	0.10	0.031	0.164	0.027	0.00
244	20.33	0.10	0.031	0.163	0.027	0.00
245	20.42	0.10	0.031	0.163	0.027	0.00
246	20.50	0.10	0.031	0.162	0.027	0.00
247	20.58	0.10	0.031	0.161	0.027	0.00
248	20.67	0.10	0.031	0.161	0.027	0.00
249	20.75	0.10	0.031	0.160	0.027	0.00
250	20.83	0.07	0.021	0.159	0.018	0.00
251	20.92	0.07	0.021	0.159	0.018	0.00
252	21.00	0.07	0.021	0.158	0.018	0.00
253	21.08	0.10	0.031	0.157	0.027	0.00
254	21.17	0.10	0.031	0.157	0.027	0.00
255	21.25	0.10	0.031	0.156	0.027	0.00
256	21.33	0.07	0.021	0.156	0.018	0.00
257	21.42	0.07	0.021	0.155	0.018	0.00
258	21.50	0.07	0.021	0.155	0.018	0.00
259	21.58	0.10	0.031	0.154	0.027	0.00
260	21.67	0.10	0.031	0.153	0.027	0.00
261	21.75	0.10	0.031	0.153	0.027	0.00
262	21.83	0.07	0.021	0.152	0.018	0.00
263	21.92	0.07	0.021	0.152	0.018	0.00

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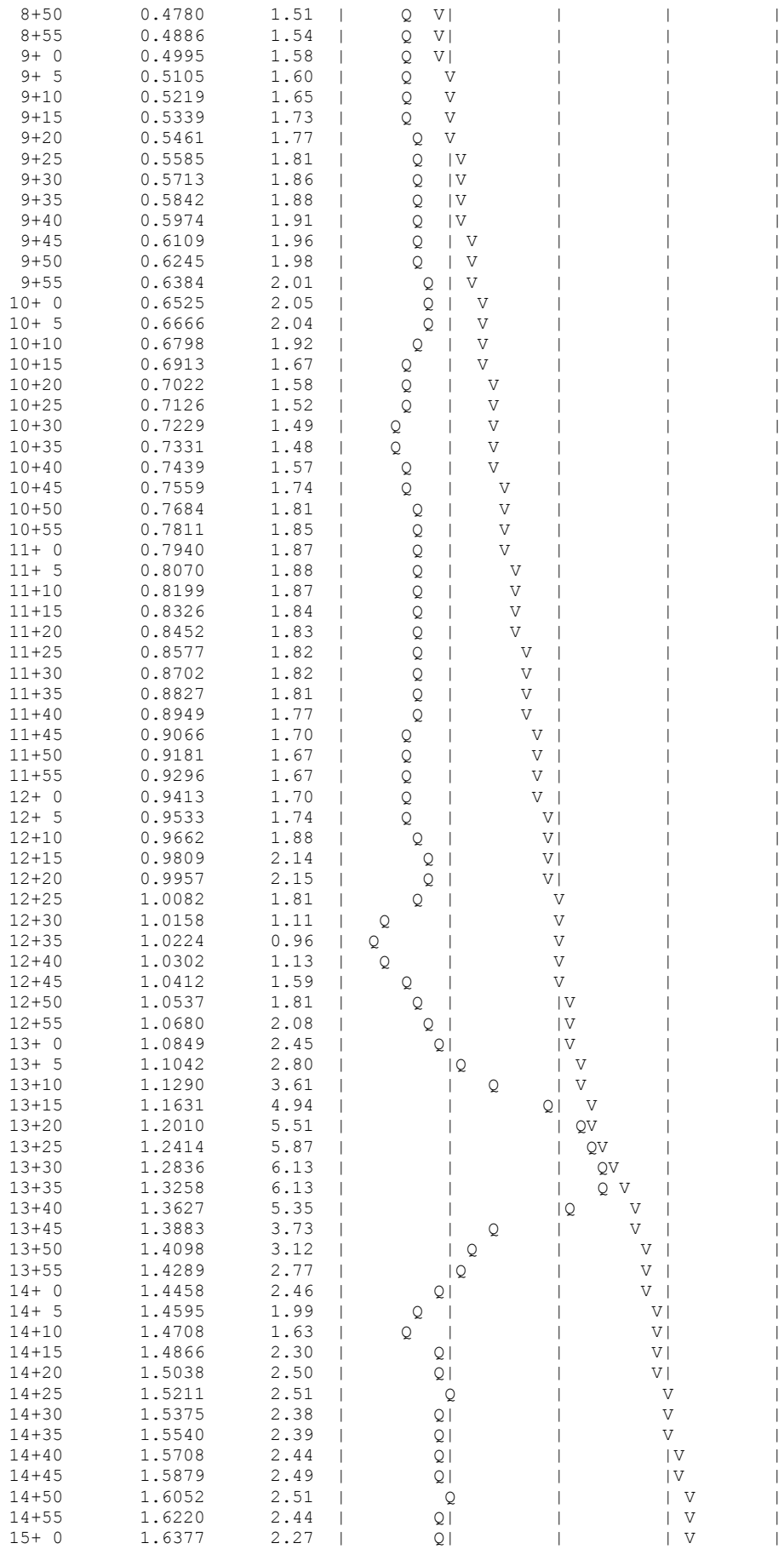
264  22.00     0.07      0.021         0.151     0.018         0.00
265  22.08     0.10      0.031         0.151     0.027         0.00
266  22.17     0.10      0.031         0.150     0.027         0.00
267  22.25     0.10      0.031         0.150     0.027         0.00
268  22.33     0.07      0.021         0.149     0.018         0.00
269  22.42     0.07      0.021         0.149     0.018         0.00
270  22.50     0.07      0.021         0.148     0.018         0.00
271  22.58     0.07      0.021         0.148     0.018         0.00
272  22.67     0.07      0.021         0.148     0.018         0.00
273  22.75     0.07      0.021         0.147     0.018         0.00
274  22.83     0.07      0.021         0.147     0.018         0.00
275  22.92     0.07      0.021         0.146     0.018         0.00
276  23.00     0.07      0.021         0.146     0.018         0.00
277  23.08     0.07      0.021         0.146     0.018         0.00
278  23.17     0.07      0.021         0.145     0.018         0.00
279  23.25     0.07      0.021         0.145     0.018         0.00
280  23.33     0.07      0.021         0.145     0.018         0.00
281  23.42     0.07      0.021         0.145     0.018         0.00
282  23.50     0.07      0.021         0.144     0.018         0.00
283  23.58     0.07      0.021         0.144     0.018         0.00
284  23.67     0.07      0.021         0.144     0.018         0.00
285  23.75     0.07      0.021         0.144     0.018         0.00
286  23.83     0.07      0.021         0.143     0.018         0.00
287  23.92     0.07      0.021         0.143     0.018         0.00
288  24.00     0.07      0.021         0.143     0.018         0.00
    Sum =     100.0                                 Sum =      4.8
      Flood volume = Effective rainfall      0.40(In)
       times area      60.7(Ac.)/[(In)/(Ft.)] =       2.0(Ac.Ft)
      Total soil loss =      2.20(In)
      Total soil loss =    11.145(Ac.Ft)
      Total rainfall =      2.60(In)
      Flood volume =       87348.5 Cubic Feet
      Total soil loss =      485470.2 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      6.130(CFS)
      ---------------------------------------------------------------------
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------------
 Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5      10.0
 ----------------------------------------------------------------------------
   0+ 5       0.0001      0.01  Q         |         |         |         |
   0+10       0.0004      0.05  Q         |         |         |         |
   0+15       0.0012      0.12  Q         |         |         |         |
   0+20       0.0023      0.15  Q         |         |         |         |
   0+25       0.0036      0.19  Q         |         |         |         |
   0+30       0.0052      0.23  Q         |         |         |         |
   0+35       0.0069      0.26  VQ        |         |         |         |
   0+40       0.0088      0.27  VQ        |         |         |         |
   0+45       0.0107      0.27  VQ        |         |         |         |
   0+50       0.0126      0.28  VQ        |         |         |         |
   0+55       0.0147      0.31  VQ        |         |         |         |
   1+ 0       0.0171      0.34  VQ        |         |         |         |
   1+ 5       0.0195      0.35  VQ        |         |         |         |
   1+10       0.0219      0.34  VQ        |         |         |         |
   1+15       0.0241      0.31  VQ        |         |         |         |
   1+20       0.0262      0.30  VQ        |         |         |         |
   1+25       0.0282      0.30  VQ        |         |         |         |
   1+30       0.0302      0.29  VQ        |         |         |         |
   1+35       0.0322      0.29  VQ        |         |         |         |
   1+40       0.0342      0.29  VQ        |         |         |         |
   1+45       0.0362      0.29  VQ        |         |         |         |
   1+50       0.0382      0.29  VQ        |         |         |         |
   1+55       0.0403      0.31  VQ        |         |         |         |
   2+ 0       0.0427      0.35  VQ        |         |         |         |
   2+ 5       0.0452      0.36  VQ        |         |         |         |
   2+10       0.0477      0.37  VQ        |         |         |         |
   2+15       0.0503      0.37  |Q        |         |         |         |
   2+20       0.0529      0.38  |Q        |         |         |         |
   2+25       0.0555      0.38  |Q        |         |         |         |
   2+30       0.0581      0.38  |Q        |         |         |         |
```

2+35	0.0608	0.38	|Q	|	|	|	|
2+40	0.0636	0.40	|Q	|	|	|	|
2+45	0.0666	0.44	|Q	|	|	|	|
2+50	0.0698	0.46	|Q	|	|	|	|
2+55	0.0730	0.46	|Q	|	|	|	|
3+ 0	0.0762	0.47	|Q	|	|	|	|
3+ 5	0.0794	0.47	|Q	|	|	|	|
3+10	0.0827	0.47	|Q	|	|	|	|
3+15	0.0860	0.48	|Q	|	|	|	|
3+20	0.0893	0.48	|Q	|	|	|	|
3+25	0.0926	0.48	|Q	|	|	|	|
3+30	0.0958	0.48	|Q	|	|	|	|
3+35	0.0991	0.48	|Q	|	|	|	|
3+40	0.1024	0.48	|QV	|	|	|	|
3+45	0.1057	0.48	|QV	|	|	|	|
3+50	0.1090	0.48	|QV	|	|	|	|
3+55	0.1125	0.50	| Q	|	|	|	|
4+ 0	0.1162	0.54	| Q	|	|	|	|
4+ 5	0.1200	0.55	| Q	|	|	|	|
4+10	0.1238	0.56	| Q	|	|	|	|
4+15	0.1277	0.56	| Q	|	|	|	|
4+20	0.1316	0.57	| Q	|	|	|	|
4+25	0.1357	0.59	| Q	|	|	|	|
4+30	0.1401	0.63	| Q	|	|	|	|
4+35	0.1445	0.65	| Q	|	|	|	|
4+40	0.1490	0.65	| Q	|	|	|	|
4+45	0.1536	0.66	| QV	|	|	|	|
4+50	0.1582	0.67	| QV	|	|	|	|
4+55	0.1629	0.69	| QV	|	|	|	|
5+ 0	0.1679	0.73	| QV	|	|	|	|
5+ 5	0.1730	0.73	| QV	|	|	|	|
5+10	0.1778	0.70	| QV	|	|	|	|
5+15	0.1822	0.63	| QV	|	|	|	|
5+20	0.1864	0.61	| QV	|	|	|	|
5+25	0.1907	0.62	| QV	|	|	|	|
5+30	0.1952	0.65	| QV	|	|	|	|
5+35	0.1997	0.66	| QV	|	|	|	|
5+40	0.2044	0.68	| Q V	|	|	|	|
5+45	0.2094	0.72	| Q V	|	|	|	|
5+50	0.2145	0.74	| Q V	|	|	|	|
5+55	0.2196	0.75	| Q V	|	|	|	|
6+ 0	0.2248	0.75	| QV	|	|	|	|
6+ 5	0.2301	0.76	| QV	|	|	|	|
6+10	0.2355	0.78	| QV	|	|	|	|
6+15	0.2411	0.82	| QV	|	|	|	|
6+20	0.2469	0.84	| QV	|	|	|	|
6+25	0.2527	0.85	| Q V	|	|	|	|
6+30	0.2586	0.85	| Q V	|	|	|	|
6+35	0.2645	0.86	| Q V	|	|	|	|
6+40	0.2706	0.88	| Q V	|	|	|	|
6+45	0.2769	0.92	| Q V	|	|	|	|
6+50	0.2833	0.93	| Q V	|	|	|	|
6+55	0.2898	0.94	| Q V	|	|	|	|
7+ 0	0.2963	0.95	| Q V	|	|	|	|
7+ 5	0.3028	0.95	| Q V	|	|	|	|
7+10	0.3094	0.95	| Q V	|	|	|	|
7+15	0.3160	0.95	| Q V	|	|	|	|
7+20	0.3226	0.96	| Q V	|	|	|	|
7+25	0.3293	0.98	| Q V	|	|	|	|
7+30	0.3363	1.01	| Q V	|	|	|	|
7+35	0.3434	1.03	| Q V	|	|	|	|
7+40	0.3507	1.06	| Q V	|	|	|	|
7+45	0.3583	1.10	| Q V	|	|	|	|
7+50	0.3660	1.12	| Q V	|	|	|	|
7+55	0.3740	1.15	| Q V	|	|	|	|
8+ 0	0.3822	1.20	| Q V	|	|	|	|
8+ 5	0.3906	1.22	| Q V	|	|	|	|
8+10	0.3994	1.27	| Q V	|	|	|	|
8+15	0.4087	1.35	| Q V	|	|	|	|
8+20	0.4182	1.38	| Q V	|	|	|	|
8+25	0.4279	1.40	| Q V	|	|	|	|
8+30	0.4376	1.41	| Q V	|	|	|	|
8+35	0.4474	1.43	| Q V	|	|	|	|
8+40	0.4574	1.45	| Q V|	|	|	|	|
8+45	0.4676	1.49	| Q V|	|	|	|	|



8+50	0.4780	1.51	Q V				
8+55	0.4886	1.54	Q V				
9+ 0	0.4995	1.58	Q V				
9+ 5	0.5105	1.60	Q V				
9+10	0.5219	1.65	Q V				
9+15	0.5339	1.73	Q V				
9+20	0.5461	1.77	Q V				
9+25	0.5585	1.81	Q V				
9+30	0.5713	1.86	Q V				
9+35	0.5842	1.88	Q V				
9+40	0.5974	1.91	Q V				
9+45	0.6109	1.96	Q V				
9+50	0.6245	1.98	Q V				
9+55	0.6384	2.01	Q V				
10+ 0	0.6525	2.05	Q V				
10+ 5	0.6666	2.04	Q V				
10+10	0.6798	1.92	Q V				
10+15	0.6913	1.67	Q V				
10+20	0.7022	1.58	Q V				
10+25	0.7126	1.52	Q V				
10+30	0.7229	1.49	Q V				
10+35	0.7331	1.48	Q V				
10+40	0.7439	1.57	Q V				
10+45	0.7559	1.74	Q V				
10+50	0.7684	1.81	Q V				
10+55	0.7811	1.85	Q V				
11+ 0	0.7940	1.87	Q V				
11+ 5	0.8070	1.88	Q V				
11+10	0.8199	1.87	Q V				
11+15	0.8326	1.84	Q V				
11+20	0.8452	1.83	Q V				
11+25	0.8577	1.82	Q V				
11+30	0.8702	1.82	Q V				
11+35	0.8827	1.81	Q V				
11+40	0.8949	1.77	Q V				
11+45	0.9066	1.70	Q V				
11+50	0.9181	1.67	Q V				
11+55	0.9296	1.67	Q V				
12+ 0	0.9413	1.70	Q V				
12+ 5	0.9533	1.74	Q V				
12+10	0.9662	1.88	Q V				
12+15	0.9809	2.14	Q V				
12+20	0.9957	2.15	Q V				
12+25	1.0082	1.81	Q V				
12+30	1.0158	1.11	Q V				
12+35	1.0224	0.96	Q V				
12+40	1.0302	1.13	Q V				
12+45	1.0412	1.59	Q V				
12+50	1.0537	1.81	Q V				
12+55	1.0680	2.08	Q V				
13+ 0	1.0849	2.45	Q V				
13+ 5	1.1042	2.80	Q V				
13+10	1.1290	3.61	Q V				
13+15	1.1631	4.94	Q V				
13+20	1.2010	5.51	QV				
13+25	1.2414	5.87	QV				
13+30	1.2836	6.13	QV				
13+35	1.3258	6.13	Q V				
13+40	1.3627	5.35	Q V				
13+45	1.3883	3.73	Q V				
13+50	1.4098	3.12	Q V				
13+55	1.4289	2.77	Q V				
14+ 0	1.4458	2.46	Q V				
14+ 5	1.4595	1.99	Q V				
14+10	1.4708	1.63	Q V				
14+15	1.4866	2.30	Q V				
14+20	1.5038	2.50	Q V				
14+25	1.5211	2.51	Q V				
14+30	1.5375	2.38	Q V				
14+35	1.5540	2.39	Q V				
14+40	1.5708	2.44	Q V				
14+45	1.5879	2.49	Q V				
14+50	1.6052	2.51	Q V				
14+55	1.6220	2.44	Q V				
15+ 0	1.6377	2.27	Q V				

15+ 5	1.6529	2.22	| Q |	|	|	V |
15+10	1.6674	2.11	| Q |	|	|	V |
15+15	1.6805	1.90	| Q |	|	|	V |
15+20	1.6930	1.82	| Q |	|	|	V |
15+25	1.7047	1.69	| Q |	|	|	V |
15+30	1.7149	1.48	| Q |	|	|	V |
15+35	1.7248	1.44	| Q |	|	|	V |
15+40	1.7353	1.52	| Q |	|	|	V |
15+45	1.7468	1.68	| Q |	|	|	V |
15+50	1.7587	1.73	| Q |	|	|	V |
15+55	1.7709	1.76	| Q |	|	|	V |
16+ 0	1.7831	1.78	| Q |	|	|	V |
16+ 5	1.7951	1.73	| Q |	|	|	V |
16+10	1.8050	1.45	| Q |	|	|	V |
16+15	1.8113	0.90	| Q |	|	|	V |
16+20	1.8160	0.70	| Q |	|	|	V |
16+25	1.8200	0.58	| Q |	|	|	V |
16+30	1.8235	0.50	| Q |	|	|	V |
16+35	1.8266	0.45	| Q |	|	|	V |
16+40	1.8293	0.40	| Q |	|	|	V |
16+45	1.8317	0.35	| Q |	|	|	V |
16+50	1.8340	0.33	| Q |	|	|	V |
16+55	1.8361	0.31	| Q |	|	|	V |
17+ 0	1.8382	0.30	| Q |	|	|	V |
17+ 5	1.8403	0.30	| Q |	|	|	V |
17+10	1.8426	0.34	| Q |	|	|	V |
17+15	1.8454	0.41	| Q |	|	|	V |
17+20	1.8484	0.44	| Q |	|	|	V |
17+25	1.8515	0.45	| Q |	|	|	V |
17+30	1.8547	0.46	| Q |	|	|	V |
17+35	1.8579	0.47	| Q |	|	|	V |
17+40	1.8611	0.47	| Q |	|	|	V |
17+45	1.8644	0.47	| Q |	|	|	V |
17+50	1.8677	0.47	| Q |	|	|	V |
17+55	1.8708	0.45	| Q |	|	|	V |
18+ 0	1.8736	0.42	| Q |	|	|	V |
18+ 5	1.8764	0.40	| Q |	|	|	V |
18+10	1.8791	0.40	| Q |	|	|	V |
18+15	1.8818	0.39	| Q |	|	|	V |
18+20	1.8845	0.39	| Q |	|	|	V |
18+25	1.8871	0.38	| Q |	|	|	V |
18+30	1.8898	0.38	| Q |	|	|	V |
18+35	1.8924	0.38	| Q |	|	|	V |
18+40	1.8949	0.36	| Q |	|	|	V |
18+45	1.8971	0.32	| Q |	|	|	V |
18+50	1.8992	0.30	| Q |	|	|	V |
18+55	1.9011	0.28	| Q |	|	|	V |
19+ 0	1.9027	0.23	| Q |	|	|	V |
19+ 5	1.9042	0.22	| Q |	|	|	V |
19+10	1.9058	0.23	| Q |	|	|	V |
19+15	1.9076	0.26	| Q |	|	|	V |
19+20	1.9095	0.28	| Q |	|	|	V |
19+25	1.9116	0.30	| Q |	|	|	V |
19+30	1.9139	0.34	| Q |	|	|	V |
19+35	1.9163	0.35	| Q |	|	|	V |
19+40	1.9187	0.34	| Q |	|	|	V |
19+45	1.9208	0.31	| Q |	|	|	V |
19+50	1.9229	0.30	| Q |	|	|	V |
19+55	1.9248	0.27	| Q |	|	|	V |
20+ 0	1.9264	0.23	| Q |	|	|	V |
20+ 5	1.9279	0.22	| Q |	|	|	V |
20+10	1.9295	0.23	| Q |	|	|	V |
20+15	1.9313	0.26	| Q |	|	|	V |
20+20	1.9331	0.27	| Q |	|	|	V |
20+25	1.9350	0.28	| Q |	|	|	V |
20+30	1.9370	0.28	| Q |	|	|	V |
20+35	1.9389	0.28	| Q |	|	|	V |
20+40	1.9409	0.28	| Q |	|	|	V |
20+45	1.9428	0.29	| Q |	|	|	V |
20+50	1.9448	0.28	| Q |	|	|	V |
20+55	1.9466	0.26	| Q |	|	|	V |
21+ 0	1.9481	0.23	| Q |	|	|	V |
21+ 5	1.9496	0.22	| Q |	|	|	V |
21+10	1.9512	0.23	| Q |	|	|	V |
21+15	1.9530	0.26	| Q |	|	|	V |

21+20	1.9548	0.27	|Q	|	|	|	V |
21+25	1.9565	0.25	|Q	|	|	|	V|
21+30	1.9581	0.22	Q	|	|	|	V|
21+35	1.9595	0.21	Q	|	|	|	V|
21+40	1.9611	0.23	Q	|	|	|	V|
21+45	1.9629	0.26	|Q	|	|	|	V|
21+50	1.9647	0.26	|Q	|	|	|	V|
21+55	1.9664	0.25	|Q	|	|	|	V|
22+ 0	1.9679	0.22	Q	|	|	|	V|
22+ 5	1.9694	0.21	Q	|	|	|	V|
22+10	1.9709	0.23	Q	|	|	|	V|
22+15	1.9727	0.26	|Q	|	|	|	V|
22+20	1.9745	0.26	|Q	|	|	|	V|
22+25	1.9763	0.25	|Q	|	|	|	V|
22+30	1.9778	0.22	Q	|	|	|	V|
22+35	1.9792	0.21	Q	|	|	|	V|
22+40	1.9806	0.20	Q	|	|	|	V|
22+45	1.9820	0.20	Q	|	|	|	V|
22+50	1.9833	0.19	Q	|	|	|	V|
22+55	1.9846	0.19	Q	|	|	|	V|
23+ 0	1.9860	0.19	Q	|	|	|	V|
23+ 5	1.9873	0.19	Q	|	|	|	V|
23+10	1.9886	0.19	Q	|	|	|	V|
23+15	1.9899	0.19	Q	|	|	|	V|
23+20	1.9912	0.19	Q	|	|	|	V|
23+25	1.9926	0.19	Q	|	|	|	V|
23+30	1.9939	0.19	Q	|	|	|	V|
23+35	1.9952	0.19	Q	|	|	|	V|
23+40	1.9965	0.19	Q	|	|	|	V|
23+45	1.9978	0.19	Q	|	|	|	V|
23+50	1.9991	0.19	Q	|	|	|	V|
23+55	2.0004	0.19	Q	|	|	|	V|
24+ 0	2.0018	0.19	Q	|	|	|	V|
24+ 5	2.0030	0.18	Q	|	|	|	V|
24+10	2.0040	0.14	Q	|	|	|	V|
24+15	2.0045	0.07	Q	|	|	|	V|
24+20	2.0048	0.04	Q	|	|	|	V|
24+25	2.0050	0.03	Q	|	|	|	V|
24+30	2.0051	0.02	Q	|	|	|	V|
24+35	2.0051	0.01	Q	|	|	|	V|
24+40	2.0052	0.01	Q	|	|	|	V|
24+45	2.0052	0.00	Q	|	|	|	V|
24+50	2.0052	0.00	Q	|	|	|	V|
24+55	2.0052	0.00	Q	|	|	|	V|
25+ 0	2.0052	0.00	Q	|	|	|	V|
25+ 5	2.0052	0.00	Q	|	|	|	V

UNIT HYDROGRAPH
DMA B
EXISTING CONDITIONS
10-YEAR 24-HOUR

U n i t H y d r o g r a p h A n a l y s i s

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Study date 10/21/14 File: BEX2410.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

14-0213 SHOPOFF
UNIT HYDROGRAPH
DMA B
EXISTING CONDITIONS
10-YEAR 24-HOUR

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 60.70(Ac.) = 0.095 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 60.70(Ac.) = 0.095 Sq. Mi.
Length along longest watercourse = 2985.00(Ft.)
Length along longest watercourse measured to centroid = 1550.00(Ft.)
Length along longest watercourse = 0.565 Mi.
Length along longest watercourse measured to centroid = 0.294 Mi.
Difference in elevation = 161.00(Ft.)
Slope along watercourse = 284.7839 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.166 Hr.
Lag time = 9.95 Min.
25% of lag time = 2.49 Min.
40% of lag time = 3.98 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
60.70	2.60	157.82

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
60.70	7.00	424.90

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.600(In)
Area Averaged 100-Year Rainfall = 7.000(In)

Point rain (area averaged) = 4.410(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 4.410(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
60.700	89.00	0.000

Total Area Entered = 60.70(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F

AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
89.0	89.0	0.141	0.000	0.141	1.000	0.141
					Sum (F) =	0.141

Area averaged mean soil loss (F) (In/Hr) = 0.141
Minimum soil loss rate ((In/Hr)) = 0.071
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	50.269	4.313	2.638
2	0.167	100.538	20.593	12.598
3	0.250	150.808	38.182	23.358
4	0.333	201.077	14.582	8.921
5	0.417	251.346	8.338	5.101
6	0.500	301.615	5.421	3.316
7	0.583	351.885	3.568	2.183
8	0.667	402.154	2.195	1.343
9	0.750	452.423	1.035	0.633
10	0.833	502.692	0.548	0.335
11	0.917	552.962	0.392	0.240
12	1.000	603.231	0.357	0.219
13	1.083	653.500	0.289	0.177
14	1.167	703.769	0.187	0.114
			Sum = 100.000 Sum=	61.174

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.035	0.251	0.032	0.00
2	0.17	0.07	0.035	0.250	0.032	0.00
3	0.25	0.07	0.035	0.249	0.032	0.00
4	0.33	0.10	0.053	0.248	0.048	0.01
5	0.42	0.10	0.053	0.247	0.048	0.01
6	0.50	0.10	0.053	0.246	0.048	0.01
7	0.58	0.10	0.053	0.245	0.048	0.01
8	0.67	0.10	0.053	0.244	0.048	0.01
9	0.75	0.10	0.053	0.243	0.048	0.01
10	0.83	0.13	0.071	0.242	0.063	0.01
11	0.92	0.13	0.071	0.241	0.063	0.01
12	1.00	0.13	0.071	0.240	0.063	0.01
13	1.08	0.10	0.053	0.239	0.048	0.01
14	1.17	0.10	0.053	0.238	0.048	0.01
15	1.25	0.10	0.053	0.237	0.048	0.01
16	1.33	0.10	0.053	0.236	0.048	0.01
17	1.42	0.10	0.053	0.235	0.048	0.01
18	1.50	0.10	0.053	0.234	0.048	0.01
19	1.58	0.10	0.053	0.234	0.048	0.01
20	1.67	0.10	0.053	0.233	0.048	0.01
21	1.75	0.10	0.053	0.232	0.048	0.01
22	1.83	0.13	0.071	0.231	0.063	0.01
23	1.92	0.13	0.071	0.230	0.063	0.01
24	2.00	0.13	0.071	0.229	0.063	0.01
25	2.08	0.13	0.071	0.228	0.063	0.01
26	2.17	0.13	0.071	0.227	0.063	0.01
27	2.25	0.13	0.071	0.226	0.063	0.01
28	2.33	0.13	0.071	0.225	0.063	0.01
29	2.42	0.13	0.071	0.224	0.063	0.01
30	2.50	0.13	0.071	0.223	0.063	0.01
31	2.58	0.17	0.088	0.222	0.079	0.01
32	2.67	0.17	0.088	0.221	0.079	0.01
33	2.75	0.17	0.088	0.221	0.079	0.01
34	2.83	0.17	0.088	0.220	0.079	0.01
35	2.92	0.17	0.088	0.219	0.079	0.01
36	3.00	0.17	0.088	0.218	0.079	0.01
37	3.08	0.17	0.088	0.217	0.079	0.01
38	3.17	0.17	0.088	0.216	0.079	0.01

39	3.25	0.17	0.088	0.215	0.079	0.01
40	3.33	0.17	0.088	0.214	0.079	0.01
41	3.42	0.17	0.088	0.213	0.079	0.01
42	3.50	0.17	0.088	0.212	0.079	0.01
43	3.58	0.17	0.088	0.212	0.079	0.01
44	3.67	0.17	0.088	0.211	0.079	0.01
45	3.75	0.17	0.088	0.210	0.079	0.01
46	3.83	0.20	0.106	0.209	0.095	0.01
47	3.92	0.20	0.106	0.208	0.095	0.01
48	4.00	0.20	0.106	0.207	0.095	0.01
49	4.08	0.20	0.106	0.206	0.095	0.01
50	4.17	0.20	0.106	0.205	0.095	0.01
51	4.25	0.20	0.106	0.205	0.095	0.01
52	4.33	0.23	0.123	0.204	0.111	0.01
53	4.42	0.23	0.123	0.203	0.111	0.01
54	4.50	0.23	0.123	0.202	0.111	0.01
55	4.58	0.23	0.123	0.201	0.111	0.01
56	4.67	0.23	0.123	0.200	0.111	0.01
57	4.75	0.23	0.123	0.199	0.111	0.01
58	4.83	0.27	0.141	0.198	0.127	0.01
59	4.92	0.27	0.141	0.198	0.127	0.01
60	5.00	0.27	0.141	0.197	0.127	0.01
61	5.08	0.20	0.106	0.196	0.095	0.01
62	5.17	0.20	0.106	0.195	0.095	0.01
63	5.25	0.20	0.106	0.194	0.095	0.01
64	5.33	0.23	0.123	0.193	0.111	0.01
65	5.42	0.23	0.123	0.193	0.111	0.01
66	5.50	0.23	0.123	0.192	0.111	0.01
67	5.58	0.27	0.141	0.191	0.127	0.01
68	5.67	0.27	0.141	0.190	0.127	0.01
69	5.75	0.27	0.141	0.189	0.127	0.01
70	5.83	0.27	0.141	0.188	0.127	0.01
71	5.92	0.27	0.141	0.187	0.127	0.01
72	6.00	0.27	0.141	0.187	0.127	0.01
73	6.08	0.30	0.159	0.186	0.143	0.02
74	6.17	0.30	0.159	0.185	0.143	0.02
75	6.25	0.30	0.159	0.184	0.143	0.02
76	6.33	0.30	0.159	0.183	0.143	0.02
77	6.42	0.30	0.159	0.183	0.143	0.02
78	6.50	0.30	0.159	0.182	0.143	0.02
79	6.58	0.33	0.176	0.181	0.159	0.02
80	6.67	0.33	0.176	0.180	0.159	0.02
81	6.75	0.33	0.176	0.179	0.159	0.02
82	6.83	0.33	0.176	0.178	0.159	0.02
83	6.92	0.33	0.176	0.178	0.159	0.02
84	7.00	0.33	0.176	0.177	0.159	0.02
85	7.08	0.33	0.176	0.176	---	0.00
86	7.17	0.33	0.176	0.175	---	0.00
87	7.25	0.33	0.176	0.174	---	0.00
88	7.33	0.37	0.194	0.174	---	0.02
89	7.42	0.37	0.194	0.173	---	0.02
90	7.50	0.37	0.194	0.172	---	0.02
91	7.58	0.40	0.212	0.171	---	0.04
92	7.67	0.40	0.212	0.170	---	0.04
93	7.75	0.40	0.212	0.170	---	0.04
94	7.83	0.43	0.229	0.169	---	0.06
95	7.92	0.43	0.229	0.168	---	0.06
96	8.00	0.43	0.229	0.167	---	0.06
97	8.08	0.50	0.265	0.167	---	0.10
98	8.17	0.50	0.265	0.166	---	0.10
99	8.25	0.50	0.265	0.165	---	0.10
100	8.33	0.50	0.265	0.164	---	0.10
101	8.42	0.50	0.265	0.163	---	0.10
102	8.50	0.50	0.265	0.163	---	0.10
103	8.58	0.53	0.282	0.162	---	0.12
104	8.67	0.53	0.282	0.161	---	0.12
105	8.75	0.53	0.282	0.160	---	0.12
106	8.83	0.57	0.300	0.160	---	0.14
107	8.92	0.57	0.300	0.159	---	0.14
108	9.00	0.57	0.300	0.158	---	0.14
109	9.08	0.63	0.335	0.157	---	0.18
110	9.17	0.63	0.335	0.157	---	0.18
111	9.25	0.63	0.335	0.156	---	0.18
112	9.33	0.67	0.353	0.155	---	0.20
113	9.42	0.67	0.353	0.154	---	0.20

114	9.50	0.67	0.353	0.154	---	0.20
115	9.58	0.70	0.370	0.153	---	0.22
116	9.67	0.70	0.370	0.152	---	0.22
117	9.75	0.70	0.370	0.151	---	0.22
118	9.83	0.73	0.388	0.151	---	0.24
119	9.92	0.73	0.388	0.150	---	0.24
120	10.00	0.73	0.388	0.149	---	0.24
121	10.08	0.50	0.265	0.149	---	0.12
122	10.17	0.50	0.265	0.148	---	0.12
123	10.25	0.50	0.265	0.147	---	0.12
124	10.33	0.50	0.265	0.146	---	0.12
125	10.42	0.50	0.265	0.146	---	0.12
126	10.50	0.50	0.265	0.145	---	0.12
127	10.58	0.67	0.353	0.144	---	0.21
128	10.67	0.67	0.353	0.144	---	0.21
129	10.75	0.67	0.353	0.143	---	0.21
130	10.83	0.67	0.353	0.142	---	0.21
131	10.92	0.67	0.353	0.142	---	0.21
132	11.00	0.67	0.353	0.141	---	0.21
133	11.08	0.63	0.335	0.140	---	0.20
134	11.17	0.63	0.335	0.139	---	0.20
135	11.25	0.63	0.335	0.139	---	0.20
136	11.33	0.63	0.335	0.138	---	0.20
137	11.42	0.63	0.335	0.137	---	0.20
138	11.50	0.63	0.335	0.137	---	0.20
139	11.58	0.57	0.300	0.136	---	0.16
140	11.67	0.57	0.300	0.135	---	0.16
141	11.75	0.57	0.300	0.135	---	0.17
142	11.83	0.60	0.317	0.134	---	0.18
143	11.92	0.60	0.317	0.133	---	0.18
144	12.00	0.60	0.317	0.133	---	0.18
145	12.08	0.83	0.441	0.132	---	0.31
146	12.17	0.83	0.441	0.131	---	0.31
147	12.25	0.83	0.441	0.131	---	0.31
148	12.33	0.87	0.459	0.130	---	0.33
149	12.42	0.87	0.459	0.129	---	0.33
150	12.50	0.87	0.459	0.129	---	0.33
151	12.58	0.93	0.494	0.128	---	0.37
152	12.67	0.93	0.494	0.127	---	0.37
153	12.75	0.93	0.494	0.127	---	0.37
154	12.83	0.97	0.512	0.126	---	0.39
155	12.92	0.97	0.512	0.126	---	0.39
156	13.00	0.97	0.512	0.125	---	0.39
157	13.08	1.13	0.600	0.124	---	0.48
158	13.17	1.13	0.600	0.124	---	0.48
159	13.25	1.13	0.600	0.123	---	0.48
160	13.33	1.13	0.600	0.122	---	0.48
161	13.42	1.13	0.600	0.122	---	0.48
162	13.50	1.13	0.600	0.121	---	0.48
163	13.58	0.77	0.406	0.120	---	0.29
164	13.67	0.77	0.406	0.120	---	0.29
165	13.75	0.77	0.406	0.119	---	0.29
166	13.83	0.77	0.406	0.119	---	0.29
167	13.92	0.77	0.406	0.118	---	0.29
168	14.00	0.77	0.406	0.117	---	0.29
169	14.08	0.90	0.476	0.117	---	0.36
170	14.17	0.90	0.476	0.116	---	0.36
171	14.25	0.90	0.476	0.116	---	0.36
172	14.33	0.87	0.459	0.115	---	0.34
173	14.42	0.87	0.459	0.114	---	0.34
174	14.50	0.87	0.459	0.114	---	0.34
175	14.58	0.87	0.459	0.113	---	0.35
176	14.67	0.87	0.459	0.113	---	0.35
177	14.75	0.87	0.459	0.112	---	0.35
178	14.83	0.83	0.441	0.112	---	0.33
179	14.92	0.83	0.441	0.111	---	0.33
180	15.00	0.83	0.441	0.110	---	0.33
181	15.08	0.80	0.423	0.110	---	0.31
182	15.17	0.80	0.423	0.109	---	0.31
183	15.25	0.80	0.423	0.109	---	0.31
184	15.33	0.77	0.406	0.108	---	0.30
185	15.42	0.77	0.406	0.108	---	0.30
186	15.50	0.77	0.406	0.107	---	0.30
187	15.58	0.63	0.335	0.107	---	0.23
188	15.67	0.63	0.335	0.106	---	0.23

189	15.75	0.63	0.335	0.105	---	0.23
190	15.83	0.63	0.335	0.105	---	0.23
191	15.92	0.63	0.335	0.104	---	0.23
192	16.00	0.63	0.335	0.104	---	0.23
193	16.08	0.13	0.071	0.103	0.063	0.01
194	16.17	0.13	0.071	0.103	0.063	0.01
195	16.25	0.13	0.071	0.102	0.063	0.01
196	16.33	0.13	0.071	0.102	0.063	0.01
197	16.42	0.13	0.071	0.101	0.063	0.01
198	16.50	0.13	0.071	0.101	0.063	0.01
199	16.58	0.10	0.053	0.100	0.048	0.01
200	16.67	0.10	0.053	0.100	0.048	0.01
201	16.75	0.10	0.053	0.099	0.048	0.01
202	16.83	0.10	0.053	0.099	0.048	0.01
203	16.92	0.10	0.053	0.098	0.048	0.01
204	17.00	0.10	0.053	0.098	0.048	0.01
205	17.08	0.17	0.088	0.097	0.079	0.01
206	17.17	0.17	0.088	0.097	0.079	0.01
207	17.25	0.17	0.088	0.096	0.079	0.01
208	17.33	0.17	0.088	0.096	0.079	0.01
209	17.42	0.17	0.088	0.095	0.079	0.01
210	17.50	0.17	0.088	0.095	0.079	0.01
211	17.58	0.17	0.088	0.094	0.079	0.01
212	17.67	0.17	0.088	0.094	0.079	0.01
213	17.75	0.17	0.088	0.093	0.079	0.01
214	17.83	0.13	0.071	0.093	0.063	0.01
215	17.92	0.13	0.071	0.092	0.063	0.01
216	18.00	0.13	0.071	0.092	0.063	0.01
217	18.08	0.13	0.071	0.092	0.063	0.01
218	18.17	0.13	0.071	0.091	0.063	0.01
219	18.25	0.13	0.071	0.091	0.063	0.01
220	18.33	0.13	0.071	0.090	0.063	0.01
221	18.42	0.13	0.071	0.090	0.063	0.01
222	18.50	0.13	0.071	0.089	0.063	0.01
223	18.58	0.10	0.053	0.089	0.048	0.01
224	18.67	0.10	0.053	0.088	0.048	0.01
225	18.75	0.10	0.053	0.088	0.048	0.01
226	18.83	0.07	0.035	0.088	0.032	0.00
227	18.92	0.07	0.035	0.087	0.032	0.00
228	19.00	0.07	0.035	0.087	0.032	0.00
229	19.08	0.10	0.053	0.086	0.048	0.01
230	19.17	0.10	0.053	0.086	0.048	0.01
231	19.25	0.10	0.053	0.086	0.048	0.01
232	19.33	0.13	0.071	0.085	0.063	0.01
233	19.42	0.13	0.071	0.085	0.063	0.01
234	19.50	0.13	0.071	0.084	0.063	0.01
235	19.58	0.10	0.053	0.084	0.048	0.01
236	19.67	0.10	0.053	0.084	0.048	0.01
237	19.75	0.10	0.053	0.083	0.048	0.01
238	19.83	0.07	0.035	0.083	0.032	0.00
239	19.92	0.07	0.035	0.082	0.032	0.00
240	20.00	0.07	0.035	0.082	0.032	0.00
241	20.08	0.10	0.053	0.082	0.048	0.01
242	20.17	0.10	0.053	0.081	0.048	0.01
243	20.25	0.10	0.053	0.081	0.048	0.01
244	20.33	0.10	0.053	0.081	0.048	0.01
245	20.42	0.10	0.053	0.080	0.048	0.01
246	20.50	0.10	0.053	0.080	0.048	0.01
247	20.58	0.10	0.053	0.080	0.048	0.01
248	20.67	0.10	0.053	0.079	0.048	0.01
249	20.75	0.10	0.053	0.079	0.048	0.01
250	20.83	0.07	0.035	0.079	0.032	0.00
251	20.92	0.07	0.035	0.078	0.032	0.00
252	21.00	0.07	0.035	0.078	0.032	0.00
253	21.08	0.10	0.053	0.078	0.048	0.01
254	21.17	0.10	0.053	0.077	0.048	0.01
255	21.25	0.10	0.053	0.077	0.048	0.01
256	21.33	0.07	0.035	0.077	0.032	0.00
257	21.42	0.07	0.035	0.077	0.032	0.00
258	21.50	0.07	0.035	0.076	0.032	0.00
259	21.58	0.10	0.053	0.076	0.048	0.01
260	21.67	0.10	0.053	0.076	0.048	0.01
261	21.75	0.10	0.053	0.075	0.048	0.01
262	21.83	0.07	0.035	0.075	0.032	0.00
263	21.92	0.07	0.035	0.075	0.032	0.00

264	22.00	0.07	0.035	0.075	0.032	0.00
265	22.08	0.10	0.053	0.074	0.048	0.01
266	22.17	0.10	0.053	0.074	0.048	0.01
267	22.25	0.10	0.053	0.074	0.048	0.01
268	22.33	0.07	0.035	0.074	0.032	0.00
269	22.42	0.07	0.035	0.073	0.032	0.00
270	22.50	0.07	0.035	0.073	0.032	0.00
271	22.58	0.07	0.035	0.073	0.032	0.00
272	22.67	0.07	0.035	0.073	0.032	0.00
273	22.75	0.07	0.035	0.073	0.032	0.00
274	22.83	0.07	0.035	0.072	0.032	0.00
275	22.92	0.07	0.035	0.072	0.032	0.00
276	23.00	0.07	0.035	0.072	0.032	0.00
277	23.08	0.07	0.035	0.072	0.032	0.00
278	23.17	0.07	0.035	0.072	0.032	0.00
279	23.25	0.07	0.035	0.072	0.032	0.00
280	23.33	0.07	0.035	0.071	0.032	0.00
281	23.42	0.07	0.035	0.071	0.032	0.00
282	23.50	0.07	0.035	0.071	0.032	0.00
283	23.58	0.07	0.035	0.071	0.032	0.00
284	23.67	0.07	0.035	0.071	0.032	0.00
285	23.75	0.07	0.035	0.071	0.032	0.00
286	23.83	0.07	0.035	0.071	0.032	0.00
287	23.92	0.07	0.035	0.071	0.032	0.00
288	24.00	0.07	0.035	0.071	0.032	0.00
	Sum =	100.0			Sum =	25.9

Flood volume = Effective rainfall 2.16(In)
times area 60.7(Ac.)/[(In)/(Ft.)] = 10.9(Ac.Ft)
Total soil loss = 2.25(In)
Total soil loss = 11.382(Ac.Ft)
Total rainfall = 4.41(In)
Flood volume = 475842.8 Cubic Feet
Total soil loss = 495788.9 Cubic Feet

Peak flow rate of this hydrograph = 28.700(CFS)

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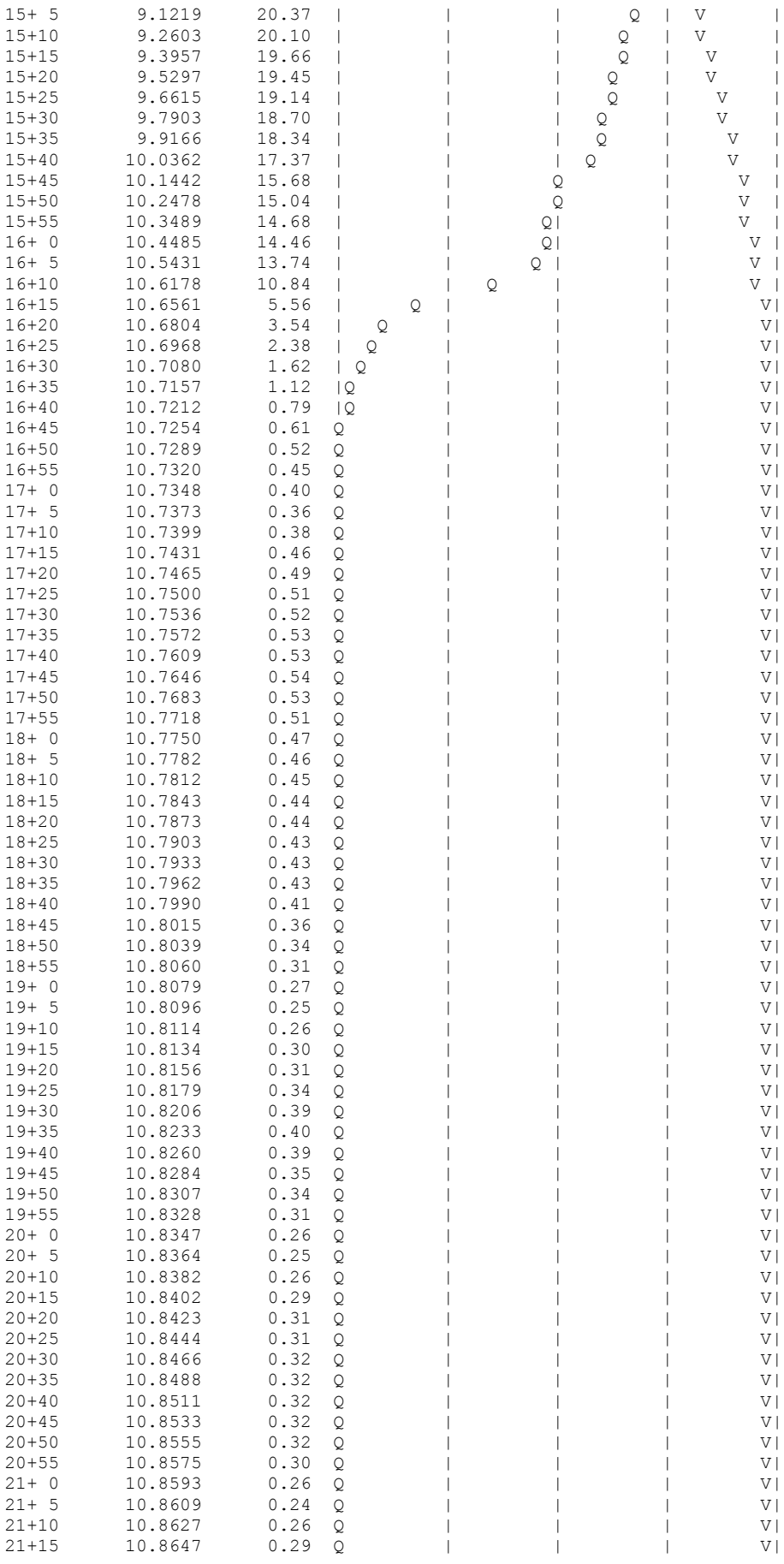
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0001	0.01	Q	|	|	|	|
0+10	0.0004	0.05	Q	|	|	|	|
0+15	0.0014	0.14	Q	|	|	|	|
0+20	0.0026	0.17	Q	|	|	|	|
0+25	0.0040	0.21	Q	|	|	|	|
0+30	0.0059	0.27	Q	|	|	|	|
0+35	0.0078	0.29	Q	|	|	|	|
0+40	0.0099	0.30	Q	|	|	|	|
0+45	0.0121	0.31	Q	|	|	|	|
0+50	0.0143	0.32	Q	|	|	|	|
0+55	0.0167	0.35	Q	|	|	|	|
1+ 0	0.0193	0.39	Q	|	|	|	|
1+ 5	0.0221	0.40	Q	|	|	|	|
1+10	0.0248	0.39	Q	|	|	|	|
1+15	0.0272	0.35	Q	|	|	|	|
1+20	0.0296	0.34	Q	|	|	|	|
1+25	0.0319	0.34	Q	|	|	|	|
1+30	0.0342	0.33	Q	|	|	|	|
1+35	0.0364	0.33	Q	|	|	|	|
1+40	0.0387	0.33	Q	|	|	|	|
1+45	0.0409	0.33	Q	|	|	|	|
1+50	0.0432	0.33	Q	|	|	|	|
1+55	0.0456	0.35	Q	|	|	|	|
2+ 0	0.0483	0.39	Q	|	|	|	|
2+ 5	0.0511	0.41	Q	|	|	|	|
2+10	0.0540	0.42	Q	|	|	|	|
2+15	0.0569	0.42	Q	|	|	|	|
2+20	0.0598	0.43	Q	|	|	|	|
2+25	0.0628	0.43	Q	|	|	|	|
2+30	0.0658	0.43	Q	|	|	|	|

2+35	0.0687	0.44	Q				
2+40	0.0719	0.46	Q				
2+45	0.0753	0.50	Q				
2+50	0.0789	0.52	Q				
2+55	0.0825	0.52	Q				
3+ 0	0.0862	0.53	Q				
3+ 5	0.0898	0.53	Q				
3+10	0.0935	0.54	Q				
3+15	0.0972	0.54	Q				
3+20	0.1009	0.54	Q				
3+25	0.1047	0.54	Q				
3+30	0.1084	0.54	Q				
3+35	0.1121	0.54	Q				
3+40	0.1158	0.54	Q				
3+45	0.1195	0.54	Q				
3+50	0.1233	0.54	Q				
3+55	0.1272	0.57	Q				
4+ 0	0.1314	0.61	Q				
4+ 5	0.1357	0.62	Q				
4+10	0.1400	0.63	Q				
4+15	0.1444	0.64	Q				
4+20	0.1489	0.65	Q				
4+25	0.1535	0.67	Q				
4+30	0.1584	0.71	Q				
4+35	0.1634	0.73	Q				
4+40	0.1685	0.74	Q				
4+45	0.1737	0.75	Q				
4+50	0.1789	0.75	VQ				
4+55	0.1842	0.78	VQ				
5+ 0	0.1899	0.82	VQ				
5+ 5	0.1956	0.83	VQ				
5+10	0.2011	0.79	VQ				
5+15	0.2060	0.72	Q				
5+20	0.2108	0.70	Q				
5+25	0.2156	0.70	Q				
5+30	0.2207	0.73	Q				
5+35	0.2258	0.75	Q				
5+40	0.2311	0.77	VQ				
5+45	0.2368	0.82	VQ				
5+50	0.2425	0.84	VQ				
5+55	0.2484	0.85	VQ				
6+ 0	0.2543	0.85	VQ				
6+ 5	0.2602	0.86	VQ				
6+10	0.2663	0.89	VQ				
6+15	0.2727	0.93	VQ				
6+20	0.2792	0.95	|Q				
6+25	0.2858	0.96	|Q				
6+30	0.2924	0.96	|Q				
6+35	0.2991	0.97	|Q				
6+40	0.3060	1.00	|Q				
6+45	0.3131	1.04	|Q				
6+50	0.3204	1.05	|Q				
6+55	0.3277	1.06	|Q				
7+ 0	0.3351	1.07	|Q				
7+ 5	0.3421	1.03	|Q				
7+10	0.3478	0.82	|Q				
7+15	0.3507	0.42	QV				
7+20	0.3531	0.35	QV				
7+25	0.3567	0.52	QV				
7+30	0.3630	0.92	|Q				
7+35	0.3708	1.13	|Q				
7+40	0.3808	1.46	|Q				
7+45	0.3944	1.97	|VQ				
7+50	0.4100	2.26	|V Q				
7+55	0.4281	2.63	|V Q				
8+ 0	0.4499	3.16	|V Q				
8+ 5	0.4740	3.50	|V Q				
8+10	0.5023	4.11	|V Q				
8+15	0.5371	5.05	|V Q				
8+20	0.5747	5.46	| V Q				
8+25	0.6141	5.72	| V Q				
8+30	0.6548	5.90	| V Q				
8+35	0.6966	6.08	| V Q				
8+40	0.7407	6.40	| V Q				
8+45	0.7882	6.89	| V Q|				

8+50	0.8375	7.15	V Q				
8+55	0.8893	7.52	V Q				
9+ 0	0.9447	8.05	V Q				
9+ 5	1.0025	8.39	V Q				
9+10	1.0645	9.00	V Q				
9+15	1.1329	9.94	V Q				
9+20	1.2045	10.39	V Q				
9+25	1.2793	10.87	V Q				
9+30	1.3582	11.46	V Q				
9+35	1.4394	11.79	V Q				
9+40	1.5235	12.20	V Q				
9+45	1.6112	12.75	V Q				
9+50	1.7011	13.05	V Q				
9+55	1.7937	13.44	V Q				
10+ 0	1.8899	13.97	V Q				
10+ 5	1.9856	13.90	V Q				
10+10	2.0718	12.51	V Q				
10+15	2.1389	9.74	V Q				
10+20	2.1990	8.73	V Q				
10+25	2.2553	8.18	V Q				
10+30	2.3092	7.83	V Q				
10+35	2.3632	7.84	V Q				
10+40	2.4241	8.84	V Q				
10+45	2.4989	10.87	V Q				
10+50	2.5792	11.66	V Q				
10+55	2.6627	12.12	V Q				
11+ 0	2.7484	12.43	V Q				
11+ 5	2.8351	12.60	V Q				
11+10	2.9214	12.52	V Q				
11+15	3.0055	12.21	V Q				
11+20	3.0890	12.13	V Q				
11+25	3.1723	12.10	V Q				
11+30	3.2557	12.10	V Q				
11+35	3.3385	12.03	V Q				
11+40	3.4185	11.61	V Q				
11+45	3.4930	10.82	V Q				
11+50	3.5659	10.58	VQ				
11+55	3.6393	10.66	VQ				
12+ 0	3.7150	11.00	VQ				
12+ 5	3.7938	11.44	V Q				
12+10	3.8839	13.08	V Q				
12+15	3.9944	16.04	V Q				
12+20	4.1132	17.26	V Q				
12+25	4.2383	18.16	V Q				
12+30	4.3694	19.03	V Q				
12+35	4.5043	19.59	V Q				
12+40	4.6443	20.33	V Q				
12+45	4.7913	21.34	V Q				
12+50	4.9415	21.82	V Q				
12+55	5.0952	22.32	V Q				
13+ 0	5.2531	22.92	V Q				
13+ 5	5.4147	23.46	V Q				
13+10	5.5852	24.76	V Q				
13+15	5.7708	26.95	V Q				
13+20	5.9625	27.83	V Q				
13+25	6.1577	28.35	V Q				
13+30	6.3554	28.70	V Q				
13+35	6.5512	28.43	V Q				
13+40	6.7313	26.15	V Q				
13+45	6.8808	21.71	V Q				
13+50	7.0189	20.05	VQ				
13+55	7.1506	19.12	QV				
14+ 0	7.2783	18.54	Q V				
14+ 5	7.4046	18.35	Q V				
14+10	7.5357	19.03	Q V				
14+15	7.6775	20.59	QV				
14+20	7.8231	21.14	Q				
14+25	7.9696	21.27	QV				
14+30	8.1148	21.09	QV				
14+35	8.2600	21.09	Q V				
14+40	8.4054	21.10	Q V				
14+45	8.5509	21.13	Q V				
14+50	8.6962	21.10	Q V				
14+55	8.8402	20.91	Q V				
15+ 0	8.9816	20.53	Q V				



15+ 5	9.1219	20.37				Q	V	
15+10	9.2603	20.10				Q	V	
15+15	9.3957	19.66				Q	V	
15+20	9.5297	19.45				Q	V	
15+25	9.6615	19.14				Q	V	
15+30	9.7903	18.70				Q	V	
15+35	9.9166	18.34				Q	V	
15+40	10.0362	17.37				Q	V	
15+45	10.1442	15.68			Q		V	
15+50	10.2478	15.04			Q		V	
15+55	10.3489	14.68			Q		V	
16+ 0	10.4485	14.46			Q		V	
16+ 5	10.5431	13.74			Q		V	
16+10	10.6178	10.84		Q			V	
16+15	10.6561	5.56	Q				V	
16+20	10.6804	3.54	Q				V	
16+25	10.6968	2.38	Q				V	
16+30	10.7080	1.62	Q				V	
16+35	10.7157	1.12	Q				V	
16+40	10.7212	0.79	Q				V	
16+45	10.7254	0.61	Q				V	
16+50	10.7289	0.52	Q				V	
16+55	10.7320	0.45	Q				V	
17+ 0	10.7348	0.40	Q				V	
17+ 5	10.7373	0.36	Q				V	
17+10	10.7399	0.38	Q				V	
17+15	10.7431	0.46	Q				V	
17+20	10.7465	0.49	Q				V	
17+25	10.7500	0.51	Q				V	
17+30	10.7536	0.52	Q				V	
17+35	10.7572	0.53	Q				V	
17+40	10.7609	0.53	Q				V	
17+45	10.7646	0.54	Q				V	
17+50	10.7683	0.53	Q				V	
17+55	10.7718	0.51	Q				V	
18+ 0	10.7750	0.47	Q				V	
18+ 5	10.7782	0.46	Q				V	
18+10	10.7812	0.45	Q				V	
18+15	10.7843	0.44	Q				V	
18+20	10.7873	0.44	Q				V	
18+25	10.7903	0.43	Q				V	
18+30	10.7933	0.43	Q				V	
18+35	10.7962	0.43	Q				V	
18+40	10.7990	0.41	Q				V	
18+45	10.8015	0.36	Q				V	
18+50	10.8039	0.34	Q				V	
18+55	10.8060	0.31	Q				V	
19+ 0	10.8079	0.27	Q				V	
19+ 5	10.8096	0.25	Q				V	
19+10	10.8114	0.26	Q				V	
19+15	10.8134	0.30	Q				V	
19+20	10.8156	0.31	Q				V	
19+25	10.8179	0.34	Q				V	
19+30	10.8206	0.39	Q				V	
19+35	10.8233	0.40	Q				V	
19+40	10.8260	0.39	Q				V	
19+45	10.8284	0.35	Q				V	
19+50	10.8307	0.34	Q				V	
19+55	10.8328	0.31	Q				V	
20+ 0	10.8347	0.26	Q				V	
20+ 5	10.8364	0.25	Q				V	
20+10	10.8382	0.26	Q				V	
20+15	10.8402	0.29	Q				V	
20+20	10.8423	0.31	Q				V	
20+25	10.8444	0.31	Q				V	
20+30	10.8466	0.32	Q				V	
20+35	10.8488	0.32	Q				V	
20+40	10.8511	0.32	Q				V	
20+45	10.8533	0.32	Q				V	
20+50	10.8555	0.32	Q				V	
20+55	10.8575	0.30	Q				V	
21+ 0	10.8593	0.26	Q				V	
21+ 5	10.8609	0.24	Q				V	
21+10	10.8627	0.26	Q				V	
21+15	10.8647	0.29	Q				V	

21+20	10.8668	0.30	Q	|	|	|	V|
21+25	10.8688	0.28	Q	|	|	|	V|
21+30	10.8705	0.25	Q	|	|	|	V|
21+35	10.8721	0.24	Q	|	|	|	V|
21+40	10.8739	0.26	Q	|	|	|	V|
21+45	10.8759	0.29	Q	|	|	|	V|
21+50	10.8780	0.30	Q	|	|	|	V|
21+55	10.8799	0.28	Q	|	|	|	V|
22+ 0	10.8816	0.25	Q	|	|	|	V|
22+ 5	10.8833	0.24	Q	|	|	|	V|
22+10	10.8851	0.26	Q	|	|	|	V|
22+15	10.8871	0.29	Q	|	|	|	V|
22+20	10.8891	0.30	Q	|	|	|	V|
22+25	10.8911	0.28	Q	|	|	|	V|
22+30	10.8928	0.25	Q	|	|	|	V|
22+35	10.8944	0.24	Q	|	|	|	V|
22+40	10.8960	0.23	Q	|	|	|	V|
22+45	10.8975	0.22	Q	|	|	|	V|
22+50	10.8990	0.22	Q	|	|	|	V|
22+55	10.9005	0.22	Q	|	|	|	V|
23+ 0	10.9020	0.22	Q	|	|	|	V|
23+ 5	10.9035	0.22	Q	|	|	|	V|
23+10	10.9050	0.22	Q	|	|	|	V|
23+15	10.9065	0.22	Q	|	|	|	V|
23+20	10.9080	0.22	Q	|	|	|	V|
23+25	10.9095	0.22	Q	|	|	|	V|
23+30	10.9110	0.22	Q	|	|	|	V|
23+35	10.9125	0.22	Q	|	|	|	V|
23+40	10.9140	0.22	Q	|	|	|	V|
23+45	10.9154	0.22	Q	|	|	|	V|
23+50	10.9169	0.22	Q	|	|	|	V|
23+55	10.9184	0.22	Q	|	|	|	V|
24+ 0	10.9199	0.22	Q	|	|	|	V|
24+ 5	10.9213	0.21	Q	|	|	|	V|
24+10	10.9224	0.16	Q	|	|	|	V|
24+15	10.9230	0.08	Q	|	|	|	V|
24+20	10.9233	0.05	Q	|	|	|	V|
24+25	10.9235	0.03	Q	|	|	|	V|
24+30	10.9237	0.02	Q	|	|	|	V|
24+35	10.9237	0.01	Q	|	|	|	V|
24+40	10.9238	0.01	Q	|	|	|	V|
24+45	10.9238	0.00	Q	|	|	|	V|
24+50	10.9238	0.00	Q	|	|	|	V|
24+55	10.9238	0.00	Q	|	|	|	V|
25+ 0	10.9238	0.00	Q	|	|	|	V|
25+ 5	10.9238	0.00	Q	|	|	|	V

UNIT HYDROGRAPH
DMA B
PROPOSED CONDITIONS
2-YEAR 24-HOUR

U n i t H y d r o g r a p h A n a l y s i s

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Study date 10/21/14 File: BPROP242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

14-0213 SHOPOFF
UNIT HYDROGRAPH
DMA B
PROPOSED CONDITIONS
2-YEAR 24-HOUR

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 60.70(Ac.) = 0.095 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 60.70(Ac.) = 0.095 Sq. Mi.
Length along longest watercourse = 3720.00(Ft.)
Length along longest watercourse measured to centroid = 2000.00(Ft.)
Length along longest watercourse = 0.705 Mi.
Length along longest watercourse measured to centroid = 0.379 Mi.
Difference in elevation = 105.00(Ft.)
Slope along watercourse = 149.0323 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.084 Hr.
Lag time = 5.05 Min.
25% of lag time = 1.26 Min.
40% of lag time = 2.02 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
60.70	2.60	157.82

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
60.70	7.00	424.90

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 2.600(In)
Area Averaged 100-Year Rainfall = 7.000(In)

Point rain (area averaged) = 2.600(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 2.600(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
60.700	64.00	0.900

Total Area Entered = 60.70(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F

AMC2	AMC-1	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
64.0	44.0	0.631	0.900	0.120	1.000	0.120
					Sum (F) =	0.120

Area averaged mean soil loss (F) (In/Hr) = 0.120
Minimum soil loss rate ((In/Hr)) = 0.060
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	98.956	14.050	8.595
2	0.167	197.913	55.616	34.023
3	0.250	296.869	18.626	11.395
4	0.333	395.825	7.557	4.623
5	0.417	494.782	2.573	1.574
6	0.500	593.738	0.862	0.528
7	0.583	692.694	0.569	0.348
8	0.667	791.651	0.146	0.090
			Sum = 100.000	Sum= 61.174

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.021	0.212	0.004	0.02
2	0.17	0.07	0.021	0.212	0.004	0.02
3	0.25	0.07	0.021	0.211	0.004	0.02
4	0.33	0.10	0.031	0.210	0.006	0.03
5	0.42	0.10	0.031	0.209	0.006	0.03
6	0.50	0.10	0.031	0.208	0.006	0.03
7	0.58	0.10	0.031	0.208	0.006	0.03
8	0.67	0.10	0.031	0.207	0.006	0.03
9	0.75	0.10	0.031	0.206	0.006	0.03
10	0.83	0.13	0.042	0.205	0.007	0.03
11	0.92	0.13	0.042	0.204	0.007	0.03
12	1.00	0.13	0.042	0.204	0.007	0.03
13	1.08	0.10	0.031	0.203	0.006	0.03
14	1.17	0.10	0.031	0.202	0.006	0.03
15	1.25	0.10	0.031	0.201	0.006	0.03
16	1.33	0.10	0.031	0.200	0.006	0.03
17	1.42	0.10	0.031	0.200	0.006	0.03
18	1.50	0.10	0.031	0.199	0.006	0.03
19	1.58	0.10	0.031	0.198	0.006	0.03
20	1.67	0.10	0.031	0.197	0.006	0.03
21	1.75	0.10	0.031	0.196	0.006	0.03
22	1.83	0.13	0.042	0.196	0.007	0.03
23	1.92	0.13	0.042	0.195	0.007	0.03
24	2.00	0.13	0.042	0.194	0.007	0.03
25	2.08	0.13	0.042	0.193	0.007	0.03
26	2.17	0.13	0.042	0.192	0.007	0.03
27	2.25	0.13	0.042	0.192	0.007	0.03
28	2.33	0.13	0.042	0.191	0.007	0.03
29	2.42	0.13	0.042	0.190	0.007	0.03
30	2.50	0.13	0.042	0.189	0.007	0.03
31	2.58	0.17	0.052	0.189	0.009	0.04
32	2.67	0.17	0.052	0.188	0.009	0.04
33	2.75	0.17	0.052	0.187	0.009	0.04
34	2.83	0.17	0.052	0.186	0.009	0.04
35	2.92	0.17	0.052	0.185	0.009	0.04
36	3.00	0.17	0.052	0.185	0.009	0.04
37	3.08	0.17	0.052	0.184	0.009	0.04
38	3.17	0.17	0.052	0.183	0.009	0.04
39	3.25	0.17	0.052	0.182	0.009	0.04
40	3.33	0.17	0.052	0.182	0.009	0.04
41	3.42	0.17	0.052	0.181	0.009	0.04
42	3.50	0.17	0.052	0.180	0.009	0.04
43	3.58	0.17	0.052	0.179	0.009	0.04
44	3.67	0.17	0.052	0.179	0.009	0.04

45	3.75	0.17	0.052	0.178	0.009	0.04
46	3.83	0.20	0.062	0.177	0.011	0.05
47	3.92	0.20	0.062	0.176	0.011	0.05
48	4.00	0.20	0.062	0.176	0.011	0.05
49	4.08	0.20	0.062	0.175	0.011	0.05
50	4.17	0.20	0.062	0.174	0.011	0.05
51	4.25	0.20	0.062	0.173	0.011	0.05
52	4.33	0.23	0.073	0.173	0.013	0.06
53	4.42	0.23	0.073	0.172	0.013	0.06
54	4.50	0.23	0.073	0.171	0.013	0.06
55	4.58	0.23	0.073	0.170	0.013	0.06
56	4.67	0.23	0.073	0.170	0.013	0.06
57	4.75	0.23	0.073	0.169	0.013	0.06
58	4.83	0.27	0.083	0.168	0.015	0.07
59	4.92	0.27	0.083	0.167	0.015	0.07
60	5.00	0.27	0.083	0.167	0.015	0.07
61	5.08	0.20	0.062	0.166	0.011	0.05
62	5.17	0.20	0.062	0.165	0.011	0.05
63	5.25	0.20	0.062	0.165	0.011	0.05
64	5.33	0.23	0.073	0.164	0.013	0.06
65	5.42	0.23	0.073	0.163	0.013	0.06
66	5.50	0.23	0.073	0.162	0.013	0.06
67	5.58	0.27	0.083	0.162	0.015	0.07
68	5.67	0.27	0.083	0.161	0.015	0.07
69	5.75	0.27	0.083	0.160	0.015	0.07
70	5.83	0.27	0.083	0.160	0.015	0.07
71	5.92	0.27	0.083	0.159	0.015	0.07
72	6.00	0.27	0.083	0.158	0.015	0.07
73	6.08	0.30	0.094	0.157	0.017	0.08
74	6.17	0.30	0.094	0.157	0.017	0.08
75	6.25	0.30	0.094	0.156	0.017	0.08
76	6.33	0.30	0.094	0.155	0.017	0.08
77	6.42	0.30	0.094	0.155	0.017	0.08
78	6.50	0.30	0.094	0.154	0.017	0.08
79	6.58	0.33	0.104	0.153	0.019	0.09
80	6.67	0.33	0.104	0.153	0.019	0.09
81	6.75	0.33	0.104	0.152	0.019	0.09
82	6.83	0.33	0.104	0.151	0.019	0.09
83	6.92	0.33	0.104	0.151	0.019	0.09
84	7.00	0.33	0.104	0.150	0.019	0.09
85	7.08	0.33	0.104	0.149	0.019	0.09
86	7.17	0.33	0.104	0.149	0.019	0.09
87	7.25	0.33	0.104	0.148	0.019	0.09
88	7.33	0.37	0.114	0.147	0.021	0.09
89	7.42	0.37	0.114	0.147	0.021	0.09
90	7.50	0.37	0.114	0.146	0.021	0.09
91	7.58	0.40	0.125	0.145	0.022	0.10
92	7.67	0.40	0.125	0.144	0.022	0.10
93	7.75	0.40	0.125	0.144	0.022	0.10
94	7.83	0.43	0.135	0.143	0.024	0.11
95	7.92	0.43	0.135	0.143	0.024	0.11
96	8.00	0.43	0.135	0.142	0.024	0.11
97	8.08	0.50	0.156	0.141	---	0.01
98	8.17	0.50	0.156	0.141	---	0.02
99	8.25	0.50	0.156	0.140	---	0.02
100	8.33	0.50	0.156	0.139	---	0.02
101	8.42	0.50	0.156	0.139	---	0.02
102	8.50	0.50	0.156	0.138	---	0.02
103	8.58	0.53	0.166	0.137	---	0.03
104	8.67	0.53	0.166	0.137	---	0.03
105	8.75	0.53	0.166	0.136	---	0.03
106	8.83	0.57	0.177	0.135	---	0.04
107	8.92	0.57	0.177	0.135	---	0.04
108	9.00	0.57	0.177	0.134	---	0.04
109	9.08	0.63	0.198	0.133	---	0.06
110	9.17	0.63	0.198	0.133	---	0.06
111	9.25	0.63	0.198	0.132	---	0.07
112	9.33	0.67	0.208	0.132	---	0.08
113	9.42	0.67	0.208	0.131	---	0.08
114	9.50	0.67	0.208	0.130	---	0.08
115	9.58	0.70	0.218	0.130	---	0.09
116	9.67	0.70	0.218	0.129	---	0.09
117	9.75	0.70	0.218	0.128	---	0.09
118	9.83	0.73	0.229	0.128	---	0.10
119	9.92	0.73	0.229	0.127	---	0.10

120	10.00	0.73	0.229	0.127	---	0.10
121	10.08	0.50	0.156	0.126	---	0.03
122	10.17	0.50	0.156	0.125	---	0.03
123	10.25	0.50	0.156	0.125	---	0.03
124	10.33	0.50	0.156	0.124	---	0.03
125	10.42	0.50	0.156	0.124	---	0.03
126	10.50	0.50	0.156	0.123	---	0.03
127	10.58	0.67	0.208	0.122	---	0.09
128	10.67	0.67	0.208	0.122	---	0.09
129	10.75	0.67	0.208	0.121	---	0.09
130	10.83	0.67	0.208	0.121	---	0.09
131	10.92	0.67	0.208	0.120	---	0.09
132	11.00	0.67	0.208	0.119	---	0.09
133	11.08	0.63	0.198	0.119	---	0.08
134	11.17	0.63	0.198	0.118	---	0.08
135	11.25	0.63	0.198	0.118	---	0.08
136	11.33	0.63	0.198	0.117	---	0.08
137	11.42	0.63	0.198	0.116	---	0.08
138	11.50	0.63	0.198	0.116	---	0.08
139	11.58	0.57	0.177	0.115	---	0.06
140	11.67	0.57	0.177	0.115	---	0.06
141	11.75	0.57	0.177	0.114	---	0.06
142	11.83	0.60	0.187	0.114	---	0.07
143	11.92	0.60	0.187	0.113	---	0.07
144	12.00	0.60	0.187	0.112	---	0.07
145	12.08	0.83	0.260	0.112	---	0.15
146	12.17	0.83	0.260	0.111	---	0.15
147	12.25	0.83	0.260	0.111	---	0.15
148	12.33	0.87	0.270	0.110	---	0.16
149	12.42	0.87	0.270	0.110	---	0.16
150	12.50	0.87	0.270	0.109	---	0.16
151	12.58	0.93	0.291	0.109	---	0.18
152	12.67	0.93	0.291	0.108	---	0.18
153	12.75	0.93	0.291	0.107	---	0.18
154	12.83	0.97	0.302	0.107	---	0.19
155	12.92	0.97	0.302	0.106	---	0.20
156	13.00	0.97	0.302	0.106	---	0.20
157	13.08	1.13	0.354	0.105	---	0.25
158	13.17	1.13	0.354	0.105	---	0.25
159	13.25	1.13	0.354	0.104	---	0.25
160	13.33	1.13	0.354	0.104	---	0.25
161	13.42	1.13	0.354	0.103	---	0.25
162	13.50	1.13	0.354	0.103	---	0.25
163	13.58	0.77	0.239	0.102	---	0.14
164	13.67	0.77	0.239	0.102	---	0.14
165	13.75	0.77	0.239	0.101	---	0.14
166	13.83	0.77	0.239	0.101	---	0.14
167	13.92	0.77	0.239	0.100	---	0.14
168	14.00	0.77	0.239	0.100	---	0.14
169	14.08	0.90	0.281	0.099	---	0.18
170	14.17	0.90	0.281	0.099	---	0.18
171	14.25	0.90	0.281	0.098	---	0.18
172	14.33	0.87	0.270	0.098	---	0.17
173	14.42	0.87	0.270	0.097	---	0.17
174	14.50	0.87	0.270	0.097	---	0.17
175	14.58	0.87	0.270	0.096	---	0.17
176	14.67	0.87	0.270	0.096	---	0.17
177	14.75	0.87	0.270	0.095	---	0.18
178	14.83	0.83	0.260	0.095	---	0.17
179	14.92	0.83	0.260	0.094	---	0.17
180	15.00	0.83	0.260	0.094	---	0.17
181	15.08	0.80	0.250	0.093	---	0.16
182	15.17	0.80	0.250	0.093	---	0.16
183	15.25	0.80	0.250	0.092	---	0.16
184	15.33	0.77	0.239	0.092	---	0.15
185	15.42	0.77	0.239	0.091	---	0.15
186	15.50	0.77	0.239	0.091	---	0.15
187	15.58	0.63	0.198	0.090	---	0.11
188	15.67	0.63	0.198	0.090	---	0.11
189	15.75	0.63	0.198	0.089	---	0.11
190	15.83	0.63	0.198	0.089	---	0.11
191	15.92	0.63	0.198	0.088	---	0.11
192	16.00	0.63	0.198	0.088	---	0.11
193	16.08	0.13	0.042	0.088	0.007	0.03
194	16.17	0.13	0.042	0.087	0.007	0.03

195	16.25	0.13	0.042	0.087	0.007	0.03
196	16.33	0.13	0.042	0.086	0.007	0.03
197	16.42	0.13	0.042	0.086	0.007	0.03
198	16.50	0.13	0.042	0.085	0.007	0.03
199	16.58	0.10	0.031	0.085	0.006	0.03
200	16.67	0.10	0.031	0.084	0.006	0.03
201	16.75	0.10	0.031	0.084	0.006	0.03
202	16.83	0.10	0.031	0.084	0.006	0.03
203	16.92	0.10	0.031	0.083	0.006	0.03
204	17.00	0.10	0.031	0.083	0.006	0.03
205	17.08	0.17	0.052	0.082	0.009	0.04
206	17.17	0.17	0.052	0.082	0.009	0.04
207	17.25	0.17	0.052	0.082	0.009	0.04
208	17.33	0.17	0.052	0.081	0.009	0.04
209	17.42	0.17	0.052	0.081	0.009	0.04
210	17.50	0.17	0.052	0.080	0.009	0.04
211	17.58	0.17	0.052	0.080	0.009	0.04
212	17.67	0.17	0.052	0.080	0.009	0.04
213	17.75	0.17	0.052	0.079	0.009	0.04
214	17.83	0.13	0.042	0.079	0.007	0.03
215	17.92	0.13	0.042	0.078	0.007	0.03
216	18.00	0.13	0.042	0.078	0.007	0.03
217	18.08	0.13	0.042	0.078	0.007	0.03
218	18.17	0.13	0.042	0.077	0.007	0.03
219	18.25	0.13	0.042	0.077	0.007	0.03
220	18.33	0.13	0.042	0.076	0.007	0.03
221	18.42	0.13	0.042	0.076	0.007	0.03
222	18.50	0.13	0.042	0.076	0.007	0.03
223	18.58	0.10	0.031	0.075	0.006	0.03
224	18.67	0.10	0.031	0.075	0.006	0.03
225	18.75	0.10	0.031	0.075	0.006	0.03
226	18.83	0.07	0.021	0.074	0.004	0.02
227	18.92	0.07	0.021	0.074	0.004	0.02
228	19.00	0.07	0.021	0.074	0.004	0.02
229	19.08	0.10	0.031	0.073	0.006	0.03
230	19.17	0.10	0.031	0.073	0.006	0.03
231	19.25	0.10	0.031	0.073	0.006	0.03
232	19.33	0.13	0.042	0.072	0.007	0.03
233	19.42	0.13	0.042	0.072	0.007	0.03
234	19.50	0.13	0.042	0.072	0.007	0.03
235	19.58	0.10	0.031	0.071	0.006	0.03
236	19.67	0.10	0.031	0.071	0.006	0.03
237	19.75	0.10	0.031	0.071	0.006	0.03
238	19.83	0.07	0.021	0.070	0.004	0.02
239	19.92	0.07	0.021	0.070	0.004	0.02
240	20.00	0.07	0.021	0.070	0.004	0.02
241	20.08	0.10	0.031	0.069	0.006	0.03
242	20.17	0.10	0.031	0.069	0.006	0.03
243	20.25	0.10	0.031	0.069	0.006	0.03
244	20.33	0.10	0.031	0.068	0.006	0.03
245	20.42	0.10	0.031	0.068	0.006	0.03
246	20.50	0.10	0.031	0.068	0.006	0.03
247	20.58	0.10	0.031	0.068	0.006	0.03
248	20.67	0.10	0.031	0.067	0.006	0.03
249	20.75	0.10	0.031	0.067	0.006	0.03
250	20.83	0.07	0.021	0.067	0.004	0.02
251	20.92	0.07	0.021	0.066	0.004	0.02
252	21.00	0.07	0.021	0.066	0.004	0.02
253	21.08	0.10	0.031	0.066	0.006	0.03
254	21.17	0.10	0.031	0.066	0.006	0.03
255	21.25	0.10	0.031	0.065	0.006	0.03
256	21.33	0.07	0.021	0.065	0.004	0.02
257	21.42	0.07	0.021	0.065	0.004	0.02
258	21.50	0.07	0.021	0.065	0.004	0.02
259	21.58	0.10	0.031	0.064	0.006	0.03
260	21.67	0.10	0.031	0.064	0.006	0.03
261	21.75	0.10	0.031	0.064	0.006	0.03
262	21.83	0.07	0.021	0.064	0.004	0.02
263	21.92	0.07	0.021	0.063	0.004	0.02
264	22.00	0.07	0.021	0.063	0.004	0.02
265	22.08	0.10	0.031	0.063	0.006	0.03
266	22.17	0.10	0.031	0.063	0.006	0.03
267	22.25	0.10	0.031	0.063	0.006	0.03
268	22.33	0.07	0.021	0.062	0.004	0.02
269	22.42	0.07	0.021	0.062	0.004	0.02

270	22.50	0.07	0.021	0.062	0.004	0.02
271	22.58	0.07	0.021	0.062	0.004	0.02
272	22.67	0.07	0.021	0.062	0.004	0.02
273	22.75	0.07	0.021	0.062	0.004	0.02
274	22.83	0.07	0.021	0.061	0.004	0.02
275	22.92	0.07	0.021	0.061	0.004	0.02
276	23.00	0.07	0.021	0.061	0.004	0.02
277	23.08	0.07	0.021	0.061	0.004	0.02
278	23.17	0.07	0.021	0.061	0.004	0.02
279	23.25	0.07	0.021	0.061	0.004	0.02
280	23.33	0.07	0.021	0.061	0.004	0.02
281	23.42	0.07	0.021	0.060	0.004	0.02
282	23.50	0.07	0.021	0.060	0.004	0.02
283	23.58	0.07	0.021	0.060	0.004	0.02
284	23.67	0.07	0.021	0.060	0.004	0.02
285	23.75	0.07	0.021	0.060	0.004	0.02
286	23.83	0.07	0.021	0.060	0.004	0.02
287	23.92	0.07	0.021	0.060	0.004	0.02
288	24.00	0.07	0.021	0.060	0.004	0.02
Sum =		100.0			Sum =	18.7

Flood volume = Effective rainfall 1.55(In)
times area 60.7(Ac.)/[(In)/(Ft.)] = 7.9(Ac.Ft)
Total soil loss = 1.04(In)
Total soil loss = 5.285(Ac.Ft)
Total rainfall = 2.60(In)
Flood volume = 342617.2 Cubic Feet
Total soil loss = 230201.5 Cubic Feet

Peak flow rate of this hydrograph = 15.291(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0010	0.15	Q				
0+10	0.0060	0.73	VQ				
0+15	0.0124	0.92	VQ				
0+20	0.0198	1.07	V Q				
0+25	0.0293	1.39	V Q				
0+30	0.0397	1.50	V Q				
0+35	0.0503	1.54	V Q				
0+40	0.0610	1.56	V Q				
0+45	0.0718	1.56	V Q				
0+50	0.0830	1.64	V Q				
0+55	0.0963	1.93	V Q				
1+ 0	0.1103	2.03	V Q				
1+ 5	0.1240	1.99	V Q				
1+10	0.1358	1.72	V Q				
1+15	0.1470	1.62	V Q				
1+20	0.1579	1.59	V Q				
1+25	0.1688	1.57	V Q				
1+30	0.1796	1.57	V Q				
1+35	0.1904	1.57	V Q				
1+40	0.2011	1.57	|V Q				
1+45	0.2119	1.57	|V Q				
1+50	0.2232	1.64	|V Q				
1+55	0.2365	1.93	|V Q				
2+ 0	0.2505	2.03	|V Q				
2+ 5	0.2647	2.07	|V Q				
2+10	0.2790	2.08	|V Q				
2+15	0.2934	2.08	|V Q				
2+20	0.3077	2.09	|V Q				
2+25	0.3221	2.09	|V Q				
2+30	0.3365	2.09	|V Q				
2+35	0.3514	2.16	|V Q				
2+40	0.3683	2.45	|V Q				
2+45	0.3858	2.55	|V Q				
2+50	0.4036	2.59	| V Q				
2+55	0.4215	2.60	| V Q				
3+ 0	0.4395	2.61	| V Q				

3+ 5	0.4575	2.61	V Q			
3+10	0.4754	2.61	V Q			
3+15	0.4934	2.61	V Q			
3+20	0.5114	2.61	V Q			
3+25	0.5293	2.61	V Q			
3+30	0.5473	2.61	V Q			
3+35	0.5653	2.61	V Q			
3+40	0.5833	2.61	V Q			
3+45	0.6012	2.61	V Q			
3+50	0.6197	2.68	V Q			
3+55	0.6402	2.97	V Q			
4+ 0	0.6613	3.07	V Q			
4+ 5	0.6827	3.11	V Q			
4+10	0.7043	3.12	V Q			
4+15	0.7258	3.13	V Q			
4+20	0.7479	3.20	V Q			
4+25	0.7719	3.49	V Q			
4+30	0.7967	3.59	V Q			
4+35	0.8217	3.63	V Q			
4+40	0.8468	3.65	V Q			
4+45	0.8719	3.65	V Q			
4+50	0.8976	3.73	V Q			
4+55	0.9252	4.02	V Q			
5+ 0	0.9536	4.11	V Q			
5+ 5	0.9812	4.01	V Q			
5+10	1.0049	3.44	VQ			
5+15	1.0272	3.25	VQ			
5+20	1.0496	3.25	VQ			
5+25	1.0738	3.51	V Q			
5+30	1.0986	3.60	V Q			
5+35	1.1241	3.71	V Q			
5+40	1.1517	4.01	V Q			
5+45	1.1800	4.11	V Q			
5+50	1.2086	4.15	V Q			
5+55	1.2373	4.17	V Q			
6+ 0	1.2661	4.17	V Q			
6+ 5	1.2953	4.25	V Q			
6+10	1.3266	4.54	V Q			
6+15	1.3585	4.64	V Q			
6+20	1.3907	4.68	V Q			
6+25	1.4230	4.69	V Q			
6+30	1.4553	4.69	V Q			
6+35	1.4882	4.77	V Q			
6+40	1.5230	5.06	V Q			
6+45	1.5585	5.16	V Q			
6+50	1.5943	5.20	V Q			
6+55	1.6302	5.21	V Q			
7+ 0	1.6661	5.22	V Q			
7+ 5	1.7021	5.22	V Q			
7+10	1.7380	5.22	V Q			
7+15	1.7740	5.22	VQ			
7+20	1.8104	5.29	VQ			
7+25	1.8489	5.58	V|Q			
7+30	1.8880	5.68	V|Q			
7+35	1.9279	5.79	V|Q			
7+40	1.9699	6.10	V Q			
7+45	2.0125	6.20	V Q			
7+50	2.0560	6.31	V Q			
7+55	2.1016	6.62	V Q			
8+ 0	2.1479	6.72	V Q			
8+ 5	2.1888	5.94	|Q			
8+10	2.2073	2.69	Q |V			
8+15	2.2185	1.62	Q |V			
8+20	2.2268	1.22	Q |V			
8+25	2.2345	1.11	Q |V			
8+30	2.2420	1.09	Q |V			
8+35	2.2502	1.19	Q |V			
8+40	2.2610	1.57	Q |V			
8+45	2.2730	1.73	Q |V			
8+50	2.2861	1.91	Q |V			
8+55	2.3021	2.32	Q |V			
9+ 0	2.3192	2.48	Q |V			
9+ 5	2.3382	2.75	Q |V			
9+10	2.3624	3.52	Q | V			
9+15	2.3885	3.80	Q | V			

9+20	2.4163	4.03	Q | V				
9+25	2.4469	4.45	Q | V				
9+30	2.4788	4.62	Q| V				
9+35	2.5118	4.80	Q| V				
9+40	2.5477	5.21	Q V				
9+45	2.5848	5.38	Q V				
9+50	2.6230	5.56	|Q V				
9+55	2.6641	5.96	|Q V				
10+ 0	2.7063	6.13	| QV				
10+ 5	2.7448	5.59	|Q V				
10+10	2.7666	3.17	Q | V				
10+15	2.7830	2.38	Q | V				
10+20	2.7973	2.08	Q | V				
10+25	2.8112	2.01	Q | V				
10+30	2.8250	2.01	Q | V				
10+35	2.8419	2.46	Q | V				
10+40	2.8713	4.26	Q | V				
10+45	2.9050	4.89	Q| V				
10+50	2.9406	5.17	Q V				
10+55	2.9771	5.29	Q V				
11+ 0	3.0139	5.35	Q V				
11+ 5	3.0505	5.32	Q V				
11+10	3.0850	5.00	Q V				
11+15	3.1189	4.92	Q| V				
11+20	3.1527	4.91	Q| V				
11+25	3.1866	4.93	Q| V				
11+30	3.2208	4.96	Q| V				
11+35	3.2539	4.81	Q| V				
11+40	3.2824	4.14	Q | V				
11+45	3.3095	3.94	Q | V				
11+50	3.3368	3.96	Q | V				
11+55	3.3666	4.32	Q | V				
12+ 0	3.3973	4.46	Q | V				
12+ 5	3.4329	5.16	Q V				
12+10	3.4858	7.69	| Q V				
12+15	3.5448	8.56	| QV				
12+20	3.6070	9.02	| Q				
12+25	3.6726	9.53	| VQ|				
12+30	3.7395	9.72	| Q|				
12+35	3.8084	10.00	| VQ				
12+40	3.8826	10.77	| V|Q				
12+45	3.9586	11.05	| V Q				
12+50	4.0362	11.27	| V Q				
12+55	4.1167	11.69	| V Q				
13+ 0	4.1984	11.85	| |V Q				
13+ 5	4.2837	12.39	| |V Q				
13+10	4.3815	14.21	| | V Q |				
13+15	4.4837	14.84	| | V Q|				
13+20	4.5878	15.12	| | V Q				
13+25	4.6927	15.23	| | V Q				
13+30	4.7980	15.29	| | V Q				
13+35	4.8969	14.36	| | V Q |				
13+40	4.9692	10.50	| |Q V |				
13+45	5.0328	9.23	| Q | V |				
13+50	5.0929	8.73	| Q | V |				
13+55	5.1520	8.58	| Q | V |				
14+ 0	5.2109	8.55	| Q | V |				
14+ 5	5.2722	8.90	| Q | V |				
14+10	5.3434	10.34	| Q V |				
14+15	5.4181	10.84	| |Q V |				
14+20	5.4937	10.98	| |Q V |				
14+25	5.5676	10.72	| |Q V |				
14+30	5.6409	10.65	| |Q V |				
14+35	5.7143	10.65	| |Q V|				
14+40	5.7878	10.67	| |Q V|				
14+45	5.8614	10.69	| |Q V|				
14+50	5.9346	10.63	| |Q V				
14+55	6.0056	10.31	| Q V				
15+ 0	6.0760	10.22	| Q V				
15+ 5	6.1456	10.11	| Q |V				
15+10	6.2129	9.77	| Q| |V				
15+15	6.2795	9.67	| Q| |V				
15+20	6.3453	9.56	| Q| | V				
15+25	6.4088	9.22	| Q | | V				
15+30	6.4717	9.12	| Q | | V				

15+35	6.5319	8.74	|	|	Q |	|	V |
15+40	6.5824	7.34	|	| Q |	|	V |
15+45	6.6299	6.89	|	Q |	|	V |
15+50	6.6761	6.72	|	Q |	|	V |
15+55	6.7221	6.68	|	Q |	|	V |
16+ 0	6.7682	6.69	|	Q |	|	V |
16+ 5	6.8098	6.05	|	Q |	|	V |
16+10	6.8338	3.48	| Q |	|	|	V |
16+15	6.8519	2.63	| Q |	|	|	V |
16+20	6.8676	2.28	| Q |	|	|	V |
16+25	6.8825	2.16	| Q |	|	|	V |
16+30	6.8971	2.12	| Q |	|	|	V |
16+35	6.9110	2.02	| Q |	|	|	V |
16+40	6.9229	1.72	| Q |	|	|	V |
16+45	6.9341	1.63	| Q |	|	|	V |
16+50	6.9450	1.59	| Q |	|	|	V |
16+55	6.9559	1.57	| Q |	|	|	V |
17+ 0	6.9667	1.57	| Q |	|	|	V |
17+ 5	6.9785	1.71	| Q |	|	|	V |
17+10	6.9943	2.29	| Q |	|	|	V |
17+15	7.0114	2.49	| Q |	|	|	V |
17+20	7.0291	2.57	| Q |	|	|	V |
17+25	7.0469	2.59	| Q |	|	|	V |
17+30	7.0648	2.60	| Q |	|	|	V |
17+35	7.0828	2.61	| Q |	|	|	V |
17+40	7.1008	2.61	| Q |	|	|	V |
17+45	7.1188	2.61	| Q |	|	|	V |
17+50	7.1362	2.54	| Q |	|	|	V |
17+55	7.1517	2.25	| Q |	|	|	V |
18+ 0	7.1665	2.15	| Q |	|	|	V |
18+ 5	7.1810	2.11	| Q |	|	|	V |
18+10	7.1954	2.10	| Q |	|	|	V |
18+15	7.2099	2.09	| Q |	|	|	V |
18+20	7.2242	2.09	| Q |	|	|	V |
18+25	7.2386	2.09	| Q |	|	|	V |
18+30	7.2530	2.09	| Q |	|	|	V |
18+35	7.2669	2.01	| Q |	|	|	V |
18+40	7.2787	1.72	| Q |	|	|	V |
18+45	7.2899	1.63	| Q |	|	|	V |
18+50	7.3004	1.51	| Q |	|	|	V |
18+55	7.3087	1.21	| Q |	|	|	V |
19+ 0	7.3163	1.11	| Q |	|	|	V |
19+ 5	7.3242	1.14	| Q |	|	|	V |
19+10	7.3339	1.42	| Q |	|	|	V |
19+15	7.3443	1.51	| Q |	|	|	V |
19+20	7.3555	1.62	| Q |	|	|	V |
19+25	7.3687	1.92	| Q |	|	|	V |
19+30	7.3826	2.02	| Q |	|	|	V |
19+35	7.3963	1.99	| Q |	|	|	V |
19+40	7.4082	1.72	| Q |	|	|	V |
19+45	7.4193	1.62	| Q |	|	|	V |
19+50	7.4298	1.51	| Q |	|	|	V |
19+55	7.4381	1.21	| Q |	|	|	V |
20+ 0	7.4457	1.11	| Q |	|	|	V |
20+ 5	7.4536	1.14	| Q |	|	|	V |
20+10	7.4633	1.42	| Q |	|	|	V |
20+15	7.4737	1.51	| Q |	|	|	V |
20+20	7.4844	1.54	| Q |	|	|	V |
20+25	7.4951	1.56	| Q |	|	|	V |
20+30	7.5058	1.56	| Q |	|	|	V |
20+35	7.5166	1.56	| Q |	|	|	V |
20+40	7.5274	1.57	| Q |	|	|	V |
20+45	7.5382	1.57	| Q |	|	|	V |
20+50	7.5485	1.49	| Q |	|	|	V |
20+55	7.5567	1.20	| Q |	|	|	V |
21+ 0	7.5644	1.10	| Q |	|	|	V |
21+ 5	7.5722	1.14	| Q |	|	|	V |
21+10	7.5819	1.42	| Q |	|	|	V |
21+15	7.5923	1.51	| Q |	|	|	V |
21+20	7.6025	1.47	| Q |	|	|	V |
21+25	7.6107	1.19	| Q |	|	|	V |
21+30	7.6183	1.10	| Q |	|	|	V |
21+35	7.6261	1.14	| Q |	|	|	V |
21+40	7.6359	1.42	| Q |	|	|	V |
21+45	7.6462	1.51	| Q |	|	|	V |

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  21+50       7.6564      1.47  | Q       |         |         |       V |
  21+55       7.6646      1.19  | Q       |         |         |       V |
  22+ 0       7.6722      1.10  | Q       |         |         |        V|
  22+ 5       7.6800      1.14  | Q       |         |         |        V|
  22+10       7.6898      1.42  | Q       |         |         |        V|
  22+15       7.7002      1.51  |  Q      |         |         |        V|
  22+20       7.7103      1.47  | Q       |         |         |        V|
  22+25       7.7185      1.19  | Q       |         |         |        V|
  22+30       7.7261      1.10  | Q       |         |         |        V|
  22+35       7.7334      1.06  | Q       |         |         |        V|
  22+40       7.7407      1.05  | Q       |         |         |        V|
  22+45       7.7479      1.05  | Q       |         |         |        V|
  22+50       7.7551      1.04  | Q       |         |         |        V|
  22+55       7.7623      1.04  | Q       |         |         |        V|
  23+ 0       7.7695      1.04  | Q       |         |         |        V|
  23+ 5       7.7767      1.04  | Q       |         |         |        V|
  23+10       7.7838      1.04  | Q       |         |         |        V|
  23+15       7.7910      1.04  | Q       |         |         |        V|
  23+20       7.7982      1.04  | Q       |         |         |        V|
  23+25       7.8054      1.04  | Q       |         |         |        V|
  23+30       7.8126      1.04  | Q       |         |         |        V|
  23+35       7.8198      1.04  | Q       |         |         |        V|
  23+40       7.8270      1.04  | Q       |         |         |        V|
  23+45       7.8342      1.04  | Q       |         |         |        V|
  23+50       7.8414      1.04  | Q       |         |         |        V|
  23+55       7.8485      1.04  | Q       |         |         |        V|
  24+ 0       7.8557      1.04  | Q       |         |         |        V|
  24+ 5       7.8619      0.90  |Q        |         |         |        V|
  24+10       7.8641      0.32  Q         |         |         |        V|
  24+15       7.8649      0.12  Q         |         |         |        V|
  24+20       7.8652      0.04  Q         |         |         |        V|
  24+25       7.8653      0.02  Q         |         |         |        V|
  24+30       7.8654      0.01  Q         |         |         |        V|
  24+35       7.8654      0.00  Q         |         |         |         V
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UNIT HYDROGRAPH
DMA B
PROPOSED CONDITIONS
10-YEAR 24-HOUR

U n i t H y d r o g r a p h A n a l y s i s

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Study date 10/21/14 File: BPROP2410.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

14-0213 SHOPOFF
UNIT HYDROGRAPH
DMA B
PROPOSED CONDITIONS
10-YEAR 24-HOUR

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 60.70(Ac.) = 0.095 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 60.70(Ac.) = 0.095 Sq. Mi.
Length along longest watercourse = 3720.00(Ft.)
Length along longest watercourse measured to centroid = 2000.00(Ft.)
Length along longest watercourse = 0.705 Mi.
Length along longest watercourse measured to centroid = 0.379 Mi.
Difference in elevation = 105.00(Ft.)
Slope along watercourse = 149.0323 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.084 Hr.
Lag time = 5.05 Min.
25% of lag time = 1.26 Min.
40% of lag time = 2.02 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
60.70	2.60	157.82

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
60.70	7.00	424.90

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.600(In)
Area Averaged 100-Year Rainfall = 7.000(In)

Point rain (area averaged) = 4.410(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 4.410(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
60.700	64.00	0.900

Total Area Entered = 60.70(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F

AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
64.0	64.0	0.427	0.900	0.081	1.000	0.081
					Sum (F) =	0.081

Area averaged mean soil loss (F) (In/Hr) = 0.081
Minimum soil loss rate ((In/Hr)) = 0.041
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	98.956	14.050	8.595
2	0.167	197.913	55.616	34.023
3	0.250	296.869	18.626	11.395
4	0.333	395.825	7.557	4.623
5	0.417	494.782	2.573	1.574
6	0.500	593.738	0.862	0.528
7	0.583	692.694	0.569	0.348
8	0.667	791.651	0.146	0.090
			Sum = 100.000	Sum= 61.174

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.035	0.144	0.006	0.03
2	0.17	0.07	0.035	0.143	0.006	0.03
3	0.25	0.07	0.035	0.143	0.006	0.03
4	0.33	0.10	0.053	0.142	0.010	0.04
5	0.42	0.10	0.053	0.142	0.010	0.04
6	0.50	0.10	0.053	0.141	0.010	0.04
7	0.58	0.10	0.053	0.140	0.010	0.04
8	0.67	0.10	0.053	0.140	0.010	0.04
9	0.75	0.10	0.053	0.139	0.010	0.04
10	0.83	0.13	0.071	0.139	0.013	0.06
11	0.92	0.13	0.071	0.138	0.013	0.06
12	1.00	0.13	0.071	0.138	0.013	0.06
13	1.08	0.10	0.053	0.137	0.010	0.04
14	1.17	0.10	0.053	0.137	0.010	0.04
15	1.25	0.10	0.053	0.136	0.010	0.04
16	1.33	0.10	0.053	0.136	0.010	0.04
17	1.42	0.10	0.053	0.135	0.010	0.04
18	1.50	0.10	0.053	0.134	0.010	0.04
19	1.58	0.10	0.053	0.134	0.010	0.04
20	1.67	0.10	0.053	0.133	0.010	0.04
21	1.75	0.10	0.053	0.133	0.010	0.04
22	1.83	0.13	0.071	0.132	0.013	0.06
23	1.92	0.13	0.071	0.132	0.013	0.06
24	2.00	0.13	0.071	0.131	0.013	0.06
25	2.08	0.13	0.071	0.131	0.013	0.06
26	2.17	0.13	0.071	0.130	0.013	0.06
27	2.25	0.13	0.071	0.130	0.013	0.06
28	2.33	0.13	0.071	0.129	0.013	0.06
29	2.42	0.13	0.071	0.129	0.013	0.06
30	2.50	0.13	0.071	0.128	0.013	0.06
31	2.58	0.17	0.088	0.128	0.016	0.07
32	2.67	0.17	0.088	0.127	0.016	0.07
33	2.75	0.17	0.088	0.127	0.016	0.07
34	2.83	0.17	0.088	0.126	0.016	0.07
35	2.92	0.17	0.088	0.125	0.016	0.07
36	3.00	0.17	0.088	0.125	0.016	0.07
37	3.08	0.17	0.088	0.124	0.016	0.07
38	3.17	0.17	0.088	0.124	0.016	0.07
39	3.25	0.17	0.088	0.123	0.016	0.07
40	3.33	0.17	0.088	0.123	0.016	0.07
41	3.42	0.17	0.088	0.122	0.016	0.07
42	3.50	0.17	0.088	0.122	0.016	0.07
43	3.58	0.17	0.088	0.121	0.016	0.07
44	3.67	0.17	0.088	0.121	0.016	0.07

45	3.75	0.17	0.088	0.120	0.016	0.07
46	3.83	0.20	0.106	0.120	0.019	0.09
47	3.92	0.20	0.106	0.119	0.019	0.09
48	4.00	0.20	0.106	0.119	0.019	0.09
49	4.08	0.20	0.106	0.118	0.019	0.09
50	4.17	0.20	0.106	0.118	0.019	0.09
51	4.25	0.20	0.106	0.117	0.019	0.09
52	4.33	0.23	0.123	0.117	---	0.01
53	4.42	0.23	0.123	0.116	---	0.01
54	4.50	0.23	0.123	0.116	---	0.01
55	4.58	0.23	0.123	0.115	---	0.01
56	4.67	0.23	0.123	0.115	---	0.01
57	4.75	0.23	0.123	0.114	---	0.01
58	4.83	0.27	0.141	0.114	---	0.03
59	4.92	0.27	0.141	0.113	---	0.03
60	5.00	0.27	0.141	0.113	---	0.03
61	5.08	0.20	0.106	0.112	0.019	0.09
62	5.17	0.20	0.106	0.112	0.019	0.09
63	5.25	0.20	0.106	0.111	0.019	0.09
64	5.33	0.23	0.123	0.111	---	0.01
65	5.42	0.23	0.123	0.110	---	0.01
66	5.50	0.23	0.123	0.110	---	0.01
67	5.58	0.27	0.141	0.109	---	0.03
68	5.67	0.27	0.141	0.109	---	0.03
69	5.75	0.27	0.141	0.108	---	0.03
70	5.83	0.27	0.141	0.108	---	0.03
71	5.92	0.27	0.141	0.108	---	0.03
72	6.00	0.27	0.141	0.107	---	0.03
73	6.08	0.30	0.159	0.107	---	0.05
74	6.17	0.30	0.159	0.106	---	0.05
75	6.25	0.30	0.159	0.106	---	0.05
76	6.33	0.30	0.159	0.105	---	0.05
77	6.42	0.30	0.159	0.105	---	0.05
78	6.50	0.30	0.159	0.104	---	0.05
79	6.58	0.33	0.176	0.104	---	0.07
80	6.67	0.33	0.176	0.103	---	0.07
81	6.75	0.33	0.176	0.103	---	0.07
82	6.83	0.33	0.176	0.102	---	0.07
83	6.92	0.33	0.176	0.102	---	0.07
84	7.00	0.33	0.176	0.101	---	0.07
85	7.08	0.33	0.176	0.101	---	0.08
86	7.17	0.33	0.176	0.100	---	0.08
87	7.25	0.33	0.176	0.100	---	0.08
88	7.33	0.37	0.194	0.100	---	0.09
89	7.42	0.37	0.194	0.099	---	0.09
90	7.50	0.37	0.194	0.099	---	0.10
91	7.58	0.40	0.212	0.098	---	0.11
92	7.67	0.40	0.212	0.098	---	0.11
93	7.75	0.40	0.212	0.097	---	0.11
94	7.83	0.43	0.229	0.097	---	0.13
95	7.92	0.43	0.229	0.096	---	0.13
96	8.00	0.43	0.229	0.096	---	0.13
97	8.08	0.50	0.265	0.096	---	0.17
98	8.17	0.50	0.265	0.095	---	0.17
99	8.25	0.50	0.265	0.095	---	0.17
100	8.33	0.50	0.265	0.094	---	0.17
101	8.42	0.50	0.265	0.094	---	0.17
102	8.50	0.50	0.265	0.093	---	0.17
103	8.58	0.53	0.282	0.093	---	0.19
104	8.67	0.53	0.282	0.092	---	0.19
105	8.75	0.53	0.282	0.092	---	0.19
106	8.83	0.57	0.300	0.092	---	0.21
107	8.92	0.57	0.300	0.091	---	0.21
108	9.00	0.57	0.300	0.091	---	0.21
109	9.08	0.63	0.335	0.090	---	0.24
110	9.17	0.63	0.335	0.090	---	0.25
111	9.25	0.63	0.335	0.089	---	0.25
112	9.33	0.67	0.353	0.089	---	0.26
113	9.42	0.67	0.353	0.089	---	0.26
114	9.50	0.67	0.353	0.088	---	0.26
115	9.58	0.70	0.370	0.088	---	0.28
116	9.67	0.70	0.370	0.087	---	0.28
117	9.75	0.70	0.370	0.087	---	0.28
118	9.83	0.73	0.388	0.086	---	0.30
119	9.92	0.73	0.388	0.086	---	0.30

120	10.00	0.73	0.388	0.086	---	0.30
121	10.08	0.50	0.265	0.085	---	0.18
122	10.17	0.50	0.265	0.085	---	0.18
123	10.25	0.50	0.265	0.084	---	0.18
124	10.33	0.50	0.265	0.084	---	0.18
125	10.42	0.50	0.265	0.084	---	0.18
126	10.50	0.50	0.265	0.083	---	0.18
127	10.58	0.67	0.353	0.083	---	0.27
128	10.67	0.67	0.353	0.082	---	0.27
129	10.75	0.67	0.353	0.082	---	0.27
130	10.83	0.67	0.353	0.082	---	0.27
131	10.92	0.67	0.353	0.081	---	0.27
132	11.00	0.67	0.353	0.081	---	0.27
133	11.08	0.63	0.335	0.080	---	0.25
134	11.17	0.63	0.335	0.080	---	0.26
135	11.25	0.63	0.335	0.080	---	0.26
136	11.33	0.63	0.335	0.079	---	0.26
137	11.42	0.63	0.335	0.079	---	0.26
138	11.50	0.63	0.335	0.078	---	0.26
139	11.58	0.57	0.300	0.078	---	0.22
140	11.67	0.57	0.300	0.078	---	0.22
141	11.75	0.57	0.300	0.077	---	0.22
142	11.83	0.60	0.317	0.077	---	0.24
143	11.92	0.60	0.317	0.076	---	0.24
144	12.00	0.60	0.317	0.076	---	0.24
145	12.08	0.83	0.441	0.076	---	0.37
146	12.17	0.83	0.441	0.075	---	0.37
147	12.25	0.83	0.441	0.075	---	0.37
148	12.33	0.87	0.459	0.075	---	0.38
149	12.42	0.87	0.459	0.074	---	0.38
150	12.50	0.87	0.459	0.074	---	0.38
151	12.58	0.93	0.494	0.073	---	0.42
152	12.67	0.93	0.494	0.073	---	0.42
153	12.75	0.93	0.494	0.073	---	0.42
154	12.83	0.97	0.512	0.072	---	0.44
155	12.92	0.97	0.512	0.072	---	0.44
156	13.00	0.97	0.512	0.072	---	0.44
157	13.08	1.13	0.600	0.071	---	0.53
158	13.17	1.13	0.600	0.071	---	0.53
159	13.25	1.13	0.600	0.071	---	0.53
160	13.33	1.13	0.600	0.070	---	0.53
161	13.42	1.13	0.600	0.070	---	0.53
162	13.50	1.13	0.600	0.069	---	0.53
163	13.58	0.77	0.406	0.069	---	0.34
164	13.67	0.77	0.406	0.069	---	0.34
165	13.75	0.77	0.406	0.068	---	0.34
166	13.83	0.77	0.406	0.068	---	0.34
167	13.92	0.77	0.406	0.068	---	0.34
168	14.00	0.77	0.406	0.067	---	0.34
169	14.08	0.90	0.476	0.067	---	0.41
170	14.17	0.90	0.476	0.067	---	0.41
171	14.25	0.90	0.476	0.066	---	0.41
172	14.33	0.87	0.459	0.066	---	0.39
173	14.42	0.87	0.459	0.066	---	0.39
174	14.50	0.87	0.459	0.065	---	0.39
175	14.58	0.87	0.459	0.065	---	0.39
176	14.67	0.87	0.459	0.065	---	0.39
177	14.75	0.87	0.459	0.064	---	0.39
178	14.83	0.83	0.441	0.064	---	0.38
179	14.92	0.83	0.441	0.064	---	0.38
180	15.00	0.83	0.441	0.063	---	0.38
181	15.08	0.80	0.423	0.063	---	0.36
182	15.17	0.80	0.423	0.063	---	0.36
183	15.25	0.80	0.423	0.062	---	0.36
184	15.33	0.77	0.406	0.062	---	0.34
185	15.42	0.77	0.406	0.062	---	0.34
186	15.50	0.77	0.406	0.061	---	0.34
187	15.58	0.63	0.335	0.061	---	0.27
188	15.67	0.63	0.335	0.061	---	0.27
189	15.75	0.63	0.335	0.060	---	0.27
190	15.83	0.63	0.335	0.060	---	0.27
191	15.92	0.63	0.335	0.060	---	0.28
192	16.00	0.63	0.335	0.060	---	0.28
193	16.08	0.13	0.071	0.059	---	0.01
194	16.17	0.13	0.071	0.059	---	0.01

195	16.25	0.13	0.071	0.059	---	0.01
196	16.33	0.13	0.071	0.058	---	0.01
197	16.42	0.13	0.071	0.058	---	0.01
198	16.50	0.13	0.071	0.058	---	0.01
199	16.58	0.10	0.053	0.057	0.010	0.04
200	16.67	0.10	0.053	0.057	0.010	0.04
201	16.75	0.10	0.053	0.057	0.010	0.04
202	16.83	0.10	0.053	0.057	0.010	0.04
203	16.92	0.10	0.053	0.056	0.010	0.04
204	17.00	0.10	0.053	0.056	0.010	0.04
205	17.08	0.17	0.088	0.056	---	0.03
206	17.17	0.17	0.088	0.055	---	0.03
207	17.25	0.17	0.088	0.055	---	0.03
208	17.33	0.17	0.088	0.055	---	0.03
209	17.42	0.17	0.088	0.055	---	0.03
210	17.50	0.17	0.088	0.054	---	0.03
211	17.58	0.17	0.088	0.054	---	0.03
212	17.67	0.17	0.088	0.054	---	0.03
213	17.75	0.17	0.088	0.054	---	0.03
214	17.83	0.13	0.071	0.053	---	0.02
215	17.92	0.13	0.071	0.053	---	0.02
216	18.00	0.13	0.071	0.053	---	0.02
217	18.08	0.13	0.071	0.052	---	0.02
218	18.17	0.13	0.071	0.052	---	0.02
219	18.25	0.13	0.071	0.052	---	0.02
220	18.33	0.13	0.071	0.052	---	0.02
221	18.42	0.13	0.071	0.051	---	0.02
222	18.50	0.13	0.071	0.051	---	0.02
223	18.58	0.10	0.053	0.051	---	0.00
224	18.67	0.10	0.053	0.051	---	0.00
225	18.75	0.10	0.053	0.050	---	0.00
226	18.83	0.07	0.035	0.050	0.006	0.03
227	18.92	0.07	0.035	0.050	0.006	0.03
228	19.00	0.07	0.035	0.050	0.006	0.03
229	19.08	0.10	0.053	0.050	---	0.00
230	19.17	0.10	0.053	0.049	---	0.00
231	19.25	0.10	0.053	0.049	---	0.00
232	19.33	0.13	0.071	0.049	---	0.02
233	19.42	0.13	0.071	0.049	---	0.02
234	19.50	0.13	0.071	0.048	---	0.02
235	19.58	0.10	0.053	0.048	---	0.00
236	19.67	0.10	0.053	0.048	---	0.00
237	19.75	0.10	0.053	0.048	---	0.01
238	19.83	0.07	0.035	0.048	0.006	0.03
239	19.92	0.07	0.035	0.047	0.006	0.03
240	20.00	0.07	0.035	0.047	0.006	0.03
241	20.08	0.10	0.053	0.047	---	0.01
242	20.17	0.10	0.053	0.047	---	0.01
243	20.25	0.10	0.053	0.046	---	0.01
244	20.33	0.10	0.053	0.046	---	0.01
245	20.42	0.10	0.053	0.046	---	0.01
246	20.50	0.10	0.053	0.046	---	0.01
247	20.58	0.10	0.053	0.046	---	0.01
248	20.67	0.10	0.053	0.045	---	0.01
249	20.75	0.10	0.053	0.045	---	0.01
250	20.83	0.07	0.035	0.045	0.006	0.03
251	20.92	0.07	0.035	0.045	0.006	0.03
252	21.00	0.07	0.035	0.045	0.006	0.03
253	21.08	0.10	0.053	0.045	---	0.01
254	21.17	0.10	0.053	0.044	---	0.01
255	21.25	0.10	0.053	0.044	---	0.01
256	21.33	0.07	0.035	0.044	0.006	0.03
257	21.42	0.07	0.035	0.044	0.006	0.03
258	21.50	0.07	0.035	0.044	0.006	0.03
259	21.58	0.10	0.053	0.044	---	0.01
260	21.67	0.10	0.053	0.043	---	0.01
261	21.75	0.10	0.053	0.043	---	0.01
262	21.83	0.07	0.035	0.043	0.006	0.03
263	21.92	0.07	0.035	0.043	0.006	0.03
264	22.00	0.07	0.035	0.043	0.006	0.03
265	22.08	0.10	0.053	0.043	---	0.01
266	22.17	0.10	0.053	0.043	---	0.01
267	22.25	0.10	0.053	0.042	---	0.01
268	22.33	0.07	0.035	0.042	0.006	0.03
269	22.42	0.07	0.035	0.042	0.006	0.03

270	22.50	0.07	0.035	0.042	0.006	0.03
271	22.58	0.07	0.035	0.042	0.006	0.03
272	22.67	0.07	0.035	0.042	0.006	0.03
273	22.75	0.07	0.035	0.042	0.006	0.03
274	22.83	0.07	0.035	0.042	0.006	0.03
275	22.92	0.07	0.035	0.041	0.006	0.03
276	23.00	0.07	0.035	0.041	0.006	0.03
277	23.08	0.07	0.035	0.041	0.006	0.03
278	23.17	0.07	0.035	0.041	0.006	0.03
279	23.25	0.07	0.035	0.041	0.006	0.03
280	23.33	0.07	0.035	0.041	0.006	0.03
281	23.42	0.07	0.035	0.041	0.006	0.03
282	23.50	0.07	0.035	0.041	0.006	0.03
283	23.58	0.07	0.035	0.041	0.006	0.03
284	23.67	0.07	0.035	0.041	0.006	0.03
285	23.75	0.07	0.035	0.041	0.006	0.03
286	23.83	0.07	0.035	0.041	0.006	0.03
287	23.92	0.07	0.035	0.041	0.006	0.03
288	24.00	0.07	0.035	0.041	0.006	0.03
Sum =		100.0			Sum =	37.4

Flood volume = Effective rainfall 3.12(In)
times area 60.7(Ac.)/[(In)/(Ft.)] = 15.8(Ac.Ft)
Total soil loss = 1.29(In)
Total soil loss = 6.534(Ac.Ft)
Total rainfall = 4.41(In)
Flood volume = 687026.0 Cubic Feet
Total soil loss = 284605.7 Cubic Feet

Peak flow rate of this hydrograph = 32.387(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	10.0	20.0	30.0	40.0
0+ 5	0.0017	0.25	Q				
0+10	0.0102	1.23	VQ				
0+15	0.0210	1.56	VQ				
0+20	0.0335	1.82	VQ				
0+25	0.0498	2.36	V Q				
0+30	0.0673	2.54	V Q				
0+35	0.0853	2.62	V Q				
0+40	0.1035	2.64	V Q				
0+45	0.1217	2.65	V Q				
0+50	0.1409	2.78	V Q				
0+55	0.1634	3.27	V Q				
1+ 0	0.1871	3.44	V Q				
1+ 5	0.2103	3.38	V Q				
1+10	0.2304	2.91	V Q				
1+15	0.2493	2.75	V Q				
1+20	0.2679	2.69	V Q				
1+25	0.2863	2.67	V Q				
1+30	0.3046	2.66	V Q				
1+35	0.3229	2.66	V Q				
1+40	0.3412	2.66	V Q				
1+45	0.3595	2.66	V Q				
1+50	0.3786	2.78	V Q				
1+55	0.4012	3.27	|V Q				
2+ 0	0.4248	3.44	|V Q				
2+ 5	0.4490	3.50	|V Q				
2+10	0.4733	3.53	|V Q				
2+15	0.4976	3.53	|V Q				
2+20	0.5220	3.54	|V Q				
2+25	0.5464	3.54	|V Q				
2+30	0.5708	3.54	|V Q				
2+35	0.5960	3.67	|V Q				
2+40	0.6246	4.16	|V Q				
2+45	0.6544	4.32	|V Q				
2+50	0.6846	4.39	|V Q				
2+55	0.7150	4.41	|V Q				
3+ 0	0.7455	4.42	|V Q				

3+ 5	0.7760	4.43	V Q			
3+10	0.8064	4.43	V Q			
3+15	0.8369	4.43	V Q			
3+20	0.8674	4.43	V Q			
3+25	0.8979	4.43	V Q			
3+30	0.9284	4.43	V Q			
3+35	0.9589	4.43	V Q			
3+40	0.9893	4.43	V Q			
3+45	1.0198	4.43	V Q			
3+50	1.0512	4.55	V Q			
3+55	1.0859	5.04	V Q			
4+ 0	1.1218	5.21	V Q			
4+ 5	1.1581	5.27	V Q			
4+10	1.1946	5.30	V Q			
4+15	1.2311	5.31	V Q			
4+20	1.2629	4.62	VQ			
4+25	1.2760	1.90	Q V			
4+30	1.2830	1.01	Q V			
4+35	1.2875	0.66	Q V			
4+40	1.2915	0.57	Q V			
4+45	1.2953	0.55	Q V			
4+50	1.3002	0.71	Q V			
4+55	1.3093	1.33	Q V			
5+ 0	1.3201	1.56	Q V			
5+ 5	1.3351	2.17	QV			
5+10	1.3640	4.20	VQ			
5+15	1.3976	4.88	VQ			
5+20	1.4288	4.52	VQ			
5+25	1.4432	2.10	QV			
5+30	1.4522	1.30	Q V			
5+35	1.4601	1.16	Q V			
5+40	1.4717	1.67	Q V			
5+45	1.4845	1.86	Q V			
5+50	1.4979	1.95	Q V			
5+55	1.5117	2.00	Q V			
6+ 0	1.5257	2.04	QV			
6+ 5	1.5411	2.23	QV			
6+10	1.5607	2.86	QV			
6+15	1.5820	3.09	QV			
6+20	1.6040	3.20	QV			
6+25	1.6264	3.25	QV			
6+30	1.6491	3.29	QV			
6+35	1.6730	3.48	QV			
6+40	1.7013	4.11	Q			
6+45	1.7312	4.34	Q			
6+50	1.7619	4.45	Q			
6+55	1.7929	4.51	Q			
7+ 0	1.8242	4.54	Q			
7+ 5	1.8557	4.58	Q			
7+10	1.8874	4.61	Q			
7+15	1.9194	4.64	Q			
7+20	1.9525	4.82	Q			
7+25	1.9900	5.44	Q			
7+30	2.0291	5.67	Q			
7+35	2.0699	5.93	Q			
7+40	2.1153	6.59	VQ			
7+45	2.1623	6.83	VQ			
7+50	2.2112	7.09	V Q			
7+55	2.2646	7.75	V Q			
8+ 0	2.3196	7.99	V Q			
8+ 5	2.3775	8.41	V Q			
8+10	2.4441	9.67	V Q			
8+15	2.5137	10.10	V Q			
8+20	2.5846	10.30	V Q			
8+25	2.6562	10.39	V Q			
8+30	2.7280	10.43	V Q			
8+35	2.8011	10.62	V Q			
8+40	2.8786	11.25	V Q			
8+45	2.9577	11.48	V Q			
8+50	3.0386	11.74	V Q			
8+55	3.1239	12.39	V Q			
9+ 0	3.2109	12.63	V Q			
9+ 5	3.3008	13.05	V Q			
9+10	3.3993	14.31	V Q			
9+15	3.5008	14.74	V Q			

9+20	3.6048	15.09	|	V| Q	|	|
9+25	3.7134	15.77	|	V| Q	|	|
9+30	3.8237	16.02	|	V| Q	|	|
9+35	3.9359	16.29	|	V| Q	|	|
9+40	4.0527	16.95	|	V Q	|	|
9+45	4.1710	17.18	|	V Q	|	|
9+50	4.2912	17.45	|	V Q	|	|
9+55	4.4159	18.11	|	|V Q	|	|
10+ 0	4.5422	18.34	|	|V Q	|	|
10+ 5	4.6620	17.39	|	|V Q	|	|
10+10	4.7532	13.24	|	| VQ	|	|
10+15	4.8350	11.87	|	|QV	|	|
10+20	4.9130	11.33	|	|QV	|	|
10+25	4.9899	11.16	|	|QV	|	|
10+30	5.0665	11.12	|	|QV	|	|
10+35	5.1482	11.86	|	|Q V	|	|
10+40	5.2507	14.88	|	| VQ	|	|
10+45	5.3603	15.91	|	| V Q	|	|
10+50	5.4728	16.34	|	| V Q	|	|
10+55	5.5865	16.51	|	| V Q	|	|
11+ 0	5.7007	16.58	|	| V Q	|	|
11+ 5	5.8142	16.48	|	| V Q	|	|
11+10	5.9238	15.91	|	| Q	|	|
11+15	6.0322	15.74	|	| Q	|	|
11+20	6.1401	15.68	|	| Q	|	|
11+25	6.2481	15.68	|	| Q	|	|
11+30	6.3562	15.69	|	| QV	|	|
11+35	6.4622	15.40	|	| QV	|	|
11+40	6.5602	14.23	|	| Q V	|	|
11+45	6.6556	13.85	|	| Q V	|	|
11+50	6.7510	13.86	|	| Q V	|	|
11+55	6.8504	14.43	|	| Q V	|	|
12+ 0	6.9512	14.63	|	| Q V	|	|
12+ 5	7.0599	15.79	|	| Q V	|	|
12+10	7.1979	20.04	|	| V Q	|	|
12+15	7.3459	21.48	|	| V |Q	|	|
12+20	7.4990	22.23	|	| V| Q	|	|
12+25	7.6577	23.05	|	| V| Q	|	|
12+30	7.8185	23.34	|	| V| Q	|	|
12+35	7.9823	23.79	|	| V Q	|	|
12+40	8.1548	25.05	|	| V Q	|	|
12+45	8.3304	25.49	|	| |V Q	|	|
12+50	8.5083	25.83	|	| |V Q	|	|
12+55	8.6909	26.51	|	| | V Q	|	|
13+ 0	8.8751	26.75	|	| | V Q	|	|
13+ 5	9.0654	27.63	|	| | V Q	|	|
13+10	9.2767	30.68	|	| | V Q	|	|
13+15	9.4952	31.72	|	| | V |Q	|	|
13+20	9.7166	32.16	|	| | V | Q	|	|
13+25	9.9392	32.32	|	| | V | Q	|	|
13+30	10.1623	32.39	|	| | V | Q	|	|
13+35	10.3742	30.77	|	| | V Q	|	|
13+40	10.5408	24.20	|	| | Q V	|	|
13+45	10.6924	22.01	|	| | Q V	|	|
13+50	10.8379	21.13	|	| |Q V	|	|
13+55	10.9815	20.85	|	| Q V	|	|
14+ 0	11.1245	20.76	|	| Q V	|	|
14+ 5	11.2713	21.32	|	| |Q V	|	|
14+10	11.4347	23.73	|	| | Q V|	|	|
14+15	11.6039	24.56	|	| | Q V|	|	|
14+20	11.7743	24.75	|	| | Q V|	|	|
14+25	11.9416	24.28	|	| | Q V	|	|
14+30	12.1078	24.14	|	| | Q V	|	|
14+35	12.2738	24.10	|	| | Q |V	|	|
14+40	12.4398	24.10	|	| | Q |V	|	|
14+45	12.6059	24.11	|	| | Q |V	|	|
14+50	12.7710	23.98	|	| | Q | V	|	|
14+55	12.9321	23.39	|	| | Q | V	|	|
15+ 0	13.0920	23.21	|	| | Q | V	|	|
15+ 5	13.2504	23.00	|	| | Q | V	|	|
15+10	13.4046	22.39	|	| | Q | V	|	|
15+15	13.5575	22.20	|	| | Q | V	|	|
15+20	13.7088	21.98	|	| |Q | V	|	|
15+25	13.8560	21.37	|	| |Q | V	|	|
15+30	14.0019	21.18	|	| |Q | V	|	|

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15+35      14.1431     20.50  |          |          Q          |    V     |
15+40      14.2677     18.09  |          |        Q |          |     V    |
15+45      14.3869     17.30  |          |       Q  |          |     V    |
15+50      14.5038     16.99  |          |     Q    |          |     V    |
15+55      14.6202     16.89  |          |     Q    |          |      V   |
16+ 0      14.7364     16.87  |          |     Q    |          |      V   |
16+ 5      14.8369     14.59  |          |   Q      |          |      V   |
16+10      14.8754      5.60  |     Q    |          |          |      V   |
16+15      14.8933      2.60  | Q        |          |          |      V   |
16+20      14.9029      1.39  |Q         |          |          |      V   |
16+25      14.9098      1.00  Q          |          |          |      V   |
16+30      14.9158      0.88  Q          |          |          |      V   |
16+35      14.9231      1.06  |Q         |          |          |      V   |
16+40      14.9375      2.08  | Q        |          |          |      V   |
16+45      14.9543      2.44  | Q        |          |          |      V   |
16+50      14.9720      2.58  | Q        |          |          |      V   |
16+55      14.9901      2.63  | Q        |          |          |       V  |
17+ 0      15.0083      2.64  | Q        |          |          |       V  |
17+ 5      15.0259      2.56  | Q        |          |          |       V  |
17+10      15.0410      2.19  | Q        |          |          |       V  |
17+15      15.0553      2.08  | Q        |          |          |       V  |
17+20      15.0694      2.04  | Q        |          |          |       V  |
17+25      15.0835      2.04  | Q        |          |          |       V  |
17+30      15.0976      2.05  | Q        |          |          |       V  |
17+35      15.1119      2.07  | Q        |          |          |       V  |
17+40      15.1262      2.08  | Q        |          |          |       V  |
17+45      15.1407      2.10  | Q        |          |          |       V  |
17+50      15.1542      1.96  |Q         |          |          |       V  |
17+55      15.1637      1.38  |Q         |          |          |       V  |
18+ 0      15.1719      1.19  |Q         |          |          |       V  |
18+ 5      15.1797      1.13  |Q         |          |          |       V  |
18+10      15.1874      1.12  |Q         |          |          |       V  |
18+15      15.1951      1.12  |Q         |          |          |       V  |
18+20      15.2029      1.13  |Q         |          |          |       V  |
18+25      15.2109      1.15  |Q         |          |          |       V  |
18+30      15.2189      1.16  |Q         |          |          |       V  |
18+35      15.2259      1.03  |Q         |          |          |       V  |
18+40      15.2290      0.44  Q          |          |          |       V  |
18+45      15.2307      0.26  Q          |          |          |       V  |
18+50      15.2336      0.41  Q          |          |          |       V  |
18+55      15.2425      1.29  |Q         |          |          |       V  |
19+ 0      15.2534      1.59  |Q         |          |          |       V  |
19+ 5      15.2636      1.48  |Q         |          |          |       V  |
19+10      15.2682      0.66  Q          |          |          |       V  |
19+15      15.2709      0.39  Q          |          |          |       V  |
19+20      15.2739      0.45  Q          |          |          |       V  |
19+25      15.2810      1.02  |Q         |          |          |       V  |
19+30      15.2894      1.22  |Q         |          |          |       V  |
19+35      15.2974      1.16  |Q         |          |          |       V  |
19+40      15.3015      0.60  Q          |          |          |       V  |
19+45      15.3044      0.42  Q          |          |          |       V  |
19+50      15.3082      0.56  Q          |          |          |       V  |
19+55      15.3175      1.34  |Q         |          |          |       V  |
20+ 0      15.3285      1.61  |Q         |          |          |       V  |
20+ 5      15.3390      1.51  |Q         |          |          |       V  |
20+10      15.3443      0.77  Q          |          |          |       V  |
20+15      15.3480      0.53  Q          |          |          |       V  |
20+20      15.3511      0.45  Q          |          |          |       V  |
20+25      15.3540      0.42  Q          |          |          |       V  |
20+30      15.3569      0.42  Q          |          |          |       V  |
20+35      15.3599      0.43  Q          |          |          |       V  |
20+40      15.3629      0.44  Q          |          |          |       V  |
20+45      15.3660      0.45  Q          |          |          |       V  |
20+50      15.3704      0.64  Q          |          |          |       V  |
20+55      15.3799      1.37  |Q         |          |          |        V|
21+ 0      15.3910      1.62  |Q         |          |          |        V|
21+ 5      15.4016      1.54  |Q         |          |          |        V|
21+10      15.4076      0.87  Q          |          |          |        V|
21+15      15.4121      0.66  Q          |          |          |        V|
21+20      15.4173      0.75  Q          |          |          |        V|
21+25      15.4270      1.41  |Q         |          |          |        V|
21+30      15.4383      1.63  |Q         |          |          |        V|
21+35      15.4490      1.55  |Q         |          |          |        V|
21+40      15.4553      0.92  Q          |          |          |        V|
21+45      15.4602      0.71  Q          |          |          |        V|
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21+50	15.4657	0.80	Q	|	|	|	V|
21+55	15.4756	1.43	|Q	|	|	|	V|
22+ 0	15.4869	1.64	|Q	|	|	|	V|
22+ 5	15.4976	1.56	|Q	|	|	|	V|
22+10	15.5042	0.96	Q	|	|	|	V|
22+15	15.5094	0.76	Q	|	|	|	V|
22+20	15.5153	0.84	Q	|	|	|	V|
22+25	15.5252	1.45	|Q	|	|	|	V|
22+30	15.5365	1.65	|Q	|	|	|	V|
22+35	15.5484	1.73	|Q	|	|	|	V|
22+40	15.5605	1.75	|Q	|	|	|	V|
22+45	15.5726	1.76	|Q	|	|	|	V|
22+50	15.5848	1.77	|Q	|	|	|	V|
22+55	15.5970	1.77	|Q	|	|	|	V|
23+ 0	15.6092	1.77	|Q	|	|	|	V|
23+ 5	15.6214	1.77	|Q	|	|	|	V|
23+10	15.6336	1.77	|Q	|	|	|	V|
23+15	15.6458	1.77	|Q	|	|	|	V|
23+20	15.6580	1.77	|Q	|	|	|	V|
23+25	15.6702	1.77	|Q	|	|	|	V|
23+30	15.6824	1.77	|Q	|	|	|	V|
23+35	15.6946	1.77	|Q	|	|	|	V|
23+40	15.7068	1.77	|Q	|	|	|	V|
23+45	15.7190	1.77	|Q	|	|	|	V|
23+50	15.7311	1.77	|Q	|	|	|	V|
23+55	15.7433	1.77	|Q	|	|	|	V|
24+ 0	15.7555	1.77	|Q	|	|	|	V|
24+ 5	15.7660	1.52	|Q	|	|	|	V|
24+10	15.7697	0.54	Q	|	|	|	V|
24+15	15.7711	0.21	Q	|	|	|	V|
24+20	15.7716	0.07	Q	|	|	|	V|
24+25	15.7718	0.03	Q	|	|	|	V|
24+30	15.7719	0.01	Q	|	|	|	V|
24+35	15.7719	0.00	Q	|	|	|	V|

UNIT HYDROGRAPH
DMA B
PROPOSED CONDITIONS
100-YEAR 1-HOUR

U n i t H y d r o g r a p h A n a l y s i s

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Study date 10/28/14 File: BPROP1100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

14-0213 SHOPOFF
UNIT HYDROGRAPH
DMA B
PROPOSED CONDITIONS
100-YEAR 1-HOUR

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 60.70(Ac.) = 0.095 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 60.70(Ac.) = 0.095 Sq. Mi.
Length along longest watercourse = 3720.00(Ft.)
Length along longest watercourse measured to centroid = 2000.00(Ft.)
Length along longest watercourse = 0.705 Mi.
Length along longest watercourse measured to centroid = 0.379 Mi.
Difference in elevation = 105.00(Ft.)
Slope along watercourse = 149.0323 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.084 Hr.
Lag time = 5.05 Min.
25% of lag time = 1.26 Min.
40% of lag time = 2.02 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
60.70	0.57	34.60

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
60.70	1.30	78.91

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.570(In)
Area Averaged 100-Year Rainfall = 1.300(In)

Point rain (area averaged) = 1.300(In)
Areal adjustment factor = 99.94 %
Adjusted average point rain = 1.299(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
60.700	64.00	0.900

Total Area Entered = 60.70(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
64.0	64.0	0.427	0.900	0.081	1.000	0.081

Sum (F) = 0.081

Area averaged mean soil loss (F) (In/Hr) = 0.081
Minimum soil loss rate ((In/Hr)) = 0.041
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

Slope of intensity-duration curve for a 1 hour storm =0.5500

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	98.956	14.050	8.595
2	0.167	197.913	55.616	34.023
3	0.250	296.869	18.626	11.395
4	0.333	395.825	7.557	4.623
5	0.417	494.782	2.573	1.574
6	0.500	593.738	0.862	0.528
7	0.583	692.694	0.569	0.348
8	0.667	791.651	0.146	0.090
		Sum = 100.000	Sum=	61.174

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	3.30	0.515	0.081	---	0.43
2	0.17	4.20	0.655	0.081	---	0.57
3	0.25	4.40	0.686	0.081	---	0.60
4	0.33	4.80	0.748	0.081	---	0.67
5	0.42	5.20	0.811	0.081	---	0.73
6	0.50	6.20	0.967	0.081	---	0.89
7	0.58	6.80	1.060	0.081	---	0.98
8	0.67	8.80	1.372	0.081	---	1.29
9	0.75	13.90	2.167	0.081	---	2.09
10	0.83	31.40	4.896	0.081	---	4.81
11	0.92	7.20	1.123	0.081	---	1.04
12	1.00	3.80	0.592	0.081	---	0.51
Sum =		100.0			Sum =	14.6

Flood volume = Effective rainfall 1.22(In)
times area 60.7(Ac.)/[(In)/(Ft.)] = 6.2(Ac.Ft)
Total soil loss = 0.08(In)
Total soil loss = 0.410(Ac.Ft)
Total rainfall = 1.30(In)
Flood volume = 268417.8 Cubic Feet
Total soil loss = 17867.9 Cubic Feet

Peak flow rate of this hydrograph = 204.924(CFS)

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1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	75.0	150.0	225.0	300.0
0+ 5	0.0257	3.73	Q				
0+10	0.1613	19.69	VQ				
0+15	0.3656	29.67	VQ				
0+20	0.6058	34.88	VQ				
0+25	0.8759	39.22	Q				
0+30	1.1789	43.99	Q V				
0+35	1.5327	51.38	Q V				
0+40	1.9426	59.51	Q	V			
0+45	2.4860	78.91	Q	V			
0+50	3.4070	133.73		Q	V		
0+55	4.8183	204.92			Q	V	
1+ 0	5.5574	107.31		Q		V	

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    1+ 5       5.9426     55.94  |      Q  |         |         |       V |
    1+10       6.0794     19.87  | Q       |         |         |        V|
    1+15       6.1303      7.39  Q         |         |         |        V|
    1+20       6.1525      3.22  Q         |         |         |        V|
    1+25       6.1598      1.06  Q         |         |         |        V|
    1+30       6.1617      0.27  Q         |         |         |        V|
    1+35       6.1620      0.05  Q         |         |         |         V
-------------------------------------------------------------------------
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UNIT HYDROGRAPH
DMA B
PROPOSED CONDITIONS
100-YEAR 3-HOUR

U n i t H y d r o g r a p h A n a l y s i s

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Study date 10/21/14 File: BPROP3100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

14-0213 SHOPOFF
UNIT HYDROGRAPH
DMA B
PROPOSED CONDITIONS
100-YEAR 3-HOUR

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 60.70(Ac.) = 0.095 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 60.70(Ac.) = 0.095 Sq. Mi.
Length along longest watercourse = 3720.00(Ft.)
Length along longest watercourse measured to centroid = 2000.00(Ft.)
Length along longest watercourse = 0.705 Mi.
Length along longest watercourse measured to centroid = 0.379 Mi.
Difference in elevation = 105.00(Ft.)
Slope along watercourse = 149.0323 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.084 Hr.
Lag time = 5.05 Min.
25% of lag time = 1.26 Min.
40% of lag time = 2.02 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
60.70	1.00	60.70

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
60.70	2.20	133.54

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.000(In)
Area Averaged 100-Year Rainfall = 2.200(In)

Point rain (area averaged) = 2.200(In)
Areal adjustment factor = 99.97 %
Adjusted average point rain = 2.199(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
60.700	64.00	0.900

Total Area Entered = 60.70(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F

AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
64.0	64.0	0.427	0.900	0.081	1.000	0.081
					Sum (F) =	0.081

Area averaged mean soil loss (F) (In/Hr) = 0.081
Minimum soil loss rate ((In/Hr)) = 0.041
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	98.956	14.050	8.595
2	0.167	197.913	55.616	34.023
3	0.250	296.869	18.626	11.395
4	0.333	395.825	7.557	4.623
5	0.417	494.782	2.573	1.574
6	0.500	593.738	0.862	0.528
7	0.583	692.694	0.569	0.348
8	0.667	791.651	0.146	0.090
			Sum = 100.000	Sum= 61.174

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.343	0.081	---	0.26
2	0.17	1.30	0.343	0.081	---	0.26
3	0.25	1.10	0.290	0.081	---	0.21
4	0.33	1.50	0.396	0.081	---	0.31
5	0.42	1.50	0.396	0.081	---	0.31
6	0.50	1.80	0.475	0.081	---	0.39
7	0.58	1.50	0.396	0.081	---	0.31
8	0.67	1.80	0.475	0.081	---	0.39
9	0.75	1.80	0.475	0.081	---	0.39
10	0.83	1.50	0.396	0.081	---	0.31
11	0.92	1.60	0.422	0.081	---	0.34
12	1.00	1.80	0.475	0.081	---	0.39
13	1.08	2.20	0.581	0.081	---	0.50
14	1.17	2.20	0.581	0.081	---	0.50
15	1.25	2.20	0.581	0.081	---	0.50
16	1.33	2.00	0.528	0.081	---	0.45
17	1.42	2.60	0.686	0.081	---	0.61
18	1.50	2.70	0.713	0.081	---	0.63
19	1.58	2.40	0.633	0.081	---	0.55
20	1.67	2.70	0.713	0.081	---	0.63
21	1.75	3.30	0.871	0.081	---	0.79
22	1.83	3.10	0.818	0.081	---	0.74
23	1.92	2.90	0.765	0.081	---	0.68
24	2.00	3.00	0.792	0.081	---	0.71
25	2.08	3.10	0.818	0.081	---	0.74
26	2.17	4.20	1.109	0.081	---	1.03
27	2.25	5.00	1.320	0.081	---	1.24
28	2.33	3.50	0.924	0.081	---	0.84
29	2.42	6.80	1.795	0.081	---	1.71
30	2.50	7.30	1.927	0.081	---	1.85
31	2.58	8.20	2.164	0.081	---	2.08
32	2.67	5.90	1.557	0.081	---	1.48
33	2.75	2.00	0.528	0.081	---	0.45
34	2.83	1.80	0.475	0.081	---	0.39
35	2.92	1.80	0.475	0.081	---	0.39
36	3.00	0.60	0.158	0.081	---	0.08
Sum =		100.0			Sum =	23.5

Flood volume = Effective rainfall 1.96(In)
times area 60.7(Ac.)/[(In)/(Ft.)] = 9.9(Ac.Ft)
Total soil loss = 0.24(In)
Total soil loss = 1.231(Ac.Ft)
Total rainfall = 2.20(In)
Flood volume = 431017.8 Cubic Feet
Total soil loss = 53603.7 Cubic Feet

Peak flow rate of this hydrograph = 114.975(CFS)

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 50.0 100.0 150.0 200.0
0+ 5	0.0155	2.25	Q
0+10	0.0925	11.17	V Q
0+15	0.1869	13.71	V Q
0+20	0.2835	14.03	VQ
0+25	0.4035	17.43	V Q
0+30	0.5358	19.21	VQ
0+35	0.6854	21.72	V Q
0+40	0.8285	20.77	VQ
0+45	0.9867	22.97	VQ
0+50	1.1450	22.98	Q
0+55	1.2882	20.81	QV
1+ 0	1.4354	21.37	QV
1+ 5	1.6009	24.03	Q V
1+10	1.7953	28.24	Q V
1+15	1.9999	29.69	Q V
1+20	2.2051	29.80	Q V
1+25	2.4086	29.56	Q V
1+30	2.6473	34.65	Q V
1+35	2.8985	36.47	Q V
1+40	3.1424	35.42	Q V
1+45	3.4104	38.91	Q V
1+50	3.7168	44.49	Q V
1+55	4.0223	44.36	Q V
2+ 0	4.3186	43.02	Q V
2+ 5	4.6187	43.57	Q V
2+10	4.9426	47.04	Q V
2+15	5.3497	59.11	Q V
2+20	5.8066	66.34	Q V
2+25	6.2483	64.13	Q V
2+30	6.8809	91.85	Q V
2+35	7.6177	106.98	Q V
2+40	8.4096	114.97	Q V
2+45	9.0297	90.04	Q V
2+50	9.3690	49.27	Q V
2+55	9.6008	33.65	Q V
3+ 0	9.7719	24.85	Q V
3+ 5	9.8499	11.32	Q V
3+10	9.8792	4.26	Q V
3+15	9.8894	1.47	Q V
3+20	9.8929	0.51	Q V
3+25	9.8943	0.21	Q V
3+30	9.8948	0.06	Q V
3+35	9.8948	0.01	Q V

UNIT HYDROGRAPH
DMA B
PROPOSED CONDITIONS
100-YEAR 6-HOUR

U n i t H y d r o g r a p h A n a l y s i s

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

14-0213 SHOPOFF
UNIT HYDROGRAPH
DMA B
PROPOSED CONDITIONS
100-YEAR 6-HOUR

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 60.70(Ac.) = 0.095 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 60.70(Ac.) = 0.095 Sq. Mi.
Length along longest watercourse = 3720.00(Ft.)
Length along longest watercourse measured to centroid = 2000.00(Ft.)
Length along longest watercourse = 0.705 Mi.
Length along longest watercourse measured to centroid = 0.379 Mi.
Difference in elevation = 105.00(Ft.)
Slope along watercourse = 149.0323 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.084 Hr.
Lag time = 5.05 Min.
25% of lag time = 1.26 Min.
40% of lag time = 2.02 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
60.70	1.40	84.98

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
60.70	3.20	194.24

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.400(In)
Area Averaged 100-Year Rainfall = 3.200(In)

Point rain (area averaged) = 3.200(In)
Areal adjustment factor = 99.98 %
Adjusted average point rain = 3.199(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
60.700	64.00	0.900

Total Area Entered = 60.70(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F

AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
64.0	64.0	0.427	0.900	0.081	1.000	0.081
					Sum (F) =	0.081

Area averaged mean soil loss (F) (In/Hr) = 0.081
Minimum soil loss rate ((In/Hr)) = 0.041
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	98.956	14.050	8.595
2	0.167	197.913	55.616	34.023
3	0.250	296.869	18.626	11.395
4	0.333	395.825	7.557	4.623
5	0.417	494.782	2.573	1.574
6	0.500	593.738	0.862	0.528
7	0.583	692.694	0.569	0.348
8	0.667	791.651	0.146	0.090
			Sum = 100.000	Sum= 61.174

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.192	0.081	---	0.11
2	0.17	0.60	0.230	0.081	---	0.15
3	0.25	0.60	0.230	0.081	---	0.15
4	0.33	0.60	0.230	0.081	---	0.15
5	0.42	0.60	0.230	0.081	---	0.15
6	0.50	0.70	0.269	0.081	---	0.19
7	0.58	0.70	0.269	0.081	---	0.19
8	0.67	0.70	0.269	0.081	---	0.19
9	0.75	0.70	0.269	0.081	---	0.19
10	0.83	0.70	0.269	0.081	---	0.19
11	0.92	0.70	0.269	0.081	---	0.19
12	1.00	0.80	0.307	0.081	---	0.23
13	1.08	0.80	0.307	0.081	---	0.23
14	1.17	0.80	0.307	0.081	---	0.23
15	1.25	0.80	0.307	0.081	---	0.23
16	1.33	0.80	0.307	0.081	---	0.23
17	1.42	0.80	0.307	0.081	---	0.23
18	1.50	0.80	0.307	0.081	---	0.23
19	1.58	0.80	0.307	0.081	---	0.23
20	1.67	0.80	0.307	0.081	---	0.23
21	1.75	0.80	0.307	0.081	---	0.23
22	1.83	0.80	0.307	0.081	---	0.23
23	1.92	0.80	0.307	0.081	---	0.23
24	2.00	0.90	0.346	0.081	---	0.26
25	2.08	0.80	0.307	0.081	---	0.23
26	2.17	0.90	0.346	0.081	---	0.26
27	2.25	0.90	0.346	0.081	---	0.26
28	2.33	0.90	0.346	0.081	---	0.26
29	2.42	0.90	0.346	0.081	---	0.26
30	2.50	0.90	0.346	0.081	---	0.26
31	2.58	0.90	0.346	0.081	---	0.26
32	2.67	0.90	0.346	0.081	---	0.26
33	2.75	1.00	0.384	0.081	---	0.30
34	2.83	1.00	0.384	0.081	---	0.30
35	2.92	1.00	0.384	0.081	---	0.30
36	3.00	1.00	0.384	0.081	---	0.30
37	3.08	1.00	0.384	0.081	---	0.30
38	3.17	1.10	0.422	0.081	---	0.34
39	3.25	1.10	0.422	0.081	---	0.34
40	3.33	1.10	0.422	0.081	---	0.34
41	3.42	1.20	0.461	0.081	---	0.38
42	3.50	1.30	0.499	0.081	---	0.42
43	3.58	1.40	0.537	0.081	---	0.46
44	3.67	1.40	0.537	0.081	---	0.46

45	3.75	1.50	0.576	0.081	---	0.49
46	3.83	1.50	0.576	0.081	---	0.49
47	3.92	1.60	0.614	0.081	---	0.53
48	4.00	1.60	0.614	0.081	---	0.53
49	4.08	1.70	0.653	0.081	---	0.57
50	4.17	1.80	0.691	0.081	---	0.61
51	4.25	1.90	0.729	0.081	---	0.65
52	4.33	2.00	0.768	0.081	---	0.69
53	4.42	2.10	0.806	0.081	---	0.73
54	4.50	2.10	0.806	0.081	---	0.73
55	4.58	2.20	0.845	0.081	---	0.76
56	4.67	2.30	0.883	0.081	---	0.80
57	4.75	2.40	0.921	0.081	---	0.84
58	4.83	2.40	0.921	0.081	---	0.84
59	4.92	2.50	0.960	0.081	---	0.88
60	5.00	2.60	0.998	0.081	---	0.92
61	5.08	3.10	1.190	0.081	---	1.11
62	5.17	3.60	1.382	0.081	---	1.30
63	5.25	3.90	1.497	0.081	---	1.42
64	5.33	4.20	1.612	0.081	---	1.53
65	5.42	4.70	1.804	0.081	---	1.72
66	5.50	5.60	2.150	0.081	---	2.07
67	5.58	1.90	0.729	0.081	---	0.65
68	5.67	0.90	0.346	0.081	---	0.26
69	5.75	0.60	0.230	0.081	---	0.15
70	5.83	0.50	0.192	0.081	---	0.11
71	5.92	0.30	0.115	0.081	---	0.03
72	6.00	0.20	0.077	0.081	0.014	0.06
Sum =		100.0			Sum =	32.6

Flood volume = Effective rainfall 2.72(In)
times area 60.7(Ac.)/[(In)/(Ft.)] = 13.8(Ac.Ft)
Total soil loss = 0.48(In)
Total soil loss = 2.433(Ac.Ft)
Total rainfall = 3.20(In)
Flood volume = 598971.9 Cubic Feet
Total soil loss = 105972.1 Cubic Feet

Peak flow rate of this hydrograph = 106.115(CFS)

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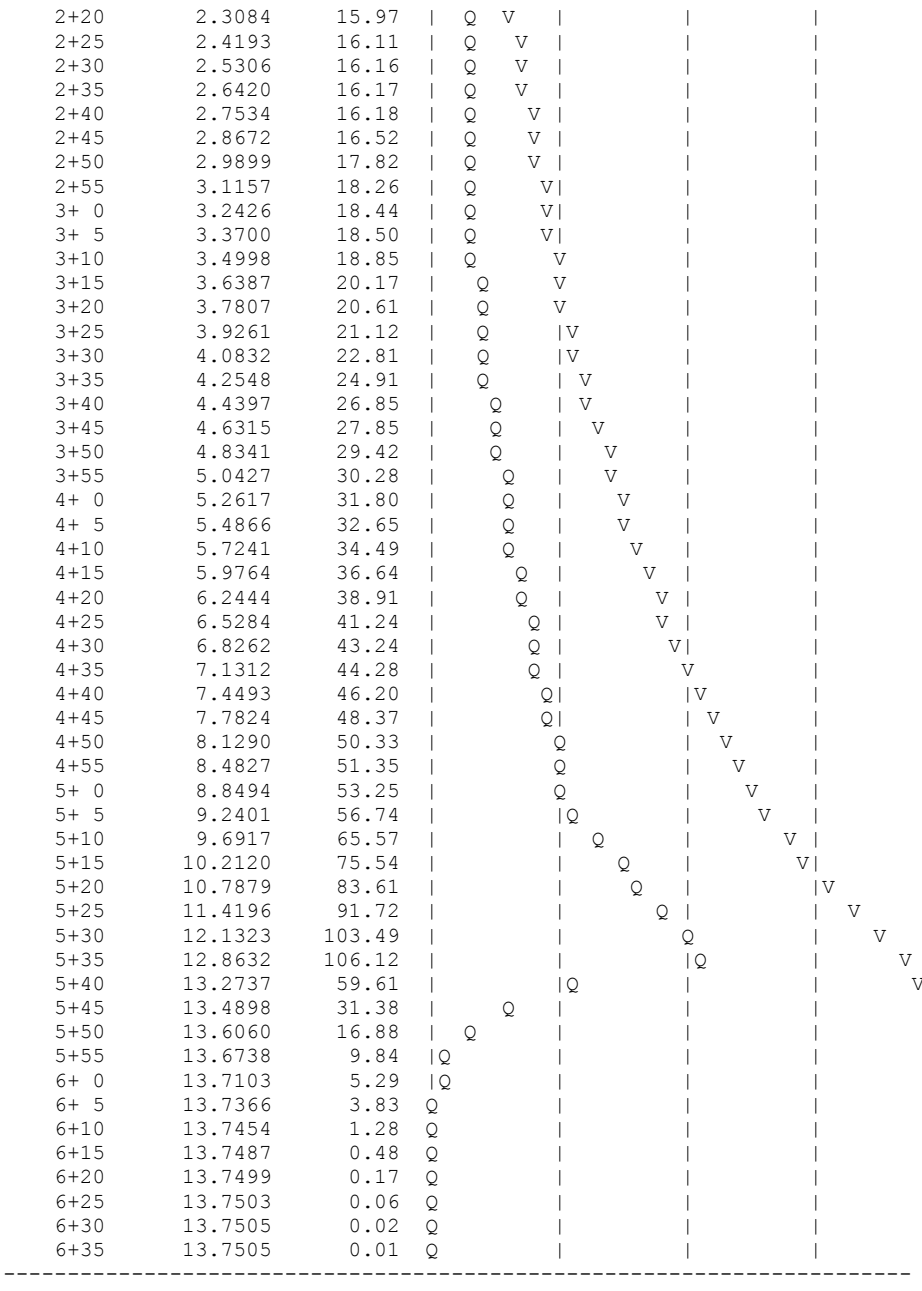
6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	50.0	100.0	150.0	200.0
0+ 5	0.0066	0.95	Q				
0+10	0.0414	5.06	VQ				
0+15	0.0939	7.63	VQ				
0+20	0.1530	8.58	VQ				
0+25	0.2145	8.93	VQ				
0+30	0.2791	9.38	VQ				
0+35	0.3531	10.75	|VQ				
0+40	0.4303	11.21	|VQ				
0+45	0.5087	11.39	|VQ				
0+50	0.5876	11.45	|VQ				
0+55	0.6666	11.47	|VQ				
1+ 0	0.7479	11.81	| Q				
1+ 5	0.8383	13.12	| Q				
1+10	0.9317	13.56	| Q				
1+15	1.0263	13.74	| Q				
1+20	1.1213	13.80	| QV				
1+25	1.2165	13.82	| QV				
1+30	1.3118	13.83	| QV				
1+35	1.4070	13.84	| Q V				
1+40	1.5023	13.84	| Q V				
1+45	1.5976	13.84	| Q V				
1+50	1.6929	13.84	| Q V				
1+55	1.7882	13.84	| Q V				
2+ 0	1.8857	14.17	| Q V				
2+ 5	1.9900	15.14	| Q V				
2+10	2.0906	14.60	| Q V				
2+15	2.1984	15.65	| Q V				



2+20	2.3084	15.97	
2+25	2.4193	16.11	
2+30	2.5306	16.16	
2+35	2.6420	16.17	
2+40	2.7534	16.18	
2+45	2.8672	16.52	
2+50	2.9899	17.82	
2+55	3.1157	18.26	
3+ 0	3.2426	18.44	
3+ 5	3.3700	18.50	
3+10	3.4998	18.85	
3+15	3.6387	20.17	
3+20	3.7807	20.61	
3+25	3.9261	21.12	
3+30	4.0832	22.81	
3+35	4.2548	24.91	
3+40	4.4397	26.85	
3+45	4.6315	27.85	
3+50	4.8341	29.42	
3+55	5.0427	30.28	
4+ 0	5.2617	31.80	
4+ 5	5.4866	32.65	
4+10	5.7241	34.49	
4+15	5.9764	36.64	
4+20	6.2444	38.91	
4+25	6.5284	41.24	
4+30	6.8262	43.24	
4+35	7.1312	44.28	
4+40	7.4493	46.20	
4+45	7.7824	48.37	
4+50	8.1290	50.33	
4+55	8.4827	51.35	
5+ 0	8.8494	53.25	
5+ 5	9.2401	56.74	
5+10	9.6917	65.57	
5+15	10.2120	75.54	
5+20	10.7879	83.61	
5+25	11.4196	91.72	
5+30	12.1323	103.49	
5+35	12.8632	106.12	
5+40	13.2737	59.61	
5+45	13.4898	31.38	
5+50	13.6060	16.88	
5+55	13.6738	9.84	
6+ 0	13.7103	5.29	
6+ 5	13.7366	3.83	
6+10	13.7454	1.28	
6+15	13.7487	0.48	
6+20	13.7499	0.17	
6+25	13.7503	0.06	
6+30	13.7505	0.02	
6+35	13.7505	0.01	

UNIT HYDROGRAPH
DMA B
PROPOSED CONDITIONS
100-YEAR 24-HOUR

U n i t H y d r o g r a p h A n a l y s i s

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Study date 10/21/14 File: BPROP24100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

14-0213 SHOPOFF
UNIT HYDROGRAPH
DMA B
PROPOSED CONDITIONS
100-YEAR 24-HOUR

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 60.70(Ac.) = 0.095 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 60.70(Ac.) = 0.095 Sq. Mi.
Length along longest watercourse = 3720.00(Ft.)
Length along longest watercourse measured to centroid = 2000.00(Ft.)
Length along longest watercourse = 0.705 Mi.
Length along longest watercourse measured to centroid = 0.379 Mi.
Difference in elevation = 105.00(Ft.)
Slope along watercourse = 149.0323 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.084 Hr.
Lag time = 5.05 Min.
25% of lag time = 1.26 Min.
40% of lag time = 2.02 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
60.70	2.60	157.82

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
60.70	7.00	424.90

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 2.600(In)
Area Averaged 100-Year Rainfall = 7.000(In)

Point rain (area averaged) = 7.000(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 6.999(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
60.700	64.00	0.900

Total Area Entered = 60.70(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
64.0	64.0	0.427	0.900	0.081	1.000	0.081
					Sum (F) =	0.081

Area averaged mean soil loss (F) (In/Hr) = 0.081
Minimum soil loss rate ((In/Hr)) = 0.041
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	98.956	14.050	8.595
2	0.167	197.913	55.616	34.023
3	0.250	296.869	18.626	11.395
4	0.333	395.825	7.557	4.623
5	0.417	494.782	2.573	1.574
6	0.500	593.738	0.862	0.528
7	0.583	692.694	0.569	0.348
8	0.667	791.651	0.146	0.090
			Sum = 100.000 Sum=	61.174

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.056	0.144	0.010	0.05
2	0.17	0.07	0.056	0.143	0.010	0.05
3	0.25	0.07	0.056	0.143	0.010	0.05
4	0.33	0.10	0.084	0.142	0.015	0.07
5	0.42	0.10	0.084	0.142	0.015	0.07
6	0.50	0.10	0.084	0.141	0.015	0.07
7	0.58	0.10	0.084	0.140	0.015	0.07
8	0.67	0.10	0.084	0.140	0.015	0.07
9	0.75	0.10	0.084	0.139	0.015	0.07
10	0.83	0.13	0.112	0.139	0.020	0.09
11	0.92	0.13	0.112	0.138	0.020	0.09
12	1.00	0.13	0.112	0.138	0.020	0.09
13	1.08	0.10	0.084	0.137	0.015	0.07
14	1.17	0.10	0.084	0.137	0.015	0.07
15	1.25	0.10	0.084	0.136	0.015	0.07
16	1.33	0.10	0.084	0.136	0.015	0.07
17	1.42	0.10	0.084	0.135	0.015	0.07
18	1.50	0.10	0.084	0.134	0.015	0.07
19	1.58	0.10	0.084	0.134	0.015	0.07
20	1.67	0.10	0.084	0.133	0.015	0.07
21	1.75	0.10	0.084	0.133	0.015	0.07
22	1.83	0.13	0.112	0.132	0.020	0.09
23	1.92	0.13	0.112	0.132	0.020	0.09
24	2.00	0.13	0.112	0.131	0.020	0.09
25	2.08	0.13	0.112	0.131	0.020	0.09
26	2.17	0.13	0.112	0.130	0.020	0.09
27	2.25	0.13	0.112	0.130	0.020	0.09
28	2.33	0.13	0.112	0.129	0.020	0.09
29	2.42	0.13	0.112	0.129	0.020	0.09
30	2.50	0.13	0.112	0.128	0.020	0.09
31	2.58	0.17	0.140	0.128	---	0.01
32	2.67	0.17	0.140	0.127	---	0.01
33	2.75	0.17	0.140	0.127	---	0.01
34	2.83	0.17	0.140	0.126	---	0.01
35	2.92	0.17	0.140	0.125	---	0.01
36	3.00	0.17	0.140	0.125	---	0.02
37	3.08	0.17	0.140	0.124	---	0.02
38	3.17	0.17	0.140	0.124	---	0.02
39	3.25	0.17	0.140	0.123	---	0.02
40	3.33	0.17	0.140	0.123	---	0.02
41	3.42	0.17	0.140	0.122	---	0.02
42	3.50	0.17	0.140	0.122	---	0.02
43	3.58	0.17	0.140	0.121	---	0.02

44	3.67	0.17	0.140	0.121	---	0.02
45	3.75	0.17	0.140	0.120	---	0.02
46	3.83	0.20	0.168	0.120	---	0.05
47	3.92	0.20	0.168	0.119	---	0.05
48	4.00	0.20	0.168	0.119	---	0.05
49	4.08	0.20	0.168	0.118	---	0.05
50	4.17	0.20	0.168	0.118	---	0.05
51	4.25	0.20	0.168	0.117	---	0.05
52	4.33	0.23	0.196	0.117	---	0.08
53	4.42	0.23	0.196	0.116	---	0.08
54	4.50	0.23	0.196	0.116	---	0.08
55	4.58	0.23	0.196	0.115	---	0.08
56	4.67	0.23	0.196	0.115	---	0.08
57	4.75	0.23	0.196	0.114	---	0.08
58	4.83	0.27	0.224	0.114	---	0.11
59	4.92	0.27	0.224	0.113	---	0.11
60	5.00	0.27	0.224	0.113	---	0.11
61	5.08	0.20	0.168	0.112	---	0.06
62	5.17	0.20	0.168	0.112	---	0.06
63	5.25	0.20	0.168	0.111	---	0.06
64	5.33	0.23	0.196	0.111	---	0.09
65	5.42	0.23	0.196	0.110	---	0.09
66	5.50	0.23	0.196	0.110	---	0.09
67	5.58	0.27	0.224	0.109	---	0.11
68	5.67	0.27	0.224	0.109	---	0.12
69	5.75	0.27	0.224	0.108	---	0.12
70	5.83	0.27	0.224	0.108	---	0.12
71	5.92	0.27	0.224	0.108	---	0.12
72	6.00	0.27	0.224	0.107	---	0.12
73	6.08	0.30	0.252	0.107	---	0.15
74	6.17	0.30	0.252	0.106	---	0.15
75	6.25	0.30	0.252	0.106	---	0.15
76	6.33	0.30	0.252	0.105	---	0.15
77	6.42	0.30	0.252	0.105	---	0.15
78	6.50	0.30	0.252	0.104	---	0.15
79	6.58	0.33	0.280	0.104	---	0.18
80	6.67	0.33	0.280	0.103	---	0.18
81	6.75	0.33	0.280	0.103	---	0.18
82	6.83	0.33	0.280	0.102	---	0.18
83	6.92	0.33	0.280	0.102	---	0.18
84	7.00	0.33	0.280	0.101	---	0.18
85	7.08	0.33	0.280	0.101	---	0.18
86	7.17	0.33	0.280	0.100	---	0.18
87	7.25	0.33	0.280	0.100	---	0.18
88	7.33	0.37	0.308	0.100	---	0.21
89	7.42	0.37	0.308	0.099	---	0.21
90	7.50	0.37	0.308	0.099	---	0.21
91	7.58	0.40	0.336	0.098	---	0.24
92	7.67	0.40	0.336	0.098	---	0.24
93	7.75	0.40	0.336	0.097	---	0.24
94	7.83	0.43	0.364	0.097	---	0.27
95	7.92	0.43	0.364	0.096	---	0.27
96	8.00	0.43	0.364	0.096	---	0.27
97	8.08	0.50	0.420	0.096	---	0.32
98	8.17	0.50	0.420	0.095	---	0.32
99	8.25	0.50	0.420	0.095	---	0.33
100	8.33	0.50	0.420	0.094	---	0.33
101	8.42	0.50	0.420	0.094	---	0.33
102	8.50	0.50	0.420	0.093	---	0.33
103	8.58	0.53	0.448	0.093	---	0.36
104	8.67	0.53	0.448	0.092	---	0.36
105	8.75	0.53	0.448	0.092	---	0.36
106	8.83	0.57	0.476	0.092	---	0.38
107	8.92	0.57	0.476	0.091	---	0.38
108	9.00	0.57	0.476	0.091	---	0.39
109	9.08	0.63	0.532	0.090	---	0.44
110	9.17	0.63	0.532	0.090	---	0.44
111	9.25	0.63	0.532	0.089	---	0.44
112	9.33	0.67	0.560	0.089	---	0.47
113	9.42	0.67	0.560	0.089	---	0.47
114	9.50	0.67	0.560	0.088	---	0.47
115	9.58	0.70	0.588	0.088	---	0.50
116	9.67	0.70	0.588	0.087	---	0.50
117	9.75	0.70	0.588	0.087	---	0.50
118	9.83	0.73	0.616	0.086	---	0.53

119	9.92	0.73	0.616	0.086	---	0.53
120	10.00	0.73	0.616	0.086	---	0.53
121	10.08	0.50	0.420	0.085	---	0.33
122	10.17	0.50	0.420	0.085	---	0.34
123	10.25	0.50	0.420	0.084	---	0.34
124	10.33	0.50	0.420	0.084	---	0.34
125	10.42	0.50	0.420	0.084	---	0.34
126	10.50	0.50	0.420	0.083	---	0.34
127	10.58	0.67	0.560	0.083	---	0.48
128	10.67	0.67	0.560	0.082	---	0.48
129	10.75	0.67	0.560	0.082	---	0.48
130	10.83	0.67	0.560	0.082	---	0.48
131	10.92	0.67	0.560	0.081	---	0.48
132	11.00	0.67	0.560	0.081	---	0.48
133	11.08	0.63	0.532	0.080	---	0.45
134	11.17	0.63	0.532	0.080	---	0.45
135	11.25	0.63	0.532	0.080	---	0.45
136	11.33	0.63	0.532	0.079	---	0.45
137	11.42	0.63	0.532	0.079	---	0.45
138	11.50	0.63	0.532	0.078	---	0.45
139	11.58	0.57	0.476	0.078	---	0.40
140	11.67	0.57	0.476	0.078	---	0.40
141	11.75	0.57	0.476	0.077	---	0.40
142	11.83	0.60	0.504	0.077	---	0.43
143	11.92	0.60	0.504	0.076	---	0.43
144	12.00	0.60	0.504	0.076	---	0.43
145	12.08	0.83	0.700	0.076	---	0.62
146	12.17	0.83	0.700	0.075	---	0.62
147	12.25	0.83	0.700	0.075	---	0.62
148	12.33	0.87	0.728	0.075	---	0.65
149	12.42	0.87	0.728	0.074	---	0.65
150	12.50	0.87	0.728	0.074	---	0.65
151	12.58	0.93	0.784	0.073	---	0.71
152	12.67	0.93	0.784	0.073	---	0.71
153	12.75	0.93	0.784	0.073	---	0.71
154	12.83	0.97	0.812	0.072	---	0.74
155	12.92	0.97	0.812	0.072	---	0.74
156	13.00	0.97	0.812	0.072	---	0.74
157	13.08	1.13	0.952	0.071	---	0.88
158	13.17	1.13	0.952	0.071	---	0.88
159	13.25	1.13	0.952	0.071	---	0.88
160	13.33	1.13	0.952	0.070	---	0.88
161	13.42	1.13	0.952	0.070	---	0.88
162	13.50	1.13	0.952	0.069	---	0.88
163	13.58	0.77	0.644	0.069	---	0.57
164	13.67	0.77	0.644	0.069	---	0.58
165	13.75	0.77	0.644	0.068	---	0.58
166	13.83	0.77	0.644	0.068	---	0.58
167	13.92	0.77	0.644	0.068	---	0.58
168	14.00	0.77	0.644	0.067	---	0.58
169	14.08	0.90	0.756	0.067	---	0.69
170	14.17	0.90	0.756	0.067	---	0.69
171	14.25	0.90	0.756	0.066	---	0.69
172	14.33	0.87	0.728	0.066	---	0.66
173	14.42	0.87	0.728	0.066	---	0.66
174	14.50	0.87	0.728	0.065	---	0.66
175	14.58	0.87	0.728	0.065	---	0.66
176	14.67	0.87	0.728	0.065	---	0.66
177	14.75	0.87	0.728	0.064	---	0.66
178	14.83	0.83	0.700	0.064	---	0.64
179	14.92	0.83	0.700	0.064	---	0.64
180	15.00	0.83	0.700	0.063	---	0.64
181	15.08	0.80	0.672	0.063	---	0.61
182	15.17	0.80	0.672	0.063	---	0.61
183	15.25	0.80	0.672	0.062	---	0.61
184	15.33	0.77	0.644	0.062	---	0.58
185	15.42	0.77	0.644	0.062	---	0.58
186	15.50	0.77	0.644	0.061	---	0.58
187	15.58	0.63	0.532	0.061	---	0.47
188	15.67	0.63	0.532	0.061	---	0.47
189	15.75	0.63	0.532	0.060	---	0.47
190	15.83	0.63	0.532	0.060	---	0.47
191	15.92	0.63	0.532	0.060	---	0.47
192	16.00	0.63	0.532	0.060	---	0.47
193	16.08	0.13	0.112	0.059	---	0.05

194	16.17	0.13	0.112	0.059	---	0.05
195	16.25	0.13	0.112	0.059	---	0.05
196	16.33	0.13	0.112	0.058	---	0.05
197	16.42	0.13	0.112	0.058	---	0.05
198	16.50	0.13	0.112	0.058	---	0.05
199	16.58	0.10	0.084	0.057	---	0.03
200	16.67	0.10	0.084	0.057	---	0.03
201	16.75	0.10	0.084	0.057	---	0.03
202	16.83	0.10	0.084	0.057	---	0.03
203	16.92	0.10	0.084	0.056	---	0.03
204	17.00	0.10	0.084	0.056	---	0.03
205	17.08	0.17	0.140	0.056	---	0.08
206	17.17	0.17	0.140	0.055	---	0.08
207	17.25	0.17	0.140	0.055	---	0.08
208	17.33	0.17	0.140	0.055	---	0.09
209	17.42	0.17	0.140	0.055	---	0.09
210	17.50	0.17	0.140	0.054	---	0.09
211	17.58	0.17	0.140	0.054	---	0.09
212	17.67	0.17	0.140	0.054	---	0.09
213	17.75	0.17	0.140	0.054	---	0.09
214	17.83	0.13	0.112	0.053	---	0.06
215	17.92	0.13	0.112	0.053	---	0.06
216	18.00	0.13	0.112	0.053	---	0.06
217	18.08	0.13	0.112	0.052	---	0.06
218	18.17	0.13	0.112	0.052	---	0.06
219	18.25	0.13	0.112	0.052	---	0.06
220	18.33	0.13	0.112	0.052	---	0.06
221	18.42	0.13	0.112	0.051	---	0.06
222	18.50	0.13	0.112	0.051	---	0.06
223	18.58	0.10	0.084	0.051	---	0.03
224	18.67	0.10	0.084	0.051	---	0.03
225	18.75	0.10	0.084	0.050	---	0.03
226	18.83	0.07	0.056	0.050	---	0.01
227	18.92	0.07	0.056	0.050	---	0.01
228	19.00	0.07	0.056	0.050	---	0.01
229	19.08	0.10	0.084	0.050	---	0.03
230	19.17	0.10	0.084	0.049	---	0.03
231	19.25	0.10	0.084	0.049	---	0.03
232	19.33	0.13	0.112	0.049	---	0.06
233	19.42	0.13	0.112	0.049	---	0.06
234	19.50	0.13	0.112	0.048	---	0.06
235	19.58	0.10	0.084	0.048	---	0.04
236	19.67	0.10	0.084	0.048	---	0.04
237	19.75	0.10	0.084	0.048	---	0.04
238	19.83	0.07	0.056	0.048	---	0.01
239	19.92	0.07	0.056	0.047	---	0.01
240	20.00	0.07	0.056	0.047	---	0.01
241	20.08	0.10	0.084	0.047	---	0.04
242	20.17	0.10	0.084	0.047	---	0.04
243	20.25	0.10	0.084	0.046	---	0.04
244	20.33	0.10	0.084	0.046	---	0.04
245	20.42	0.10	0.084	0.046	---	0.04
246	20.50	0.10	0.084	0.046	---	0.04
247	20.58	0.10	0.084	0.046	---	0.04
248	20.67	0.10	0.084	0.045	---	0.04
249	20.75	0.10	0.084	0.045	---	0.04
250	20.83	0.07	0.056	0.045	---	0.01
251	20.92	0.07	0.056	0.045	---	0.01
252	21.00	0.07	0.056	0.045	---	0.01
253	21.08	0.10	0.084	0.045	---	0.04
254	21.17	0.10	0.084	0.044	---	0.04
255	21.25	0.10	0.084	0.044	---	0.04
256	21.33	0.07	0.056	0.044	---	0.01
257	21.42	0.07	0.056	0.044	---	0.01
258	21.50	0.07	0.056	0.044	---	0.01
259	21.58	0.10	0.084	0.044	---	0.04
260	21.67	0.10	0.084	0.043	---	0.04
261	21.75	0.10	0.084	0.043	---	0.04
262	21.83	0.07	0.056	0.043	---	0.01
263	21.92	0.07	0.056	0.043	---	0.01
264	22.00	0.07	0.056	0.043	---	0.01
265	22.08	0.10	0.084	0.043	---	0.04
266	22.17	0.10	0.084	0.043	---	0.04
267	22.25	0.10	0.084	0.042	---	0.04
268	22.33	0.07	0.056	0.042	---	0.01

269	22.42	0.07	0.056	0.042	---	0.01
270	22.50	0.07	0.056	0.042	---	0.01
271	22.58	0.07	0.056	0.042	---	0.01
272	22.67	0.07	0.056	0.042	---	0.01
273	22.75	0.07	0.056	0.042	---	0.01
274	22.83	0.07	0.056	0.042	---	0.01
275	22.92	0.07	0.056	0.041	---	0.01
276	23.00	0.07	0.056	0.041	---	0.01
277	23.08	0.07	0.056	0.041	---	0.01
278	23.17	0.07	0.056	0.041	---	0.01
279	23.25	0.07	0.056	0.041	---	0.01
280	23.33	0.07	0.056	0.041	---	0.02
281	23.42	0.07	0.056	0.041	---	0.02
282	23.50	0.07	0.056	0.041	---	0.02
283	23.58	0.07	0.056	0.041	---	0.02
284	23.67	0.07	0.056	0.041	---	0.02
285	23.75	0.07	0.056	0.041	---	0.02
286	23.83	0.07	0.056	0.041	---	0.02
287	23.92	0.07	0.056	0.041	---	0.02
288	24.00	0.07	0.056	0.041	---	0.02
Sum =		100.0			Sum =	64.2

Flood volume = Effective rainfall 5.35(In)
times area 60.7(Ac.)/[(In)/(Ft.)] = 27.1(Ac.Ft)
Total soil loss = 1.65(In)
Total soil loss = 8.342(Ac.Ft)
Total rainfall = 7.00(In)
Flood volume = 1178847.4 Cubic Feet
Total soil loss = 363356.7 Cubic Feet

Peak flow rate of this hydrograph = 53.919(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	15.0	30.0	45.0	60.0
0+ 5	0.0027	0.39	Q	|	|	|	|
0+10	0.0162	1.96	VQ	|	|	|	|
0+15	0.0333	2.48	VQ	|	|	|	|
0+20	0.0532	2.89	VQ	|	|	|	|
0+25	0.0790	3.74	V Q	|	|	|	|
0+30	0.1068	4.03	V Q	|	|	|	|
0+35	0.1354	4.15	V Q	|	|	|	|
0+40	0.1642	4.19	V Q	|	|	|	|
0+45	0.1932	4.21	V Q	|	|	|	|
0+50	0.2236	4.41	V Q	|	|	|	|
0+55	0.2593	5.19	V Q	|	|	|	|
1+ 0	0.2969	5.46	V Q	|	|	|	|
1+ 5	0.3339	5.36	V Q	|	|	|	|
1+10	0.3657	4.62	V Q	|	|	|	|
1+15	0.3958	4.37	V Q	|	|	|	|
1+20	0.4252	4.27	V Q	|	|	|	|
1+25	0.4544	4.24	V Q	|	|	|	|
1+30	0.4835	4.23	V Q	|	|	|	|
1+35	0.5125	4.22	V Q	|	|	|	|
1+40	0.5416	4.22	V Q	|	|	|	|
1+45	0.5706	4.22	V Q	|	|	|	|
1+50	0.6010	4.41	V Q	|	|	|	|
1+55	0.6368	5.19	V Q	|	|	|	|
2+ 0	0.6743	5.46	V Q	|	|	|	|
2+ 5	0.7126	5.56	|V Q	|	|	|	|
2+10	0.7512	5.60	|V Q	|	|	|	|
2+15	0.7898	5.61	|V Q	|	|	|	|
2+20	0.8285	5.62	|V Q	|	|	|	|
2+25	0.8672	5.62	|V Q	|	|	|	|
2+30	0.9059	5.62	|V Q	|	|	|	|
2+35	0.9399	4.94	|V Q	|	|	|	|
2+40	0.9554	2.24	|Q	|	|	|	|
2+45	0.9647	1.36	QV	|	|	|	|
2+50	0.9717	1.02	QV	|	|	|	|
2+55	0.9781	0.92	QV	|	|	|	|

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3+ 0       0.9844      0.91  QV        |         |         |         |
3+ 5       0.9907      0.92  QV        |         |         |         |
3+10       0.9972      0.94  QV        |         |         |         |
3+15       1.0039      0.97  QV        |         |         |         |
3+20       1.0108      1.00  QV        |         |         |         |
3+25       1.0179      1.04  QV        |         |         |         |
3+30       1.0253      1.07  QV        |         |         |         |
3+35       1.0328      1.10  QV        |         |         |         |
3+40       1.0406      1.13  QV        |         |         |         |
3+45       1.0486      1.16  QV        |         |         |         |
3+50       1.0585      1.43  QV        |         |         |         |
3+55       1.0751      2.42  |Q        |         |         |         |
4+ 0       1.0942      2.77  |Q        |         |         |         |
4+ 5       1.1144      2.93  |Q        |         |         |         |
4+10       1.1350      3.00  |VQ       |         |         |         |
4+15       1.1560      3.05  |VQ       |         |         |         |
4+20       1.1790      3.33  |VQ       |         |         |         |
4+25       1.2087      4.32  |VQ       |         |         |         |
4+30       1.2408      4.67  |V Q      |         |         |         |
4+35       1.2740      4.83  |V Q      |         |         |         |
4+40       1.3078      4.90  |V Q      |         |         |         |
4+45       1.3418      4.95  |V Q      |         |         |         |
4+50       1.3778      5.23  | VQ      |         |         |         |
4+55       1.4206      6.21  | V Q     |         |         |         |
5+ 0       1.4658      6.56  | V Q     |         |         |         |
5+ 5       1.5088      6.24  | V Q     |         |         |         |
5+10       1.5391      4.41  | Q       |         |         |         |
5+15       1.5654      3.81  | Q       |         |         |         |
5+20       1.5918      3.83  | Q       |         |         |         |
5+25       1.6244      4.73  | VQ      |         |         |         |
5+30       1.6592      5.05  | VQ      |         |         |         |
5+35       1.6966      5.43  | VQ      |         |         |         |
5+40       1.7410      6.45  | V Q     |         |         |         |
5+45       1.7880      6.82  | V Q     |         |         |         |
5+50       1.8361      6.99  | V Q     |         |         |         |
5+55       1.8847      7.06  | V Q     |         |         |         |
6+ 0       1.9337      7.11  | V Q     |         |         |         |
6+ 5       1.9845      7.39  | V Q     |         |         |         |
6+10       2.0422      8.37  |  V Q    |         |         |         |
6+15       2.1022      8.72  |  V Q    |         |         |         |
6+20       2.1633      8.88  |  V Q    |         |         |         |
6+25       2.2250      8.95  |  V Q    |         |         |         |
6+30       2.2869      8.99  |  V Q    |         |         |         |
6+35       2.3508      9.27  |  V  Q   |         |         |         |
6+40       2.4214     10.26  |  V  Q   |         |         |         |
6+45       2.4944     10.60  |  V   Q  |         |         |         |
6+50       2.5686     10.76  |  V   Q  |         |         |         |
6+55       2.6432     10.83  |  V   Q  |         |         |         |
7+ 0       2.7181     10.88  |   V  Q  |         |         |         |
7+ 5       2.7933     10.92  |   V  Q  |         |         |         |
7+10       2.8687     10.95  |   V  Q  |         |         |         |
7+15       2.9442     10.97  |   V  Q  |         |         |         |
7+20       3.0217     11.24  |   V  Q  |         |         |         |
7+25       3.1059     12.22  |   V   Q |         |         |         |
7+30       3.1925     12.57  |   V   Q |         |         |         |
7+35       3.2818     12.97  |   V   Q |         |         |         |
7+40       3.3782     13.99  |   V    Q|         |         |         |
7+45       3.4770     14.36  |    V   Q|         |         |         |
7+50       3.5787     14.76  |    V   Q|         |         |         |
7+55       3.6875     15.79  |    V    Q         |         |         |
8+ 0       3.7987     16.15  |    V    Q         |         |         |
8+ 5       3.9144     16.80  |    V    |Q        |         |         |
8+10       4.0438     18.78  |    V    | Q       |         |         |
8+15       4.1778     19.46  |     V   | Q       |         |         |
8+20       4.3139     19.76  |     V   |  Q      |         |         |
8+25       4.4507     19.87  |     V   |  Q      |         |         |
8+30       4.5880     19.93  |     V   |  Q      |         |         |
8+35       4.7273     20.22  |     V   |  Q      |         |         |
8+40       4.8733     21.20  |      V  |   Q     |         |         |
8+45       5.0217     21.55  |      V  |   Q     |         |         |
8+50       5.1728     21.95  |      V  |   Q     |         |         |
8+55       5.3310     22.97  |      V  |    Q    |         |         |
9+ 0       5.4917     23.33  |       V |    Q    |         |         |
9+ 5       5.6568     23.98  |       V |    Q    |         |         |
9+10       5.8356     25.96  |       V |      Q  |         |         |
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9+15	6.0191	26.64	|	V |	Q |	|	|
9+20	6.2062	27.17	|	V|	Q |	|	|
9+25	6.4007	28.24	|	V|	Q |	|	|
9+30	6.5978	28.62	|	V|	Q|	|	|
9+35	6.7977	29.03	|	V	Q|	|	|
9+40	7.0047	30.06	|	V	Q	|	|
9+45	7.2142	30.42	|	V	Q	|	|
9+50	7.4265	30.83	|	V	Q	|	|
9+55	7.6459	31.85	|	|V	|Q	|	|
10+ 0	7.8677	32.21	|	|V	|Q	|	|
10+ 5	8.0791	30.69	|	|V	Q	|	|
10+10	8.2450	24.09	|	| V Q	|	|	|
10+15	8.3958	21.90	|	| V Q	|	|	|
10+20	8.5406	21.02	|	| V Q	|	|	|
10+25	8.6834	20.74	|	| VQ	|	|	|
10+30	8.8258	20.67	|	| Q	|	|	|
10+35	8.9761	21.83	|	| VQ	|	|	|
10+40	9.1593	26.60	|	| V Q	|	|	|
10+45	9.3536	28.22	|	| V Q	|	|	|
10+50	9.5526	28.89	|	| V Q|	|	|	|
10+55	9.7532	29.14	|	| V Q|	|	|	|
11+ 0	9.9546	29.23	|	| V Q|	|	|	|
11+ 5	10.1548	29.07	|	| V Q|	|	|	|
11+10	10.3486	28.15	|	| V Q |	|	|	|
11+15	10.5405	27.86	|	| V Q |	|	|	|
11+20	10.7316	27.75	|	| V Q |	|	|	|
11+25	10.9226	27.73	|	| V Q |	|	|	|
11+30	11.1136	27.74	|	| V Q |	|	|	|
11+35	11.3014	27.27	|	| V Q |	|	|	|
11+40	11.4763	25.39	|	| Q |	|	|	|
11+45	11.6469	24.77	|	| QV |	|	|	|
11+50	11.8176	24.78	|	| QV |	|	|	|
11+55	11.9943	25.67	|	| Q |	|	|	|
12+ 0	12.1733	25.98	|	| Q |	|	|	|
12+ 5	12.3647	27.80	|	| Q |	|	|	|
12+10	12.6025	34.53	|	| V |	Q |	|	|
12+15	12.8560	36.80	|	| V|	Q |	|	|
12+20	13.1176	37.98	|	| V|	Q |	|	|
12+25	13.3881	39.27	|	| V|	Q |	|	|
12+30	13.6616	39.72	|	| V	Q |	|	|
12+35	13.9400	40.42	|	| V	Q |	|	|
12+40	14.2321	42.41	|	| |V	Q |	|	|
12+45	14.5288	43.09	|	| |V	Q |	|	|
12+50	14.8292	43.62	|	| |V	Q|	|	|
12+55	15.1369	44.68	|	| | V	Q|	|	|
13+ 0	15.4472	45.06	|	| | V	Q |	|	|
13+ 5	15.7670	46.43	|	| | V	Q |	|	|
13+10	16.1201	51.27	|	| | V	|	Q |	|
13+15	16.4844	52.90	|	| | V	|	Q |	|
13+20	16.8534	53.58	|	| | V	|	Q |	|
13+25	17.2241	53.82	|	| | V	|	Q |	|
13+30	17.5954	53.92	|	| | V	|	Q |	|
13+35	17.9490	51.34	|	| | V	|	Q |	|
13+40	18.2306	40.89	|	| | VQ	|	|	|
13+45	18.4882	37.40	|	| | Q V	|	|	|
13+50	18.7362	36.00	|	| | Q V	|	|	|
13+55	18.9809	35.54	|	| | Q V |	|	|	|
14+ 0	19.2247	35.40	|	| | Q V |	|	|	|
14+ 5	19.4745	36.27	|	| | Q V |	|	|	|
14+10	19.7505	40.08	|	| | Q V|	|	|	|
14+15	20.0355	41.38	|	| | Q V|	|	|	|
14+20	20.3225	41.67	|	| | Q V	|	|	|
14+25	20.6043	40.92	|	| | Q V	|	|	|
14+30	20.8844	40.68	|	| | Q V	|	|	|
14+35	21.1641	40.61	|	| | Q |V	|	|	|
14+40	21.4437	40.60	|	| | Q |V	|	|	|
14+45	21.7233	40.60	|	| | Q | V	|	|	|
14+50	22.0013	40.37	|	| | Q | V	|	|	|
14+55	22.2729	39.44	|	| | Q | V	|	|	|
15+ 0	22.5425	39.14	|	| | Q | V	|	|	|
15+ 5	22.8096	38.79	|	| | Q | V	|	|	|
15+10	23.0700	37.81	|	| | Q | V	|	|	|
15+15	23.3282	37.49	|	| | Q | V	|	|	|
15+20	23.5840	37.13	|	| | Q | V	|	|	|
15+25	23.8329	36.15	|	| | Q | V	|	|	|

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15+30      24.0798     35.84  |          |          |  Q       |    V     |
15+35      24.3192     34.76  |          |          |  Q       |    V     |
15+40      24.5321     30.92  |          |          Q          |     V    |
15+45      24.7363     29.65  |          |         Q|          |     V    |
15+50      24.9369     29.14  |          |         Q|          |     V    |
15+55      25.1365     28.98  |          |         Q|          |      V   |
16+ 0      25.3358     28.94  |          |         Q|          |      V   |
16+ 5      25.5100     25.31  |          |      Q   |          |      V   |
16+10      25.5859     11.02  |          Q          |          |      V   |
16+15      25.6290      6.25  |    Q     |          |          |      V   |
16+20      25.6588      4.33  |  Q       |          |          |      V   |
16+25      25.6841      3.68  |  Q       |          |          |      V   |
16+30      25.7081      3.48  |  Q       |          |          |      V   |
16+35      25.7295      3.11  |  Q       |          |          |       V  |
16+40      25.7442      2.14  |Q         |          |          |       V  |
16+45      25.7569      1.84  |Q         |          |          |       V  |
16+50      25.7688      1.72  |Q         |          |          |       V  |
16+55      25.7804      1.70  |Q         |          |          |       V  |
17+ 0      25.7922      1.70  |Q         |          |          |       V  |
17+ 5      25.8072      2.19  |Q         |          |          |       V  |
17+10      25.8356      4.11  |  Q       |          |          |       V  |
17+15      25.8684      4.77  |   Q      |          |          |       V  |
17+20      25.9031      5.04  |   Q      |          |          |       V  |
17+25      25.9386      5.15  |   Q      |          |          |       V  |
17+30      25.9743      5.19  |   Q      |          |          |       V  |
17+35      26.0104      5.23  |   Q      |          |          |       V  |
17+40      26.0465      5.25  |   Q      |          |          |       V  |
17+45      26.0828      5.27  |   Q      |          |          |       V  |
17+50      26.1176      5.04  |   Q      |          |          |       V  |
17+55      26.1459      4.11  |  Q       |          |          |       V  |
18+ 0      26.1721      3.80  |  Q       |          |          |       V  |
18+ 5      26.1975      3.69  |  Q       |          |          |       V  |
18+10      26.2227      3.66  |  Q       |          |          |       V  |
18+15      26.2480      3.66  |  Q       |          |          |       V  |
18+20      26.2732      3.67  |  Q       |          |          |       V  |
18+25      26.2986      3.68  |  Q       |          |          |       V  |
18+30      26.3241      3.70  |  Q       |          |          |       V  |
18+35      26.3480      3.47  |  Q       |          |          |       V  |
18+40      26.3655      2.54  |Q         |          |          |       V  |
18+45      26.3808      2.23  |Q         |          |          |       V  |
18+50      26.3938      1.88  |Q         |          |          |        V |
18+55      26.3999      0.89  Q          |          |          |        V |
19+ 0      26.4039      0.57  Q          |          |          |        V |
19+ 5      26.4086      0.69  Q          |          |          |        V |
19+10      26.4197      1.61  |Q         |          |          |        V |
19+15      26.4330      1.93  |Q         |          |          |        V |
19+20      26.4489      2.30  |Q         |          |          |        V |
19+25      26.4717      3.31  |  Q       |          |          |        V |
19+30      26.4969      3.66  |  Q       |          |          |        V |
19+35      26.5215      3.57  |  Q       |          |          |        V |
19+40      26.5400      2.68  |Q         |          |          |        V |
19+45      26.5565      2.39  |Q         |          |          |        V |
19+50      26.5705      2.04  |Q         |          |          |        V |
19+55      26.5778      1.06  Q          |          |          |        V |
20+ 0      26.5829      0.74  Q          |          |          |        V |
20+ 5      26.5888      0.85  Q          |          |          |        V |
20+10      26.6010      1.77  |Q         |          |          |        V |
20+15      26.6154      2.09  |Q         |          |          |        V |
20+20      26.6308      2.22  |Q         |          |          |        V |
20+25      26.6464      2.28  |Q         |          |          |        V |
20+30      26.6623      2.30  |Q         |          |          |        V |
20+35      26.6783      2.33  |Q         |          |          |        V |
20+40      26.6944      2.34  |Q         |          |          |        V |
20+45      26.7106      2.35  |Q         |          |          |        V |
20+50      26.7253      2.12  |Q         |          |          |        V |
20+55      26.7334      1.18  Q          |          |          |        V |
21+ 0      26.7394      0.87  Q          |          |          |        V |
21+ 5      26.7463      1.00  Q          |          |          |        V |
21+10      26.7595      1.92  |Q         |          |          |        V |
21+15      26.7748      2.23  |Q         |          |          |        V |
21+20      26.7894      2.12  |Q         |          |          |        V |
21+25      26.7978      1.22  Q          |          |          |        V |
21+30      26.8042      0.93  Q          |          |          |        V |
21+35      26.8115      1.06  Q          |          |          |        V |
21+40      26.8251      1.98  |Q         |          |          |        V |
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  21+45      26.8409      2.29  |Q        |         |         |        V|
  21+50      26.8559      2.18  |Q        |         |         |        V|
  21+55      26.8647      1.28  Q         |         |         |        V|
  22+ 0      26.8715      0.98  Q         |         |         |        V|
  22+ 5      26.8791      1.11  Q         |         |         |        V|
  22+10      26.8931      2.03  |Q        |         |         |        V|
  22+15      26.9093      2.35  |Q        |         |         |        V|
  22+20      26.9247      2.23  |Q        |         |         |        V|
  22+25      26.9338      1.33  Q         |         |         |        V|
  22+30      26.9409      1.03  Q         |         |         |        V|
  22+35      26.9473      0.92  Q         |         |         |        V|
  22+40      26.9534      0.89  Q         |         |         |        V|
  22+45      26.9595      0.88  Q         |         |         |        V|
  22+50      26.9655      0.88  Q         |         |         |        V|
  22+55      26.9716      0.88  Q         |         |         |        V|
  23+ 0      26.9777      0.89  Q         |         |         |        V|
  23+ 5      26.9838      0.89  Q         |         |         |        V|
  23+10      26.9900      0.90  Q         |         |         |        V|
  23+15      26.9963      0.91  Q         |         |         |        V|
  23+20      27.0026      0.91  Q         |         |         |        V|
  23+25      27.0089      0.92  Q         |         |         |        V|
  23+30      27.0152      0.92  Q         |         |         |        V|
  23+35      27.0216      0.93  Q         |         |         |        V|
  23+40      27.0280      0.93  Q         |         |         |        V|
  23+45      27.0344      0.93  Q         |         |         |        V|
  23+50      27.0409      0.94  Q         |         |         |        V|
  23+55      27.0474      0.94  Q         |         |         |        V|
  24+ 0      27.0539      0.94  Q         |         |         |        V|
  24+ 5      27.0595      0.81  Q         |         |         |        V|
  24+10      27.0614      0.29  Q         |         |         |        V|
  24+15      27.0622      0.11  Q         |         |         |        V|
  24+20      27.0625      0.04  Q         |         |         |        V|
  24+25      27.0626      0.01  Q         |         |         |        V|
  24+30      27.0626      0.01  Q         |         |         |        V|
  24+35      27.0626      0.00  Q         |         |         |         V
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Appendix D – Basin Routing

DMA A – Basin Routing Calculations Summary

DMA A – Basin Routing

DMA B – Basin Routing Calculations Summary

DMA B – Basin Routing

BASIN ROUTING
DMA A
CALCULATIONS

Basin Routing
14-0213 Shopoff
DMA A

Basin Information	Extended Detention	
Vbmp:	94,432	CF
	2.168	AC-FT
Bottom Elevation:	2423.1	FT
Bottom Length:	1020	FT
Bottom Width:	40	FT
Bottom Area:	37470	SF
Bottom Slope:	1	%
Side Slope:	3	:1
D85:	0.79	IN

Vbmp		2-Year Orifice		10-Year Orifice		100-YR /Outlet Box Weir	
		Q 2-YR 24-HR	4.3	Q 100-YR 24-HR	22.6	Q 100-Yr 24-HR	
Opening (IN)	2.5	Opening (IN)	5.5	Opening (IN)	8		
Opening (FT)	0.208	Opening (FT)	0.458	Opening (FT)	0.667	3'x4' Box	
AREA (SF)	0.034	AREA (SF)	0.165	AREA (SF)	0.349	L (FT)	10
# of Orifices	2	# of Orifices	4	# of Orifices	8		
Total Area (SF)	0.068	Total Area (SF)	0.660	Total Area (SF)	2.793		
G (FT/s^2)	32.2	G (FT/s^2)	32.2	G (FT/s^2)	32.2		
Cd	0.66	Cd	0.66	Cd	0.66	C	2.7
Invert H (FT)	0	Invert H (FT)	3.4	Invert H (FT)	4.4	Weir H (FT)	5.2

#	Elevation (FT)	Area (SF)	Depth (FT)	Storage (AC-FT)	h (FT)	Q (CFS)	h (FT)	Q (CFS)	h (FT)	Q (CFS)	h (FT)	Q (CFS)	Qtotal (CFS)
1	2423.1	200	0	0.000		0.000		0.000		0.000		0.000	0.000
2	2,423.20	447.29	0.1	0.001		0.000		0.000		0.000		0.000	0.000
3	2,424.10	15,816.36	1	0.163	0.90	0.342		0.000		0.000		0.000	0.342
4	2,425.10	35,041.10	2	0.741	1.90	0.497		0.000		0.000		0.000	0.497
5	2,426.10	49,627.79	3	1.753	2.90	0.614		0.000		0.000		0.000	0.614
6	***2,426.50***	***52,620.63***	***3.4***	***2.222***	***3.30***	***0.656***		***0.000***		***0.000***		***0.000***	***0.656***
7	2,427.10	57,152.62	4	2.978	3.90	0.713	0.37	2.129		0.000		0.000	2.841
8	***2,427.50***	***60,202.43***	***4.4***	***3.517***	***4.30***	***0.748***	***0.77***	***3.069***		***0.000***		***0.000***	***3.817***
9	2,428.10	64,819.87	5	4.378	4.90	0.799	1.37	4.093	0.27	7.638		0.000	12.529
10	***2,428.30***	***66,370.41***	***5.2***	***4.679***	***5.10***	***0.815***	***1.57***	***4.381***	***0.47***	***10.104***	***0.00***	***0.000***	***15.300***
11	2,428.60	68,706.90	5.5	5.144	5.40	0.839	1.87	4.781	0.77	12.951	0.30	4.437	23.007
12	2,429.10	72,629.54	6	5.955	5.90	0.877	2.37	5.382	1.27	16.646	0.80	19.320	42.225
13	2,429.60	76,587.78	6.5	6.811	6.40	0.913	2.87	5.922	1.77	19.659	1.30	40.020	66.515
14	2,430.10	80,581.62	7	7.713	6.90	0.948	3.37	6.418	2.27	22.268	1.80	65.204	94.837
15	2,430.60	84,611.07	7.5	8.662	7.40	0.982	3.87	6.877	2.77	24.602	2.30	94.179	126.640
16	2,431.10	88,676.12	8	9.656	7.90	1.015	4.37	7.308	3.27	26.732	2.80	126.503	161.558
17	2,431.60	92,776.78	8.5	10.697	8.40	1.046	4.87	7.714	3.77	28.705	3.30	161.858	199.324
18	2,432.10	96,913.04	9	11.786	8.90	1.077	5.37	8.101	4.27	30.551	3.80	200.004	239.733
19	2,432.60	101,084.91	9.5	12.922	9.40	1.107	5.87	8.469	4.77	32.292	4.30	240.750	282.618

BASIN ROUTING
DMA A
PROPOSED CONDITIONS
2-YEAR 24-HOUR

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2005
Study date: 10/22/14

14-0213 SHOPOFF
BASIN ROUTING
DMA A
2-YEAR 24-HOUR

Program License Serial Number 4010

******************** HYDROGRAPH INFORMATION **********************

From study/file name: APROP242.rte
****************************HYDROGRAPH DATA****************************
Number of intervals = 294
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 10.780 (CFS)
Total volume = 5.510 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 294
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.100	0.003	0.001	0.003	0.003
1.000	0.163	0.342	0.162	0.164
2.000	0.741	0.497	0.739	0.743
3.000	1.753	0.614	1.751	1.755
3.400	2.222	0.656	2.220	2.224
4.000	2.978	2.841	2.968	2.988
4.400	3.517	3.817	3.504	3.530
5.000	4.378	12.529	4.335	4.421
5.200	4.679	15.300	4.626	4.732
5.500	5.144	23.007	5.065	5.223
6.000	5.955	42.225	5.810	6.100
6.500	6.811	66.515	6.582	7.040
7.000	7.713	94.837	7.386	8.040
7.500	8.662	126.640	8.226	9.098
8.000	9.656	161.558	9.100	10.212
8.500	10.697	199.324	10.011	11.383
9.000	11.786	239.733	10.960	12.612
9.500	12.922	282.618	11.949	13.895

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	2.7	5.39	8.08	10.78	Depth (Ft.)
0.083	0.13	0.00	0.000	O	|	|	|	|	0.02
0.167	0.55	0.00	0.003	OI	|	|	|	|	0.09
0.250	0.68	0.01	0.007	O I	|	|	|	|	0.12
0.333	0.79	0.02	0.012	O I	|	|	|	|	0.15
0.417	1.01	0.03	0.018	O I	|	|	|	|	0.18
0.500	1.08	0.05	0.025	O I	|	|	|	|	0.22
0.583	1.11	0.06	0.032	O I	|	|	|	|	0.26
0.667	1.11	0.08	0.039	O I	|	|	|	|	0.30
0.750	1.12	0.09	0.046	O I	|	|	|	|	0.34
0.833	1.18	0.11	0.054	O I	|	|	|	|	0.38
0.917	1.39	0.13	0.062	O I	|	|	|	|	0.43
1.000	1.46	0.14	0.070	O I	|	|	|	|	0.48
1.083	1.41	0.16	0.079	O I	|	|	|	|	0.53
1.167	1.21	0.18	0.087	O I	|	|	|	|	0.57
1.250	1.15	0.19	0.094	O I	|	|	|	|	0.61
1.333	1.13	0.21	0.100	O I	|	|	|	|	0.65
1.417	1.12	0.22	0.107	O I	|	|	|	|	0.68
1.500	1.12	0.24	0.113	O I	|	|	|	|	0.72
1.583	1.12	0.25	0.119	O I	|	|	|	|	0.75
1.667	1.12	0.26	0.125	O I	|	|	|	|	0.78
1.750	1.12	0.27	0.131	O I	|	|	|	|	0.82
1.833	1.18	0.29	0.137	O I	|	|	|	|	0.85
1.917	1.39	0.30	0.143	O I	|	|	|	|	0.89
2.000	1.46	0.32	0.151	O I	|	|	|	|	0.93
2.083	1.48	0.33	0.159	O I	|	|	|	|	0.98
2.167	1.49	0.34	0.167	|O I	|	|	|	|	1.01
2.250	1.49	0.35	0.175	|O I	|	|	|	|	1.02
2.333	1.49	0.35	0.183	|O I	|	|	|	|	1.03
2.417	1.49	0.35	0.190	|O I	|	|	|	|	1.05
2.500	1.49	0.35	0.198	|O I	|	|	|	|	1.06
2.583	1.56	0.35	0.206	|O I	|	|	|	|	1.08
2.667	1.76	0.36	0.215	|O I	|	|	|	|	1.09
2.750	1.83	0.36	0.225	|O I	|	|	|	|	1.11
2.833	1.85	0.36	0.235	|O I	|	|	|	|	1.13
2.917	1.86	0.36	0.246	|O I	|	|	|	|	1.14
3.000	1.86	0.37	0.256	|O I	|	|	|	|	1.16
3.083	1.86	0.37	0.266	|O I	|	|	|	|	1.18
3.167	1.86	0.37	0.277	|O I	|	|	|	|	1.20
3.250	1.86	0.38	0.287	|O I	|	|	|	|	1.21
3.333	1.86	0.38	0.297	|O I	|	|	|	|	1.23
3.417	1.86	0.38	0.307	|O I	|	|	|	|	1.25
3.500	1.86	0.38	0.317	|O I	|	|	|	|	1.27
3.583	1.86	0.39	0.328	|O I	|	|	|	|	1.28
3.667	1.86	0.39	0.338	|O I	|	|	|	|	1.30
3.750	1.86	0.39	0.348	|O I	|	|	|	|	1.32
3.833	1.93	0.39	0.358	|O I	|	|	|	|	1.34
3.917	2.14	0.40	0.370	|O I	|	|	|	|	1.36
4.000	2.20	0.40	0.382	|O I	|	|	|	|	1.38
4.083	2.22	0.40	0.394	|O I	|	|	|	|	1.40
4.167	2.23	0.41	0.407	|O I	|	|	|	|	1.42
4.250	2.23	0.41	0.419	|O I	|	|	|	|	1.44
4.333	2.30	0.41	0.432	|O I	|	|	|	|	1.47
4.417	2.51	0.42	0.446	|O I|	|	|	|	|	1.49
4.500	2.57	0.42	0.460	|O I|	|	|	|	|	1.51
4.583	2.60	0.43	0.475	|O I|	|	|	|	|	1.54
4.667	2.60	0.43	0.490	|O I|	|	|	|	|	1.57
4.750	2.60	0.43	0.505	|O I|	|	|	|	|	1.59
4.833	2.67	0.44	0.520	|O I|	|	|	|	|	1.62
4.917	2.88	0.44	0.536	|O I	|	|	|	|	1.65
5.000	2.94	0.45	0.553	|O I	|	|	|	|	1.68
5.083	2.83	0.45	0.570	|O I	|	|	|	|	1.70
5.167	2.42	0.46	0.585	|O I|	|	|	|	|	1.73
5.250	2.30	0.46	0.598	|O I |	|	|	|	|	1.75
5.333	2.32	0.46	0.611	|O I |	|	|	|	|	1.78
5.417	2.52	0.47	0.625	|O I|	|	|	|	|	1.80
5.500	2.57	0.47	0.639	|O I|	|	|	|	|	1.82
5.583	2.66	0.47	0.654	|O I|	|	|	|	|	1.85

5.667	2.88	0.48	0.669	O	I			1.88
5.750	2.94	0.48	0.686	O	I			1.91
5.833	2.97	0.49	0.703	O	I			1.93
5.917	2.97	0.49	0.720	O	I			1.96
6.000	2.98	0.50	0.737	O	I			1.99
6.083	3.05	0.50	0.755	O	I			2.01
6.167	3.25	0.50	0.773	O	I			2.03
6.250	3.32	0.50	0.792	O	I			2.05
6.333	3.34	0.51	0.812	O	I			2.07
6.417	3.35	0.51	0.831	O	I			2.09
6.500	3.35	0.51	0.851	O	I			2.11
6.583	3.42	0.51	0.870	O	I			2.13
6.667	3.63	0.51	0.891	O	I			2.15
6.750	3.69	0.52	0.913	O	I			2.17
6.833	3.71	0.52	0.935	O	I			2.19
6.917	3.72	0.52	0.957	O	I			2.21
7.000	3.72	0.52	0.979	O	I			2.23
7.083	3.72	0.53	1.001	O	I			2.26
7.167	3.72	0.53	1.023	O	I			2.28
7.250	3.72	0.53	1.045	O	I			2.30
7.333	3.79	0.53	1.067	O	I			2.32
7.417	4.00	0.54	1.090	O	I			2.34
7.500	4.06	0.54	1.114	O	I			2.37
7.583	4.15	0.54	1.139	O	I			2.39
7.667	4.37	0.55	1.164	O	I			2.42
7.750	4.43	0.55	1.191	O	I			2.44
7.833	4.52	0.55	1.218	O	I			2.47
7.917	4.74	0.56	1.246	O	I			2.50
8.000	4.81	0.56	1.275	O	I			2.53
8.083	4.05	0.56	1.302	O	I			2.55
8.167	1.59	0.56	1.317	O I				2.57
8.250	0.88	0.56	1.322	OI				2.57
8.333	0.63	0.56	1.323	O				2.58
8.417	0.59	0.56	1.323	O				2.58
8.500	0.58	0.56	1.324	O				2.58
8.583	0.68	0.56	1.324	OI				2.58
8.667	0.96	0.56	1.326	OI				2.58
8.750	1.07	0.56	1.329	O I				2.58
8.833	1.21	0.57	1.333	O I				2.58
8.917	1.50	0.57	1.338	O I				2.59
9.000	1.61	0.57	1.345	O I				2.60
9.083	1.83	0.57	1.353	O I				2.60
9.167	2.37	0.57	1.363	O	I			2.62
9.250	2.56	0.57	1.376	O	I			2.63
9.333	2.73	0.57	1.391	O	I			2.64
9.417	3.03	0.57	1.407	O	I			2.66
9.500	3.14	0.58	1.424	O	I			2.67
9.583	3.28	0.58	1.442	O	I			2.69
9.667	3.57	0.58	1.462	O	I			2.71
9.750	3.68	0.58	1.482	O	I			2.73
9.833	3.82	0.59	1.504	O	I			2.75
9.917	4.11	0.59	1.528	O	I			2.78
10.000	4.22	0.59	1.552	O	I			2.80
10.083	3.70	0.59	1.575	O	I			2.82
10.167	1.95	0.60	1.591	O I				2.84
10.250	1.45	0.60	1.598	O I				2.85
10.333	1.28	0.60	1.604	O I				2.85
10.417	1.25	0.60	1.608	O I				2.86
10.500	1.25	0.60	1.613	O I				2.86
10.583	1.68	0.60	1.619	O I				2.87
10.667	2.98	0.60	1.631	O	I			2.88
10.750	3.39	0.60	1.648	O	I			2.90
10.833	3.56	0.60	1.668	O	I			2.92
10.917	3.62	0.61	1.689	O	I			2.94
11.000	3.67	0.61	1.710	O	I			2.96
11.083	3.62	0.61	1.731	O	I			2.98
11.167	3.39	0.61	1.750	O	I			3.00
11.250	3.34	0.62	1.769	O	I			3.01
11.333	3.34	0.62	1.788	O	I			3.03
11.417	3.36	0.62	1.807	O	I			3.05
11.500	3.38	0.62	1.826	O	I			3.06
11.583	3.24	0.62	1.844	O	I			3.08
11.667	2.76	0.62	1.861	O	I			3.09
11.750	2.63	0.62	1.875	O	I			3.10
11.833	2.68	0.63	1.889	O	I			3.12

11.917	2.95	0.63	1.904	O	I			3.13
12.000	3.04	0.63	1.920	O	I			3.14
12.083	3.66	0.63	1.939	O	I			3.16
12.167	5.48	0.63	1.966	O	I			3.18
12.250	6.05	0.64	2.002	O	I			3.21
12.333	6.35	0.64	2.040	O	I			3.24
12.417	6.69	0.64	2.080	O	I			3.28
12.500	6.81	0.65	2.122	O	I			3.32
12.583	7.04	0.65	2.166	O	I			3.35
12.667	7.58	0.66	2.212	O	I			3.39
12.750	7.76	0.76	2.259	O	I			3.43
12.833	7.93	0.90	2.308	O	I			3.47
12.917	8.22	1.05	2.357	O	I			3.51
13.000	8.33	1.19	2.406	O	I			3.55
13.083	8.79	1.33	2.456	O	I			3.59
13.167	10.10	1.49	2.512	O	I			3.63
13.250	10.51	1.67	2.572	O	I			3.68
13.333	10.68	1.84	2.632	O	I			3.73
13.417	10.74	2.02	2.693	O	I			3.77
13.500	10.78	2.19	2.753	O	I			3.82
13.583	9.92	2.35	2.808	O	I			3.87
13.667	7.14	2.47	2.850	O	I			3.90
13.750	6.32	2.56	2.879	O	I			3.92
13.833	6.03	2.63	2.904	O	I			3.94
13.917	5.97	2.69	2.927	O	I			3.96
14.000	5.95	2.76	2.949	O	I			3.98
14.083	6.28	2.82	2.972	O	I			4.00
14.167	7.32	2.88	2.999	O	I			4.02
14.250	7.65	2.94	3.031	O	I			4.04
14.333	7.71	3.00	3.063	O	I			4.06
14.417	7.51	3.05	3.095	O	I			4.09
14.500	7.47	3.11	3.125	O	I			4.11
14.583	7.47	3.16	3.155	O	I			4.13
14.667	7.48	3.22	3.185	O	I			4.15
14.750	7.50	3.27	3.214	O	I			4.18
14.833	7.44	3.32	3.243	O	I			4.20
14.917	7.21	3.37	3.270	O	I			4.22
15.000	7.15	3.42	3.296	O	I			4.24
15.083	7.06	3.46	3.321	O	I			4.25
15.167	6.82	3.51	3.345	O	I			4.27
15.250	6.76	3.55	3.368	O	I			4.29
15.333	6.67	3.59	3.389	O	I			4.31
15.417	6.43	3.62	3.410	O	I			4.32
15.500	6.37	3.66	3.429	O	I			4.33
15.583	6.04	3.69	3.446	O	I			4.35
15.667	5.03	3.71	3.459	O	I			4.36
15.750	4.74	3.73	3.467	O	I			4.36
15.833	4.65	3.74	3.473	O	I			4.37
15.917	4.64	3.75	3.480	O	I			4.37
16.000	4.65	3.76	3.486	O	I			4.38
16.083	4.09	3.77	3.490	O	I			4.38
16.167	2.31	3.76	3.486	I	O			4.38
16.250	1.78	3.74	3.474	I	O			4.37
16.333	1.58	3.71	3.460	I	O			4.36
16.417	1.52	3.69	3.445	I	O			4.35
16.500	1.50	3.66	3.430	I	O			4.34
16.583	1.42	3.63	3.415	I	O			4.32
16.667	1.21	3.60	3.400	I	O			4.31
16.750	1.15	3.57	3.383	I	O			4.30
16.833	1.13	3.54	3.366	I	O			4.29
16.917	1.12	3.51	3.350	I	O			4.28
17.000	1.12	3.48	3.333	I	O			4.26
17.083	1.25	3.46	3.318	I	O			4.25
17.167	1.67	3.43	3.304	I	O			4.24
17.250	1.79	3.41	3.292	I	O			4.23
17.333	1.84	3.39	3.281	I	O			4.23
17.417	1.85	3.37	3.271	I	O			4.22
17.500	1.86	3.35	3.261	I	O			4.21
17.583	1.86	3.33	3.250	I	O			4.20
17.667	1.86	3.32	3.240	I	O			4.19
17.750	1.86	3.30	3.230	I	O			4.19
17.833	1.79	3.28	3.220	I	O			4.18
17.917	1.59	3.26	3.209	I	O			4.17
18.000	1.52	3.24	3.198	I	O			4.16
18.083	1.50	3.22	3.186	I	O			4.15

18.167	1.49	3.20	3.174	| I |O | | | 4.15
18.250	1.49	3.17	3.162	| I |O | | | 4.14
18.333	1.49	3.15	3.151	| I |O | | | 4.13
18.417	1.49	3.13	3.139	| I |O | | | 4.12
18.500	1.49	3.11	3.128	| I |O | | | 4.11
18.583	1.42	3.09	3.117	| I |O | | | 4.10
18.667	1.21	3.07	3.105	| I |O | | | 4.09
18.750	1.15	3.05	3.092	| I |O | | | 4.08
18.833	1.06	3.02	3.079	| I O | | | 4.07
18.917	0.85	3.00	3.064	| I O | | | 4.06
19.000	0.78	2.97	3.049	| I O | | | 4.05
19.083	0.82	2.94	3.035	| I O | | | 4.04
19.167	1.02	2.92	3.021	| I O | | | 4.03
19.250	1.08	2.90	3.008	| I O | | | 4.02
19.333	1.17	2.87	2.996	| I O | | | 4.01
19.417	1.39	2.85	2.985	| I O | | | 4.01
19.500	1.45	2.83	2.975	| I O | | | 4.00
19.583	1.41	2.81	2.966	| I O | | | 3.99
19.667	1.21	2.78	2.955	| I O | | | 3.98
19.750	1.15	2.74	2.945	| I O | | | 3.97
19.833	1.06	2.71	2.933	| I O | | | 3.96
19.917	0.85	2.68	2.921	| I O| | | 3.96
20.000	0.78	2.64	2.909	| I O| | | 3.94
20.083	0.82	2.60	2.896	| I O| | | 3.94
20.167	1.02	2.57	2.885	| I O| | | 3.93
20.250	1.08	2.54	2.874	| I O| | | 3.92
20.333	1.11	2.51	2.864	| I O| | | 3.91
20.417	1.11	2.49	2.855	| I O| | | 3.90
20.500	1.12	2.46	2.846	| I O| | | 3.89
20.583	1.12	2.43	2.836	| I O| | | 3.89
20.667	1.12	2.41	2.827	| I O| | | 3.88
20.750	1.12	2.38	2.819	| I O| | | 3.87
20.833	1.05	2.35	2.810	| I O | | | 3.87
20.917	0.84	2.33	2.800	| I O | | | 3.86
21.000	0.78	2.30	2.790	| I O | | | 3.85
21.083	0.82	2.27	2.780	| I O | | | 3.84
21.167	1.02	2.24	2.770	| I O | | | 3.84
21.250	1.08	2.22	2.762	| I O | | | 3.83
21.333	1.04	2.19	2.754	| I O | | | 3.82
21.417	0.84	2.17	2.746	| I O | | | 3.82
21.500	0.78	2.14	2.737	| I O | | | 3.81
21.583	0.82	2.12	2.727	| I O | | | 3.80
21.667	1.02	2.09	2.719	| I O | | | 3.79
21.750	1.08	2.07	2.712	| I O | | | 3.79
21.833	1.04	2.05	2.705	| I O | | | 3.78
21.917	0.84	2.03	2.698	| I O | | | 3.78
22.000	0.78	2.01	2.689	| I O | | | 3.77
22.083	0.82	1.98	2.681	| I O | | | 3.76
22.167	1.02	1.96	2.674	| I O | | | 3.76
22.250	1.08	1.94	2.668	| I O | | | 3.75
22.333	1.04	1.93	2.662	| I O | | | 3.75
22.417	0.84	1.91	2.655	| I O | | | 3.74
22.500	0.78	1.89	2.647	| I O | | | 3.74
22.583	0.75	1.86	2.640	| I O | | | 3.73
22.667	0.75	1.84	2.632	| I O | | | 3.73
22.750	0.75	1.82	2.625	| I O | | | 3.72
22.833	0.74	1.80	2.617	| I O | | | 3.71
22.917	0.74	1.78	2.610	| I O | | | 3.71
23.000	0.74	1.76	2.603	| I O | | | 3.70
23.083	0.74	1.74	2.596	| I O | | | 3.70
23.167	0.74	1.72	2.590	| I O | | | 3.69
23.250	0.74	1.70	2.583	| I O | | | 3.69
23.333	0.74	1.68	2.576	| I O | | | 3.68
23.417	0.74	1.66	2.570	| I O | | | 3.68
23.500	0.74	1.64	2.564	| I O | | | 3.67
23.583	0.74	1.63	2.558	| I O | | | 3.67
23.667	0.74	1.61	2.552	| I O | | | 3.66
23.750	0.74	1.59	2.546	| I O | | | 3.66
23.833	0.74	1.57	2.540	| I O | | | 3.65
23.917	0.74	1.56	2.534	| I O | | | 3.65
24.000	0.74	1.54	2.529	| I O | | | 3.64
24.083	0.61	1.53	2.523	|I O | | | 3.64
24.167	0.19	1.50	2.515	I O | | | 3.63
24.250	0.07	1.48	2.506	I O | | | 3.63
24.333	0.02	1.45	2.496	I O | | | 3.62

24.417	0.01	1.42	2.486	I O	|	|	|	3.61
24.500	0.00	1.39	2.477	I O	|	|	|	3.60
24.583	0.00	1.36	2.467	I O	|	|	|	3.59
24.667	0.00	1.34	2.458	I O	|	|	|	3.59
24.750	0.00	1.31	2.449	I O	|	|	|	3.58
24.833	0.00	1.29	2.440	I O	|	|	|	3.57
24.917	0.00	1.26	2.431	I O	|	|	|	3.57
25.000	0.00	1.24	2.422	I O	|	|	|	3.56
25.083	0.00	1.21	2.414	I O	|	|	|	3.55
25.167	0.00	1.19	2.406	I O	|	|	|	3.55
25.250	0.00	1.16	2.398	I O	|	|	|	3.54
25.333	0.00	1.14	2.390	I O	|	|	|	3.53
25.417	0.00	1.12	2.382	I O	|	|	|	3.53
25.500	0.00	1.10	2.374	I O	|	|	|	3.52
25.583	0.00	1.07	2.367	I O	|	|	|	3.51
25.667	0.00	1.05	2.360	I O	|	|	|	3.51
25.750	0.00	1.03	2.352	I O	|	|	|	3.50
25.833	0.00	1.01	2.345	I O	|	|	|	3.50
25.917	0.00	0.99	2.338	I O	|	|	|	3.49
26.000	0.00	0.97	2.332	I O	|	|	|	3.49
26.083	0.00	0.95	2.325	I O	|	|	|	3.48
26.167	0.00	0.93	2.318	I O	|	|	|	3.48
26.250	0.00	0.92	2.312	I O	|	|	|	3.47
26.333	0.00	0.90	2.306	I O	|	|	|	3.47
26.417	0.00	0.88	2.300	I O	|	|	|	3.46
26.500	0.00	0.86	2.294	I O	|	|	|	3.46
26.583	0.00	0.85	2.288	I O	|	|	|	3.45
26.667	0.00	0.83	2.282	I O	|	|	|	3.45
26.750	0.00	0.81	2.276	I O	|	|	|	3.44
26.833	0.00	0.80	2.271	I O	|	|	|	3.44
26.917	0.00	0.78	2.265	I O	|	|	|	3.43
27.000	0.00	0.77	2.260	I O	|	|	|	3.43
27.083	0.00	0.75	2.255	I O	|	|	|	3.43
27.167	0.00	0.74	2.250	I O	|	|	|	3.42
27.250	0.00	0.72	2.245	I O	|	|	|	3.42
27.333	0.00	0.71	2.240	I O	|	|	|	3.41
27.417	0.00	0.69	2.235	I O	|	|	|	3.41
27.500	0.00	0.68	2.230	I O	|	|	|	3.41
27.583	0.00	0.67	2.226	IO	|	|	|	3.40
27.667	0.00	0.66	2.221	IO	|	|	|	3.40
27.750	0.00	0.66	2.217	IO	|	|	|	3.40
27.833	0.00	0.66	2.212	IO	|	|	|	3.39
27.917	0.00	0.65	2.208	IO	|	|	|	3.39
28.000	0.00	0.65	2.203	IO	|	|	|	3.38
28.083	0.00	0.65	2.199	IO	|	|	|	3.38
28.167	0.00	0.65	2.194	IO	|	|	|	3.38
28.250	0.00	0.65	2.190	IO	|	|	|	3.37
28.333	0.00	0.65	2.185	IO	|	|	|	3.37
28.417	0.00	0.65	2.181	IO	|	|	|	3.36
28.500	0.00	0.65	2.176	IO	|	|	|	3.36
28.583	0.00	0.65	2.172	IO	|	|	|	3.36
28.667	0.00	0.65	2.167	IO	|	|	|	3.35
28.750	0.00	0.65	2.163	IO	|	|	|	3.35
28.833	0.00	0.65	2.158	IO	|	|	|	3.35
28.917	0.00	0.65	2.154	IO	|	|	|	3.34
29.000	0.00	0.65	2.149	IO	|	|	|	3.34
29.083	0.00	0.65	2.145	IO	|	|	|	3.33
29.167	0.00	0.65	2.140	IO	|	|	|	3.33
29.250	0.00	0.65	2.136	IO	|	|	|	3.33
29.333	0.00	0.65	2.131	IO	|	|	|	3.32
29.417	0.00	0.65	2.127	IO	|	|	|	3.32
29.500	0.00	0.65	2.122	IO	|	|	|	3.32
29.583	0.00	0.65	2.118	IO	|	|	|	3.31
29.667	0.00	0.65	2.113	IO	|	|	|	3.31
29.750	0.00	0.65	2.109	IO	|	|	|	3.30
29.833	0.00	0.65	2.105	IO	|	|	|	3.30
29.917	0.00	0.65	2.100	IO	|	|	|	3.30
30.000	0.00	0.64	2.096	IO	|	|	|	3.29
30.083	0.00	0.64	2.091	IO	|	|	|	3.29
30.167	0.00	0.64	2.087	IO	|	|	|	3.28
30.250	0.00	0.64	2.082	IO	|	|	|	3.28
30.333	0.00	0.64	2.078	IO	|	|	|	3.28
30.417	0.00	0.64	2.073	IO	|	|	|	3.27
30.500	0.00	0.64	2.069	IO	|	|	|	3.27
30.583	0.00	0.64	2.065	IO	|	|	|	3.27

30.667	0.00	0.64	2.060	IO					3.26
30.750	0.00	0.64	2.056	IO					3.26
30.833	0.00	0.64	2.051	IO					3.25
30.917	0.00	0.64	2.047	IO					3.25
31.000	0.00	0.64	2.043	IO					3.25
31.083	0.00	0.64	2.038	IO					3.24
31.167	0.00	0.64	2.034	IO					3.24
31.250	0.00	0.64	2.029	IO					3.24
31.333	0.00	0.64	2.025	IO					3.23
31.417	0.00	0.64	2.021	IO					3.23
31.500	0.00	0.64	2.016	IO					3.22
31.583	0.00	0.64	2.012	IO					3.22
31.667	0.00	0.64	2.007	IO					3.22
31.750	0.00	0.64	2.003	IO					3.21
31.833	0.00	0.64	1.999	IO					3.21
31.917	0.00	0.64	1.994	IO					3.21
32.000	0.00	0.64	1.990	IO					3.20
32.083	0.00	0.63	1.986	IO					3.20
32.167	0.00	0.63	1.981	IO					3.19
32.250	0.00	0.63	1.977	IO					3.19
32.333	0.00	0.63	1.972	IO					3.19
32.417	0.00	0.63	1.968	IO					3.18
32.500	0.00	0.63	1.964	IO					3.18
32.583	0.00	0.63	1.959	IO					3.18
32.667	0.00	0.63	1.955	IO					3.17
32.750	0.00	0.63	1.951	IO					3.17
32.833	0.00	0.63	1.946	IO					3.16
32.917	0.00	0.63	1.942	IO					3.16
33.000	0.00	0.63	1.938	IO					3.16
33.083	0.00	0.63	1.933	IO					3.15
33.167	0.00	0.63	1.929	IO					3.15
33.250	0.00	0.63	1.925	IO					3.15
33.333	0.00	0.63	1.920	IO					3.14
33.417	0.00	0.63	1.916	IO					3.14
33.500	0.00	0.63	1.912	IO					3.14
33.583	0.00	0.63	1.907	IO					3.13
33.667	0.00	0.63	1.903	IO					3.13
33.750	0.00	0.63	1.899	IO					3.12
33.833	0.00	0.63	1.894	IO					3.12
33.917	0.00	0.63	1.890	IO					3.12
34.000	0.00	0.63	1.886	IO					3.11
34.083	0.00	0.63	1.881	IO					3.11
34.167	0.00	0.63	1.877	IO					3.11
34.250	0.00	0.62	1.873	IO					3.10
34.333	0.00	0.62	1.868	IO					3.10
34.417	0.00	0.62	1.864	IO					3.09
34.500	0.00	0.62	1.860	IO					3.09
34.583	0.00	0.62	1.856	IO					3.09
34.667	0.00	0.62	1.851	IO					3.08
34.750	0.00	0.62	1.847	IO					3.08
34.833	0.00	0.62	1.843	IO					3.08
34.917	0.00	0.62	1.838	IO					3.07
35.000	0.00	0.62	1.834	IO					3.07
35.083	0.00	0.62	1.830	IO					3.07
35.167	0.00	0.62	1.826	IO					3.06
35.250	0.00	0.62	1.821	IO					3.06
35.333	0.00	0.62	1.817	IO					3.05
35.417	0.00	0.62	1.813	IO					3.05
35.500	0.00	0.62	1.809	IO					3.05
35.583	0.00	0.62	1.804	IO					3.04
35.667	0.00	0.62	1.800	IO					3.04
35.750	0.00	0.62	1.796	IO					3.04
35.833	0.00	0.62	1.791	IO					3.03
35.917	0.00	0.62	1.787	IO					3.03
36.000	0.00	0.62	1.783	IO					3.03
36.083	0.00	0.62	1.779	IO					3.02
36.167	0.00	0.62	1.774	IO					3.02
36.250	0.00	0.62	1.770	IO					3.01
36.333	0.00	0.62	1.766	IO					3.01
36.417	0.00	0.61	1.762	IO					3.01
36.500	0.00	0.61	1.758	IO					3.00
36.583	0.00	0.61	1.753	IO					3.00
36.667	0.00	0.61	1.749	IO					3.00
36.750	0.00	0.61	1.745	IO					2.99
36.833	0.00	0.61	1.741	IO					2.99

36.917	0.00	0.61	1.736	IO					2.98
37.000	0.00	0.61	1.732	IO					2.98
37.083	0.00	0.61	1.728	IO					2.98
37.167	0.00	0.61	1.724	IO					2.97
37.250	0.00	0.61	1.720	IO					2.97
37.333	0.00	0.61	1.715	IO					2.96
37.417	0.00	0.61	1.711	IO					2.96
37.500	0.00	0.61	1.707	IO					2.95
37.583	0.00	0.61	1.703	IO					2.95
37.667	0.00	0.61	1.699	IO					2.95
37.750	0.00	0.61	1.694	IO					2.94
37.833	0.00	0.61	1.690	IO					2.94
37.917	0.00	0.61	1.686	IO					2.93
38.000	0.00	0.61	1.682	IO					2.93
38.083	0.00	0.61	1.678	IO					2.93
38.167	0.00	0.60	1.674	IO					2.92
38.250	0.00	0.60	1.669	IO					2.92
38.333	0.00	0.60	1.665	IO					2.91
38.417	0.00	0.60	1.661	IO					2.91
38.500	0.00	0.60	1.657	IO					2.91
38.583	0.00	0.60	1.653	IO					2.90
38.667	0.00	0.60	1.649	IO					2.90
38.750	0.00	0.60	1.644	IO					2.89
38.833	0.00	0.60	1.640	IO					2.89
38.917	0.00	0.60	1.636	IO					2.88
39.000	0.00	0.60	1.632	IO					2.88
39.083	0.00	0.60	1.628	IO					2.88
39.167	0.00	0.60	1.624	IO					2.87
39.250	0.00	0.60	1.620	IO					2.87
39.333	0.00	0.60	1.616	IO					2.86
39.417	0.00	0.60	1.611	IO					2.86
39.500	0.00	0.60	1.607	IO					2.86
39.583	0.00	0.60	1.603	IO					2.85
39.667	0.00	0.60	1.599	IO					2.85
39.750	0.00	0.60	1.595	IO					2.84
39.833	0.00	0.60	1.591	IO					2.84
39.917	0.00	0.59	1.587	IO					2.84
40.000	0.00	0.59	1.583	IO					2.83
40.083	0.00	0.59	1.579	IO					2.83
40.167	0.00	0.59	1.575	IO					2.82
40.250	0.00	0.59	1.570	IO					2.82
40.333	0.00	0.59	1.566	IO					2.82
40.417	0.00	0.59	1.562	IO					2.81
40.500	0.00	0.59	1.558	IO					2.81
40.583	0.00	0.59	1.554	IO					2.80
40.667	0.00	0.59	1.550	IO					2.80
40.750	0.00	0.59	1.546	IO					2.80
40.833	0.00	0.59	1.542	IO					2.79
40.917	0.00	0.59	1.538	IO					2.79
41.000	0.00	0.59	1.534	IO					2.78
41.083	0.00	0.59	1.530	IO					2.78
41.167	0.00	0.59	1.526	IO					2.78
41.250	0.00	0.59	1.522	IO					2.77
41.333	0.00	0.59	1.518	IO					2.77
41.417	0.00	0.59	1.514	IO					2.76
41.500	0.00	0.59	1.510	IO					2.76
41.583	0.00	0.59	1.506	IO					2.76
41.667	0.00	0.58	1.502	IO					2.75
41.750	0.00	0.58	1.497	IO					2.75
41.833	0.00	0.58	1.493	IO					2.74
41.917	0.00	0.58	1.489	IO					2.74
42.000	0.00	0.58	1.485	IO					2.74
42.083	0.00	0.58	1.481	IO					2.73
42.167	0.00	0.58	1.477	IO					2.73
42.250	0.00	0.58	1.473	IO					2.72
42.333	0.00	0.58	1.469	IO					2.72
42.417	0.00	0.58	1.465	IO					2.72
42.500	0.00	0.58	1.461	IO					2.71
42.583	0.00	0.58	1.457	IO					2.71
42.667	0.00	0.58	1.453	IO					2.70
42.750	0.00	0.58	1.449	IO					2.70
42.833	0.00	0.58	1.445	IO					2.70
42.917	0.00	0.58	1.441	IO					2.69
43.000	0.00	0.58	1.437	IO					2.69
43.083	0.00	0.58	1.433	IO					2.68

43.167	0.00	0.58	1.430	IO				2.68
43.250	0.00	0.58	1.426	IO				2.68
43.333	0.00	0.58	1.422	IO				2.67
43.417	0.00	0.58	1.418	IO				2.67
43.500	0.00	0.57	1.414	IO				2.66
43.583	0.00	0.57	1.410	IO				2.66
43.667	0.00	0.57	1.406	IO				2.66
43.750	0.00	0.57	1.402	IO				2.65
43.833	0.00	0.57	1.398	IO				2.65
43.917	0.00	0.57	1.394	IO				2.65
44.000	0.00	0.57	1.390	IO				2.64
44.083	0.00	0.57	1.386	IO				2.64
44.167	0.00	0.57	1.382	IO				2.63
44.250	0.00	0.57	1.378	IO				2.63
44.333	0.00	0.57	1.374	IO				2.63
44.417	0.00	0.57	1.370	IO				2.62
44.500	0.00	0.57	1.366	IO				2.62
44.583	0.00	0.57	1.362	IO				2.61
44.667	0.00	0.57	1.359	IO				2.61
44.750	0.00	0.57	1.355	IO				2.61
44.833	0.00	0.57	1.351	IO				2.60
44.917	0.00	0.57	1.347	IO				2.60
45.000	0.00	0.57	1.343	IO				2.59
45.083	0.00	0.57	1.339	IO				2.59
45.167	0.00	0.57	1.335	IO				2.59
45.250	0.00	0.57	1.331	IO				2.58
45.333	0.00	0.56	1.327	IO				2.58
45.417	0.00	0.56	1.323	IO				2.58
45.500	0.00	0.56	1.320	IO				2.57
45.583	0.00	0.56	1.316	IO				2.57
45.667	0.00	0.56	1.312	IO				2.56
45.750	0.00	0.56	1.308	IO				2.56
45.833	0.00	0.56	1.304	IO				2.56
45.917	0.00	0.56	1.300	IO				2.55
46.000	0.00	0.56	1.296	IO				2.55
46.083	0.00	0.56	1.292	IO				2.54
46.167	0.00	0.56	1.289	IO				2.54
46.250	0.00	0.56	1.285	IO				2.54
46.333	0.00	0.56	1.281	IO				2.53
46.417	0.00	0.56	1.277	IO				2.53
46.500	0.00	0.56	1.273	IO				2.53
46.583	0.00	0.56	1.269	IO				2.52
46.667	0.00	0.56	1.265	IO				2.52
46.750	0.00	0.56	1.262	IO				2.51
46.833	0.00	0.56	1.258	IO				2.51
46.917	0.00	0.56	1.254	IO				2.51
47.000	0.00	0.56	1.250	IO				2.50
47.083	0.00	0.56	1.246	IO				2.50
47.167	0.00	0.55	1.243	IO				2.50
47.250	0.00	0.55	1.239	IO				2.49
47.333	0.00	0.55	1.235	IO				2.49
47.417	0.00	0.55	1.231	IO				2.48
47.500	0.00	0.55	1.227	IO				2.48
47.583	0.00	0.55	1.223	IO				2.48
47.667	0.00	0.55	1.220	IO				2.47
47.750	0.00	0.55	1.216	IO				2.47
47.833	0.00	0.55	1.212	IO				2.47
47.917	0.00	0.55	1.208	IO				2.46
48.000	0.00	0.55	1.204	IO				2.46
48.083	0.00	0.55	1.201	IO				2.45
48.167	0.00	0.55	1.197	IO				2.45
48.250	0.00	0.55	1.193	IO				2.45
48.333	0.00	0.55	1.189	IO				2.44
48.417	0.00	0.55	1.186	IO				2.44
48.500	0.00	0.55	1.182	IO				2.44
48.583	0.00	0.55	1.178	IO				2.43
48.667	0.00	0.55	1.174	IO				2.43
48.750	0.00	0.55	1.170	IO				2.42
48.833	0.00	0.55	1.167	IO				2.42
48.917	0.00	0.55	1.163	IO				2.42
49.000	0.00	0.55	1.159	IO				2.41
49.083	0.00	0.54	1.155	IO				2.41
49.167	0.00	0.54	1.152	IO				2.41
49.250	0.00	0.54	1.148	IO				2.40
49.333	0.00	0.54	1.144	IO				2.40

49.417	0.00	0.54	1.140	IO					2.39
49.500	0.00	0.54	1.137	IO					2.39
49.583	0.00	0.54	1.133	IO					2.39
49.667	0.00	0.54	1.129	IO					2.38
49.750	0.00	0.54	1.125	IO					2.38
49.833	0.00	0.54	1.122	IO					2.38
49.917	0.00	0.54	1.118	IO					2.37
50.000	0.00	0.54	1.114	IO					2.37
50.083	0.00	0.54	1.111	IO					2.37
50.167	0.00	0.54	1.107	IO					2.36
50.250	0.00	0.54	1.103	IO					2.36
50.333	0.00	0.54	1.099	IO					2.35
50.417	0.00	0.54	1.096	IO					2.35
50.500	0.00	0.54	1.092	IO					2.35
50.583	0.00	0.54	1.088	IO					2.34
50.667	0.00	0.54	1.085	IO					2.34
50.750	0.00	0.54	1.081	IO					2.34
50.833	0.00	0.54	1.077	IO					2.33
50.917	0.00	0.54	1.074	IO					2.33
51.000	0.00	0.54	1.070	IO					2.32
51.083	0.00	0.53	1.066	IO					2.32
51.167	0.00	0.53	1.063	IO					2.32
51.250	0.00	0.53	1.059	IO					2.31
51.333	0.00	0.53	1.055	IO					2.31
51.417	0.00	0.53	1.051	IO					2.31
51.500	0.00	0.53	1.048	IO					2.30
51.583	0.00	0.53	1.044	IO					2.30
51.667	0.00	0.53	1.040	IO					2.30
51.750	0.00	0.53	1.037	IO					2.29
51.833	0.00	0.53	1.033	IO					2.29
51.917	0.00	0.53	1.030	IO					2.29
52.000	0.00	0.53	1.026	IO					2.28
52.083	0.00	0.53	1.022	IO					2.28
52.167	0.00	0.53	1.019	IO					2.27
52.250	0.00	0.53	1.015	IO					2.27
52.333	0.00	0.53	1.011	IO					2.27
52.417	0.00	0.53	1.008	IO					2.26
52.500	0.00	0.53	1.004	IO					2.26
52.583	0.00	0.53	1.000	IO					2.26
52.667	0.00	0.53	0.997	IO					2.25
52.750	0.00	0.53	0.993	IO					2.25
52.833	0.00	0.53	0.990	IO					2.25
52.917	0.00	0.53	0.986	IO					2.24
53.000	0.00	0.52	0.982	IO					2.24
53.083	0.00	0.52	0.979	IO					2.23
53.167	0.00	0.52	0.975	IO					2.23
53.250	0.00	0.52	0.971	IO					2.23
53.333	0.00	0.52	0.968	IO					2.22
53.417	0.00	0.52	0.964	IO					2.22
53.500	0.00	0.52	0.961	IO					2.22
53.583	0.00	0.52	0.957	IO					2.21
53.667	0.00	0.52	0.953	IO					2.21
53.750	0.00	0.52	0.950	IO					2.21
53.833	0.00	0.52	0.946	IO					2.20
53.917	0.00	0.52	0.943	IO					2.20
54.000	0.00	0.52	0.939	IO					2.20
54.083	0.00	0.52	0.936	IO					2.19
54.167	0.00	0.52	0.932	IO					2.19
54.250	0.00	0.52	0.928	IO					2.19
54.333	0.00	0.52	0.925	IO					2.18
54.417	0.00	0.52	0.921	IO					2.18
54.500	0.00	0.52	0.918	IO					2.17
54.583	0.00	0.52	0.914	IO					2.17
54.667	0.00	0.52	0.911	IO					2.17
54.750	0.00	0.52	0.907	IO					2.16
54.833	0.00	0.52	0.903	IO					2.16
54.917	0.00	0.52	0.900	IO					2.16
55.000	0.00	0.51	0.896	IO					2.15
55.083	0.00	0.51	0.893	IO					2.15
55.167	0.00	0.51	0.889	IO					2.15
55.250	0.00	0.51	0.886	IO					2.14
55.333	0.00	0.51	0.882	IO					2.14
55.417	0.00	0.51	0.879	IO					2.14
55.500	0.00	0.51	0.875	IO					2.13
55.583	0.00	0.51	0.872	IO					2.13

55.667	0.00	0.51	0.868	IO					2.13
55.750	0.00	0.51	0.865	IO					2.12
55.833	0.00	0.51	0.861	IO					2.12
55.917	0.00	0.51	0.857	IO					2.12
56.000	0.00	0.51	0.854	IO					2.11
56.083	0.00	0.51	0.850	IO					2.11
56.167	0.00	0.51	0.847	IO					2.10
56.250	0.00	0.51	0.843	IO					2.10
56.333	0.00	0.51	0.840	IO					2.10
56.417	0.00	0.51	0.836	IO					2.09
56.500	0.00	0.51	0.833	IO					2.09
56.583	0.00	0.51	0.829	IO					2.09
56.667	0.00	0.51	0.826	IO					2.08
56.750	0.00	0.51	0.822	IO					2.08
56.833	0.00	0.51	0.819	IO					2.08
56.917	0.00	0.51	0.816	IO					2.07
57.000	0.00	0.51	0.812	IO					2.07
57.083	0.00	0.50	0.809	IO					2.07
57.167	0.00	0.50	0.805	IO					2.06
57.250	0.00	0.50	0.802	IO					2.06
57.333	0.00	0.50	0.798	IO					2.06
57.417	0.00	0.50	0.795	IO					2.05
57.500	0.00	0.50	0.791	IO					2.05
57.583	0.00	0.50	0.788	IO					2.05
57.667	0.00	0.50	0.784	IO					2.04
57.750	0.00	0.50	0.781	IO					2.04
57.833	0.00	0.50	0.777	IO					2.04
57.917	0.00	0.50	0.774	IO					2.03
58.000	0.00	0.50	0.770	IO					2.03
58.083	0.00	0.50	0.767	IO					2.03
58.167	0.00	0.50	0.764	IO					2.02
58.250	0.00	0.50	0.760	IO					2.02
58.333	0.00	0.50	0.757	IO					2.02
58.417	0.00	0.50	0.753	IO					2.01
58.500	0.00	0.50	0.750	IO					2.01
58.583	0.00	0.50	0.746	IO					2.01
58.667	0.00	0.50	0.743	IO					2.00
58.750	0.00	0.50	0.740	IO					2.00
58.833	0.00	0.50	0.736	IO					1.99
58.917	0.00	0.49	0.733	IO					1.99
59.000	0.00	0.49	0.729	IO					1.98
59.083	0.00	0.49	0.726	IO					1.97
59.167	0.00	0.49	0.723	IO					1.97
59.250	0.00	0.49	0.719	IO					1.96
59.333	0.00	0.49	0.716	IO					1.96
59.417	0.00	0.49	0.712	IO					1.95
59.500	0.00	0.49	0.709	IO					1.94
59.583	0.00	0.49	0.706	IO					1.94
59.667	0.00	0.49	0.702	IO					1.93
59.750	0.00	0.49	0.699	IO					1.93
59.833	0.00	0.48	0.696	IO					1.92
59.917	0.00	0.48	0.692	IO					1.92
60.000	0.00	0.48	0.689	IO					1.91
60.083	0.00	0.48	0.686	IO					1.90
60.167	0.00	0.48	0.682	IO					1.90
60.250	0.00	0.48	0.679	IO					1.89
60.333	0.00	0.48	0.676	IO					1.89
60.417	0.00	0.48	0.672	IO					1.88
60.500	0.00	0.48	0.669	IO					1.88
60.583	0.00	0.48	0.666	IO					1.87
60.667	0.00	0.48	0.663	IO					1.86
60.750	0.00	0.48	0.659	IO					1.86
60.833	0.00	0.47	0.656	IO					1.85
60.917	0.00	0.47	0.653	IO					1.85
61.000	0.00	0.47	0.649	IO					1.84
61.083	0.00	0.47	0.646	IO					1.84
61.167	0.00	0.47	0.643	IO					1.83
61.250	0.00	0.47	0.640	IO					1.82
61.333	0.00	0.47	0.637	IO					1.82
61.417	0.00	0.47	0.633	IO					1.81
61.500	0.00	0.47	0.630	IO					1.81
61.583	0.00	0.47	0.627	IO					1.80
61.667	0.00	0.47	0.624	IO					1.80
61.750	0.00	0.46	0.620	IO					1.79
61.833	0.00	0.46	0.617	IO					1.79

61.917	0.00	0.46	0.614	IO				1.78
62.000	0.00	0.46	0.611	IO				1.77
62.083	0.00	0.46	0.608	IO				1.77
62.167	0.00	0.46	0.605	IO				1.76
62.250	0.00	0.46	0.601	IO				1.76
62.333	0.00	0.46	0.598	IO				1.75
62.417	0.00	0.46	0.595	IO				1.75
62.500	0.00	0.46	0.592	IO				1.74
62.583	0.00	0.46	0.589	IO				1.74
62.667	0.00	0.46	0.586	IO				1.73
62.750	0.00	0.45	0.582	IO				1.73
62.833	0.00	0.45	0.579	IO				1.72
62.917	0.00	0.45	0.576	IO				1.71
63.000	0.00	0.45	0.573	IO				1.71
63.083	0.00	0.45	0.570	IO				1.70
63.167	0.00	0.45	0.567	IO				1.70
63.250	0.00	0.45	0.564	IO				1.69
63.333	0.00	0.45	0.561	IO				1.69
63.417	0.00	0.45	0.558	IO				1.68
63.500	0.00	0.45	0.555	IO				1.68
63.583	0.00	0.45	0.551	IO				1.67
63.667	0.00	0.45	0.548	IO				1.67
63.750	0.00	0.44	0.545	IO				1.66
63.833	0.00	0.44	0.542	IO				1.66
63.917	0.00	0.44	0.539	IO				1.65
64.000	0.00	0.44	0.536	IO				1.65
64.083	0.00	0.44	0.533	IO				1.64
64.167	0.00	0.44	0.530	IO				1.64
64.250	0.00	0.44	0.527	IO				1.63
64.333	0.00	0.44	0.524	IO				1.62
64.417	0.00	0.44	0.521	IO				1.62
64.500	0.00	0.44	0.518	IO				1.61
64.583	0.00	0.44	0.515	IO				1.61
64.667	0.00	0.44	0.512	IO				1.60
64.750	0.00	0.43	0.509	IO				1.60
64.833	0.00	0.43	0.506	IO				1.59
64.917	0.00	0.43	0.503	IO				1.59
65.000	0.00	0.43	0.500	IO				1.58
65.083	0.00	0.43	0.497	IO				1.58
65.167	0.00	0.43	0.494	IO				1.57
65.250	0.00	0.43	0.491	IO				1.57
65.333	0.00	0.43	0.488	IO				1.56
65.417	0.00	0.43	0.485	IO				1.56
65.500	0.00	0.43	0.482	IO				1.55
65.583	0.00	0.43	0.479	IO				1.55
65.667	0.00	0.43	0.476	IO				1.54
65.750	0.00	0.43	0.473	IO				1.54
65.833	0.00	0.42	0.471	IO				1.53
65.917	0.00	0.42	0.468	IO				1.53
66.000	0.00	0.42	0.465	IO				1.52
66.083	0.00	0.42	0.462	IO				1.52
66.167	0.00	0.42	0.459	IO				1.51
66.250	0.00	0.42	0.456	IO				1.51
66.333	0.00	0.42	0.453	IO				1.50
66.417	0.00	0.42	0.450	IO				1.50
66.500	0.00	0.42	0.447	IO				1.49
66.583	0.00	0.42	0.444	IO				1.49
66.667	0.00	0.42	0.442	IO				1.48
66.750	0.00	0.42	0.439	IO				1.48
66.833	0.00	0.42	0.436	IO				1.47
66.917	0.00	0.41	0.433	IO				1.47
67.000	0.00	0.41	0.430	IO				1.46
67.083	0.00	0.41	0.427	IO				1.46
67.167	0.00	0.41	0.424	IO				1.45
67.250	0.00	0.41	0.422	IO				1.45
67.333	0.00	0.41	0.419	IO				1.44
67.417	0.00	0.41	0.416	IO				1.44
67.500	0.00	0.41	0.413	IO				1.43
67.583	0.00	0.41	0.410	IO				1.43
67.667	0.00	0.41	0.407	IO				1.42
67.750	0.00	0.41	0.405	IO				1.42
67.833	0.00	0.41	0.402	IO				1.41
67.917	0.00	0.41	0.399	IO				1.41
68.000	0.00	0.40	0.396	IO				1.40
68.083	0.00	0.40	0.394	IO				1.40

68.167	0.00	0.40	0.391	IO				1.39
68.250	0.00	0.40	0.388	IO				1.39
68.333	0.00	0.40	0.385	IO				1.38
68.417	0.00	0.40	0.382	IO				1.38
68.500	0.00	0.40	0.380	IO				1.37
68.583	0.00	0.40	0.377	IO				1.37
68.667	0.00	0.40	0.374	IO				1.37
68.750	0.00	0.40	0.371	IO				1.36
68.833	0.00	0.40	0.369	IO				1.36
68.917	0.00	0.40	0.366	IO				1.35
69.000	0.00	0.40	0.363	IO				1.35
69.083	0.00	0.39	0.361	IO				1.34
69.167	0.00	0.39	0.358	IO				1.34
69.250	0.00	0.39	0.355	IO				1.33
69.333	0.00	0.39	0.352	IO				1.33
69.417	0.00	0.39	0.350	IO				1.32
69.500	0.00	0.39	0.347	IO				1.32
69.583	0.00	0.39	0.344	IO				1.31
69.667	0.00	0.39	0.342	IO				1.31
69.750	0.00	0.39	0.339	IO				1.30
69.833	0.00	0.39	0.336	IO				1.30
69.917	0.00	0.39	0.334	IO				1.30
70.000	0.00	0.39	0.331	IO				1.29
70.083	0.00	0.39	0.328	IO				1.29
70.167	0.00	0.39	0.326	IO				1.28
70.250	0.00	0.38	0.323	IO				1.28
70.333	0.00	0.38	0.320	IO				1.27
70.417	0.00	0.38	0.318	IO				1.27
70.500	0.00	0.38	0.315	IO				1.26
70.583	0.00	0.38	0.312	IO				1.26
70.667	0.00	0.38	0.310	IO				1.25
70.750	0.00	0.38	0.307	IO				1.25
70.833	0.00	0.38	0.304	IO				1.24
70.917	0.00	0.38	0.302	IO				1.24
71.000	0.00	0.38	0.299	IO				1.24
71.083	0.00	0.38	0.297	IO				1.23
71.167	0.00	0.38	0.294	IO				1.23
71.250	0.00	0.38	0.291	IO				1.22
71.333	0.00	0.38	0.289	IO				1.22
71.417	0.00	0.38	0.286	IO				1.21
71.500	0.00	0.37	0.284	IO				1.21
71.583	0.00	0.37	0.281	IO				1.20
71.667	0.00	0.37	0.279	IO				1.20
71.750	0.00	0.37	0.276	IO				1.20
71.833	0.00	0.37	0.273	IO				1.19
71.917	0.00	0.37	0.271	IO				1.19
72.000	0.00	0.37	0.268	IO				1.18
72.083	0.00	0.37	0.266	IO				1.18
72.167	0.00	0.37	0.263	IO				1.17
72.250	0.00	0.37	0.261	IO				1.17
72.333	0.00	0.37	0.258	IO				1.16
72.417	0.00	0.37	0.256	IO				1.16
72.500	0.00	0.37	0.253	IO				1.16
72.583	0.00	0.37	0.251	IO				1.15
72.667	0.00	0.36	0.248	IO				1.15
72.750	0.00	0.36	0.246	IO				1.14
72.833	0.00	0.36	0.243	IO				1.14
72.917	0.00	0.36	0.241	IO				1.13
73.000	0.00	0.36	0.238	IO				1.13
73.083	0.00	0.36	0.236	IO				1.13
73.167	0.00	0.36	0.233	IO				1.12
73.250	0.00	0.36	0.231	IO				1.12
73.333	0.00	0.36	0.228	IO				1.11
73.417	0.00	0.36	0.226	IO				1.11
73.500	0.00	0.36	0.223	IO				1.10
73.583	0.00	0.36	0.221	IO				1.10
73.667	0.00	0.36	0.218	IO				1.10
73.750	0.00	0.36	0.216	IO				1.09
73.833	0.00	0.36	0.213	IO				1.09
73.917	0.00	0.35	0.211	IO				1.08
74.000	0.00	0.35	0.208	IO				1.08
74.083	0.00	0.35	0.206	IO				1.07
74.167	0.00	0.35	0.204	IO				1.07
74.250	0.00	0.35	0.201	IO				1.07
74.333	0.00	0.35	0.199	IO				1.06

74.417	0.00	0.35	0.196	IO					1.06
74.500	0.00	0.35	0.194	IO					1.05
74.583	0.00	0.35	0.191	IO					1.05
74.667	0.00	0.35	0.189	IO					1.05
74.750	0.00	0.35	0.187	IO					1.04
74.833	0.00	0.35	0.184	IO					1.04
74.917	0.00	0.35	0.182	IO					1.03
75.000	0.00	0.35	0.180	IO					1.03
75.083	0.00	0.35	0.177	IO					1.02
75.167	0.00	0.35	0.175	IO					1.02
75.250	0.00	0.34	0.172	IO					1.02
75.333	0.00	0.34	0.170	IO					1.01
75.417	0.00	0.34	0.168	IO					1.01
75.500	0.00	0.34	0.165	IO					1.00
75.583	0.00	0.34	0.163	IO					1.00
75.667	0.00	0.34	0.161	O					0.99
75.750	0.00	0.33	0.158	O					0.97
75.833	0.00	0.33	0.156	O					0.96
75.917	0.00	0.32	0.154	O					0.95
76.000	0.00	0.32	0.152	O					0.94
76.083	0.00	0.31	0.149	O					0.92
76.167	0.00	0.31	0.147	O					0.91
76.250	0.00	0.30	0.145	O					0.90
76.333	0.00	0.30	0.143	O					0.89
76.417	0.00	0.30	0.141	O					0.88
76.500	0.00	0.29	0.139	O					0.87
76.583	0.00	0.29	0.137	O					0.85
76.667	0.00	0.28	0.135	O					0.84
76.750	0.00	0.28	0.133	O					0.83
76.833	0.00	0.27	0.131	O					0.82
76.917	0.00	0.27	0.129	O					0.81
77.000	0.00	0.27	0.128	O					0.80
77.083	0.00	0.26	0.126	O					0.79
77.167	0.00	0.26	0.124	O					0.78
77.250	0.00	0.25	0.122	O					0.77
77.333	0.00	0.25	0.120	O					0.76
77.417	0.00	0.25	0.119	O					0.75
77.500	0.00	0.24	0.117	O					0.74
77.583	0.00	0.24	0.115	O					0.73
77.667	0.00	0.24	0.114	O					0.72
77.750	0.00	0.23	0.112	O					0.71
77.833	0.00	0.23	0.110	O					0.70
77.917	0.00	0.23	0.109	O					0.70
78.000	0.00	0.22	0.107	O					0.69
78.083	0.00	0.22	0.106	O					0.68
78.167	0.00	0.22	0.104	O					0.67
78.250	0.00	0.21	0.103	O					0.66
78.333	0.00	0.21	0.101	O					0.65
78.417	0.00	0.21	0.100	O					0.65
78.500	0.00	0.20	0.098	O					0.64
78.583	0.00	0.20	0.097	O					0.63
78.667	0.00	0.20	0.096	O					0.62
78.750	0.00	0.20	0.094	O					0.61
78.833	0.00	0.19	0.093	O					0.61
78.917	0.00	0.19	0.092	O					0.60
79.000	0.00	0.19	0.090	O					0.59
79.083	0.00	0.18	0.089	O					0.58
79.167	0.00	0.18	0.088	O					0.58
79.250	0.00	0.18	0.087	O					0.57
79.333	0.00	0.18	0.085	O					0.56
79.417	0.00	0.17	0.084	O					0.56
79.500	0.00	0.17	0.083	O					0.55
79.583	0.00	0.17	0.082	O					0.54
79.667	0.00	0.17	0.081	O					0.54
79.750	0.00	0.16	0.080	O					0.53
79.833	0.00	0.16	0.078	O					0.52
79.917	0.00	0.16	0.077	O					0.52
80.000	0.00	0.16	0.076	O					0.51
80.083	0.00	0.15	0.075	O					0.51
80.167	0.00	0.15	0.074	O					0.50
80.250	0.00	0.15	0.073	O					0.49
80.333	0.00	0.15	0.072	O					0.49
80.417	0.00	0.15	0.071	O					0.48
80.500	0.00	0.14	0.070	O					0.48
80.583	0.00	0.14	0.069	O					0.47

80.667	0.00	0.14	0.068	O					0.47
80.750	0.00	0.14	0.067	O					0.46
80.833	0.00	0.14	0.066	O					0.46
80.917	0.00	0.13	0.065	O					0.45
81.000	0.00	0.13	0.064	O					0.44
81.083	0.00	0.13	0.063	O					0.44
81.167	0.00	0.13	0.063	O					0.43
81.250	0.00	0.13	0.062	O					0.43
81.333	0.00	0.12	0.061	O					0.43
81.417	0.00	0.12	0.060	O					0.42
81.500	0.00	0.12	0.059	O					0.42
81.583	0.00	0.12	0.058	O					0.41
81.667	0.00	0.12	0.057	O					0.41
81.750	0.00	0.12	0.057	O					0.40
81.833	0.00	0.11	0.056	O					0.40
81.917	0.00	0.11	0.055	O					0.39
82.000	0.00	0.11	0.054	O					0.39
82.083	0.00	0.11	0.054	O					0.38
82.167	0.00	0.11	0.053	O					0.38
82.250	0.00	0.11	0.052	O					0.38
82.333	0.00	0.10	0.051	O					0.37
82.417	0.00	0.10	0.051	O					0.37
82.500	0.00	0.10	0.050	O					0.36
82.583	0.00	0.10	0.049	O					0.36
82.667	0.00	0.10	0.049	O					0.36
82.750	0.00	0.10	0.048	O					0.35
82.833	0.00	0.10	0.047	O					0.35
82.917	0.00	0.09	0.047	O					0.35
83.000	0.00	0.09	0.046	O					0.34
83.083	0.00	0.09	0.045	O					0.34
83.167	0.00	0.09	0.045	O					0.33
83.250	0.00	0.09	0.044	O					0.33
83.333	0.00	0.09	0.043	O					0.33
83.417	0.00	0.09	0.043	O					0.32
83.500	0.00	0.08	0.042	O					0.32
83.583	0.00	0.08	0.042	O					0.32
83.667	0.00	0.08	0.041	O					0.31
83.750	0.00	0.08	0.041	O					0.31
83.833	0.00	0.08	0.040	O					0.31
83.917	0.00	0.08	0.039	O					0.31
84.000	0.00	0.08	0.039	O					0.30
84.083	0.00	0.08	0.038	O					0.30
84.167	0.00	0.08	0.038	O					0.30
84.250	0.00	0.07	0.037	O					0.29
84.333	0.00	0.07	0.037	O					0.29
84.417	0.00	0.07	0.036	O					0.29
84.500	0.00	0.07	0.036	O					0.28
84.583	0.00	0.07	0.035	O					0.28
84.667	0.00	0.07	0.035	O					0.28
84.750	0.00	0.07	0.034	O					0.28
84.833	0.00	0.07	0.034	O					0.27
84.917	0.00	0.07	0.034	O					0.27
85.000	0.00	0.07	0.033	O					0.27
85.083	0.00	0.06	0.033	O					0.27
85.167	0.00	0.06	0.032	O					0.26
85.250	0.00	0.06	0.032	O					0.26
85.333	0.00	0.06	0.031	O					0.26
85.417	0.00	0.06	0.031	O					0.26
85.500	0.00	0.06	0.030	O					0.25
85.583	0.00	0.06	0.030	O					0.25
85.667	0.00	0.06	0.030	O					0.25
85.750	0.00	0.06	0.029	O					0.25
85.833	0.00	0.06	0.029	O					0.25
85.917	0.00	0.06	0.029	O					0.24
86.000	0.00	0.05	0.028	O					0.24
86.083	0.00	0.05	0.028	O					0.24
86.167	0.00	0.05	0.027	O					0.24
86.250	0.00	0.05	0.027	O					0.24
86.333	0.00	0.05	0.027	O					0.23
86.417	0.00	0.05	0.026	O					0.23
86.500	0.00	0.05	0.026	O					0.23
86.583	0.00	0.05	0.026	O					0.23
86.667	0.00	0.05	0.025	O					0.23
86.750	0.00	0.05	0.025	O					0.22
86.833	0.00	0.05	0.025	O					0.22

86.917	0.00	0.05	0.024	O	|	|	|	|	0.22
87.000	0.00	0.05	0.024	O	|	|	|	|	0.22
87.083	0.00	0.05	0.024	O	|	|	|	|	0.22
87.167	0.00	0.04	0.023	O	|	|	|	|	0.21
87.250	0.00	0.04	0.023	O	|	|	|	|	0.21
87.333	0.00	0.04	0.023	O	|	|	|	|	0.21
87.417	0.00	0.04	0.022	O	|	|	|	|	0.21
87.500	0.00	0.04	0.022	O	|	|	|	|	0.21
87.583	0.00	0.04	0.022	O	|	|	|	|	0.21
87.667	0.00	0.04	0.022	O	|	|	|	|	0.20
87.750	0.00	0.04	0.021	O	|	|	|	|	0.20
87.833	0.00	0.04	0.021	O	|	|	|	|	0.20
87.917	0.00	0.04	0.021	O	|	|	|	|	0.20
88.000	0.00	0.04	0.021	O	|	|	|	|	0.20
88.083	0.00	0.04	0.020	O	|	|	|	|	0.20
88.167	0.00	0.04	0.020	O	|	|	|	|	0.20
88.250	0.00	0.04	0.020	O	|	|	|	|	0.19
88.333	0.00	0.04	0.020	O	|	|	|	|	0.19
88.417	0.00	0.04	0.019	O	|	|	|	|	0.19
88.500	0.00	0.04	0.019	O	|	|	|	|	0.19
88.583	0.00	0.03	0.019	O	|	|	|	|	0.19
88.667	0.00	0.03	0.019	O	|	|	|	|	0.19
88.750	0.00	0.03	0.018	O	|	|	|	|	0.19
88.833	0.00	0.03	0.018	O	|	|	|	|	0.18
88.917	0.00	0.03	0.018	O	|	|	|	|	0.18
89.000	0.00	0.03	0.018	O	|	|	|	|	0.18
89.083	0.00	0.03	0.017	O	|	|	|	|	0.18
89.167	0.00	0.03	0.017	O	|	|	|	|	0.18
89.250	0.00	0.03	0.017	O	|	|	|	|	0.18
89.333	0.00	0.03	0.017	O	|	|	|	|	0.18
89.417	0.00	0.03	0.017	O	|	|	|	|	0.18
89.500	0.00	0.03	0.016	O	|	|	|	|	0.18
89.583	0.00	0.03	0.016	O	|	|	|	|	0.17
89.667	0.00	0.03	0.016	O	|	|	|	|	0.17
89.750	0.00	0.03	0.016	O	|	|	|	|	0.17
89.833	0.00	0.03	0.016	O	|	|	|	|	0.17
89.917	0.00	0.03	0.015	O	|	|	|	|	0.17
90.000	0.00	0.03	0.015	O	|	|	|	|	0.17
90.083	0.00	0.03	0.015	O	|	|	|	|	0.17
90.167	0.00	0.03	0.015	O	|	|	|	|	0.17
90.250	0.00	0.03	0.015	O	|	|	|	|	0.17
90.333	0.00	0.03	0.014	O	|	|	|	|	0.16
90.417	0.00	0.03	0.014	O	|	|	|	|	0.16
90.500	0.00	0.02	0.014	O	|	|	|	|	0.16
90.583	0.00	0.02	0.014	O	|	|	|	|	0.16
90.667	0.00	0.02	0.014	O	|	|	|	|	0.16
90.750	0.00	0.02	0.014	O	|	|	|	|	0.16
90.833	0.00	0.02	0.013	O	|	|	|	|	0.16
90.917	0.00	0.02	0.013	O	|	|	|	|	0.16
91.000	0.00	0.02	0.013	O	|	|	|	|	0.16
91.083	0.00	0.02	0.013	O	|	|	|	|	0.16
91.167	0.00	0.02	0.013	O	|	|	|	|	0.16
91.250	0.00	0.02	0.013	O	|	|	|	|	0.15
91.333	0.00	0.02	0.013	O	|	|	|	|	0.15
91.417	0.00	0.02	0.012	O	|	|	|	|	0.15
91.500	0.00	0.02	0.012	O	|	|	|	|	0.15
91.583	0.00	0.02	0.012	O	|	|	|	|	0.15
91.667	0.00	0.02	0.012	O	|	|	|	|	0.15
91.750	0.00	0.02	0.012	O	|	|	|	|	0.15
91.833	0.00	0.02	0.012	O	|	|	|	|	0.15
91.917	0.00	0.02	0.012	O	|	|	|	|	0.15
92.000	0.00	0.02	0.011	O	|	|	|	|	0.15
92.083	0.00	0.02	0.011	O	|	|	|	|	0.15
92.167	0.00	0.02	0.011	O	|	|	|	|	0.15
92.250	0.00	0.02	0.011	O	|	|	|	|	0.15
92.333	0.00	0.02	0.011	O	|	|	|	|	0.14
92.417	0.00	0.02	0.011	O	|	|	|	|	0.14
92.500	0.00	0.02	0.011	O	|	|	|	|	0.14
92.583	0.00	0.02	0.011	O	|	|	|	|	0.14
92.667	0.00	0.02	0.010	O	|	|	|	|	0.14
92.750	0.00	0.02	0.010	O	|	|	|	|	0.14
92.833	0.00	0.02	0.010	O	|	|	|	|	0.14
92.917	0.00	0.02	0.010	O	|	|	|	|	0.14
93.000	0.00	0.02	0.010	O	|	|	|	|	0.14
93.083	0.00	0.02	0.010	O	|	|	|	|	0.14

93.167	0.00	0.02	0.010	O	|	|	|	|	0.14
93.250	0.00	0.02	0.010	O	|	|	|	|	0.14
93.333	0.00	0.01	0.010	O	|	|	|	|	0.14
93.417	0.00	0.01	0.009	O	|	|	|	|	0.14
93.500	0.00	0.01	0.009	O	|	|	|	|	0.14
93.583	0.00	0.01	0.009	O	|	|	|	|	0.14
93.667	0.00	0.01	0.009	O	|	|	|	|	0.13
93.750	0.00	0.01	0.009	O	|	|	|	|	0.13
93.833	0.00	0.01	0.009	O	|	|	|	|	0.13
93.917	0.00	0.01	0.009	O	|	|	|	|	0.13
94.000	0.00	0.01	0.009	O	|	|	|	|	0.13
94.083	0.00	0.01	0.009	O	|	|	|	|	0.13
94.167	0.00	0.01	0.009	O	|	|	|	|	0.13
94.250	0.00	0.01	0.009	O	|	|	|	|	0.13
94.333	0.00	0.01	0.008	O	|	|	|	|	0.13
94.417	0.00	0.01	0.008	O	|	|	|	|	0.13
94.500	0.00	0.01	0.008	O	|	|	|	|	0.13
94.583	0.00	0.01	0.008	O	|	|	|	|	0.13
94.667	0.00	0.01	0.008	O	|	|	|	|	0.13
94.750	0.00	0.01	0.008	O	|	|	|	|	0.13
94.833	0.00	0.01	0.008	O	|	|	|	|	0.13
94.917	0.00	0.01	0.008	O	|	|	|	|	0.13
95.000	0.00	0.01	0.008	O	|	|	|	|	0.13
95.083	0.00	0.01	0.008	O	|	|	|	|	0.13
95.167	0.00	0.01	0.008	O	|	|	|	|	0.13
95.250	0.00	0.01	0.008	O	|	|	|	|	0.13
95.333	0.00	0.01	0.007	O	|	|	|	|	0.13
95.417	0.00	0.01	0.007	O	|	|	|	|	0.12
95.500	0.00	0.01	0.007	O	|	|	|	|	0.12
95.583	0.00	0.01	0.007	O	|	|	|	|	0.12
95.667	0.00	0.01	0.007	O	|	|	|	|	0.12
95.750	0.00	0.01	0.007	O	|	|	|	|	0.12
95.833	0.00	0.01	0.007	O	|	|	|	|	0.12
95.917	0.00	0.01	0.007	O	|	|	|	|	0.12
96.000	0.00	0.01	0.007	O	|	|	|	|	0.12
96.083	0.00	0.01	0.007	O	|	|	|	|	0.12
96.167	0.00	0.01	0.007	O	|	|	|	|	0.12
96.250	0.00	0.01	0.007	O	|	|	|	|	0.12
96.333	0.00	0.01	0.007	O	|	|	|	|	0.12
96.417	0.00	0.01	0.007	O	|	|	|	|	0.12
96.500	0.00	0.01	0.007	O	|	|	|	|	0.12
96.583	0.00	0.01	0.007	O	|	|	|	|	0.12
96.667	0.00	0.01	0.006	O	|	|	|	|	0.12
96.750	0.00	0.01	0.006	O	|	|	|	|	0.12
96.833	0.00	0.01	0.006	O	|	|	|	|	0.12
96.917	0.00	0.01	0.006	O	|	|	|	|	0.12
97.000	0.00	0.01	0.006	O	|	|	|	|	0.12
97.083	0.00	0.01	0.006	O	|	|	|	|	0.12
97.167	0.00	0.01	0.006	O	|	|	|	|	0.12
97.250	0.00	0.01	0.006	O	|	|	|	|	0.12
97.333	0.00	0.01	0.006	O	|	|	|	|	0.12
97.417	0.00	0.01	0.006	O	|	|	|	|	0.12
97.500	0.00	0.01	0.006	O	|	|	|	|	0.12
97.583	0.00	0.01	0.006	O	|	|	|	|	0.12
97.667	0.00	0.01	0.006	O	|	|	|	|	0.12
97.750	0.00	0.01	0.006	O	|	|	|	|	0.12
97.833	0.00	0.01	0.006	O	|	|	|	|	0.12
97.917	0.00	0.01	0.006	O	|	|	|	|	0.12
98.000	0.00	0.01	0.006	O	|	|	|	|	0.11
98.083	0.00	0.01	0.006	O	|	|	|	|	0.11
98.167	0.00	0.01	0.006	O	|	|	|	|	0.11
98.250	0.00	0.01	0.005	O	|	|	|	|	0.11
98.333	0.00	0.01	0.005	O	|	|	|	|	0.11
98.417	0.00	0.01	0.005	O	|	|	|	|	0.11
98.500	0.00	0.01	0.005	O	|	|	|	|	0.11
98.583	0.00	0.01	0.005	O	|	|	|	|	0.11
98.667	0.00	0.01	0.005	O	|	|	|	|	0.11
98.750	0.00	0.01	0.005	O	|	|	|	|	0.11
98.833	0.00	0.01	0.005	O	|	|	|	|	0.11
98.917	0.00	0.01	0.005	O	|	|	|	|	0.11
99.000	0.00	0.01	0.005	O	|	|	|	|	0.11
99.083	0.00	0.01	0.005	O	|	|	|	|	0.11
99.167	0.00	0.01	0.005	O	|	|	|	|	0.11
99.250	0.00	0.01	0.005	O	|	|	|	|	0.11
99.333	0.00	0.01	0.005	O	|	|	|	|	0.11

99.417	0.00	0.01	0.005	O	|	|	|	|	0.11
99.500	0.00	0.01	0.005	O	|	|	|	|	0.11
99.583	0.00	0.00	0.005	O	|	|	|	|	0.11
99.667	0.00	0.00	0.005	O	|	|	|	|	0.11
99.750	0.00	0.00	0.005	O	|	|	|	|	0.11
99.833	0.00	0.00	0.005	O	|	|	|	|	0.11
99.917	0.00	0.00	0.005	O	|	|	|	|	0.11
100.000	0.00	0.00	0.005	O	|	|	|	|	0.11
100.083	0.00	0.00	0.005	O	|	|	|	|	0.11
100.167	0.00	0.00	0.005	O	|	|	|	|	0.11
100.250	0.00	0.00	0.005	O	|	|	|	|	0.11
100.333	0.00	0.00	0.005	O	|	|	|	|	0.11
100.417	0.00	0.00	0.005	O	|	|	|	|	0.11
100.500	0.00	0.00	0.005	O	|	|	|	|	0.11
100.583	0.00	0.00	0.004	O	|	|	|	|	0.11
100.667	0.00	0.00	0.004	O	|	|	|	|	0.11
100.750	0.00	0.00	0.004	O	|	|	|	|	0.11
100.833	0.00	0.00	0.004	O	|	|	|	|	0.11
100.917	0.00	0.00	0.004	O	|	|	|	|	0.11
101.000	0.00	0.00	0.004	O	|	|	|	|	0.11
101.083	0.00	0.00	0.004	O	|	|	|	|	0.11
101.167	0.00	0.00	0.004	O	|	|	|	|	0.11
101.250	0.00	0.00	0.004	O	|	|	|	|	0.11
101.333	0.00	0.00	0.004	O	|	|	|	|	0.11
101.417	0.00	0.00	0.004	O	|	|	|	|	0.11
101.500	0.00	0.00	0.004	O	|	|	|	|	0.11
101.583	0.00	0.00	0.004	O	|	|	|	|	0.11
101.667	0.00	0.00	0.004	O	|	|	|	|	0.11
101.750	0.00	0.00	0.004	O	|	|	|	|	0.11
101.833	0.00	0.00	0.004	O	|	|	|	|	0.11
101.917	0.00	0.00	0.004	O	|	|	|	|	0.11
102.000	0.00	0.00	0.004	O	|	|	|	|	0.11
102.083	0.00	0.00	0.004	O	|	|	|	|	0.11
102.167	0.00	0.00	0.004	O	|	|	|	|	0.11
102.250	0.00	0.00	0.004	O	|	|	|	|	0.11
102.333	0.00	0.00	0.004	O	|	|	|	|	0.11
102.417	0.00	0.00	0.004	O	|	|	|	|	0.11
102.500	0.00	0.00	0.004	O	|	|	|	|	0.11
102.583	0.00	0.00	0.004	O	|	|	|	|	0.11
102.667	0.00	0.00	0.004	O	|	|	|	|	0.11
102.750	0.00	0.00	0.004	O	|	|	|	|	0.10
102.833	0.00	0.00	0.004	O	|	|	|	|	0.10
102.917	0.00	0.00	0.004	O	|	|	|	|	0.10
103.000	0.00	0.00	0.004	O	|	|	|	|	0.10
103.083	0.00	0.00	0.004	O	|	|	|	|	0.10
103.167	0.00	0.00	0.004	O	|	|	|	|	0.10
103.250	0.00	0.00	0.004	O	|	|	|	|	0.10
103.333	0.00	0.00	0.004	O	|	|	|	|	0.10
103.417	0.00	0.00	0.004	O	|	|	|	|	0.10
103.500	0.00	0.00	0.004	O	|	|	|	|	0.10
103.583	0.00	0.00	0.004	O	|	|	|	|	0.10
103.667	0.00	0.00	0.004	O	|	|	|	|	0.10
103.750	0.00	0.00	0.004	O	|	|	|	|	0.10
103.833	0.00	0.00	0.004	O	|	|	|	|	0.10
103.917	0.00	0.00	0.004	O	|	|	|	|	0.10
104.000	0.00	0.00	0.004	O	|	|	|	|	0.10
104.083	0.00	0.00	0.004	O	|	|	|	|	0.10
104.167	0.00	0.00	0.004	O	|	|	|	|	0.10
104.250	0.00	0.00	0.004	O	|	|	|	|	0.10
104.333	0.00	0.00	0.004	O	|	|	|	|	0.10
104.417	0.00	0.00	0.004	O	|	|	|	|	0.10
104.500	0.00	0.00	0.004	O	|	|	|	|	0.10
104.583	0.00	0.00	0.004	O	|	|	|	|	0.10
104.667	0.00	0.00	0.003	O	|	|	|	|	0.10
104.750	0.00	0.00	0.003	O	|	|	|	|	0.10
104.833	0.00	0.00	0.003	O	|	|	|	|	0.10
104.917	0.00	0.00	0.003	O	|	|	|	|	0.10
105.000	0.00	0.00	0.003	O	|	|	|	|	0.10
105.083	0.00	0.00	0.003	O	|	|	|	|	0.10
105.167	0.00	0.00	0.003	O	|	|	|	|	0.10
105.250	0.00	0.00	0.003	O	|	|	|	|	0.10
105.333	0.00	0.00	0.003	O	|	|	|	|	0.10
105.417	0.00	0.00	0.003	O	|	|	|	|	0.10
105.500	0.00	0.00	0.003	O	|	|	|	|	0.10
105.583	0.00	0.00	0.003	O	|	|	|	|	0.10

105.667	0.00	0.00	0.003	O	|	|	|	|	0.10
105.750	0.00	0.00	0.003	O	|	|	|	|	0.10
105.833	0.00	0.00	0.003	O	|	|	|	|	0.10
105.917	0.00	0.00	0.003	O	|	|	|	|	0.10
106.000	0.00	0.00	0.003	O	|	|	|	|	0.10
106.083	0.00	0.00	0.003	O	|	|	|	|	0.10
106.167	0.00	0.00	0.003	O	|	|	|	|	0.10
106.250	0.00	0.00	0.003	O	|	|	|	|	0.10
106.333	0.00	0.00	0.003	O	|	|	|	|	0.10
106.417	0.00	0.00	0.003	O	|	|	|	|	0.10
106.500	0.00	0.00	0.003	O	|	|	|	|	0.10
106.583	0.00	0.00	0.003	O	|	|	|	|	0.10
106.667	0.00	0.00	0.003	O	|	|	|	|	0.10
106.750	0.00	0.00	0.003	O	|	|	|	|	0.10
106.833	0.00	0.00	0.003	O	|	|	|	|	0.10
106.917	0.00	0.00	0.003	O	|	|	|	|	0.10
107.000	0.00	0.00	0.003	O	|	|	|	|	0.10
107.083	0.00	0.00	0.003	O	|	|	|	|	0.10
107.167	0.00	0.00	0.003	O	|	|	|	|	0.10
107.250	0.00	0.00	0.003	O	|	|	|	|	0.10
107.333	0.00	0.00	0.003	O	|	|	|	|	0.10
107.417	0.00	0.00	0.003	O	|	|	|	|	0.10
107.500	0.00	0.00	0.003	O	|	|	|	|	0.10
107.583	0.00	0.00	0.003	O	|	|	|	|	0.10
107.667	0.00	0.00	0.003	O	|	|	|	|	0.10
107.750	0.00	0.00	0.003	O	|	|	|	|	0.10
107.833	0.00	0.00	0.003	O	|	|	|	|	0.10
107.917	0.00	0.00	0.003	O	|	|	|	|	0.10
108.000	0.00	0.00	0.003	O	|	|	|	|	0.10
108.083	0.00	0.00	0.003	O	|	|	|	|	0.10
108.167	0.00	0.00	0.003	O	|	|	|	|	0.10
108.250	0.00	0.00	0.003	O	|	|	|	|	0.10
108.333	0.00	0.00	0.003	O	|	|	|	|	0.10
108.417	0.00	0.00	0.003	O	|	|	|	|	0.10
108.500	0.00	0.00	0.003	O	|	|	|	|	0.10
108.583	0.00	0.00	0.003	O	|	|	|	|	0.10
108.667	0.00	0.00	0.003	O	|	|	|	|	0.10
108.750	0.00	0.00	0.003	O	|	|	|	|	0.10

Remaining water in basin = 0.00 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1305
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 3.768 (CFS)
Total volume = 5.507 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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BASIN ROUTING
DMA A
PROPOSED CONDITIONS
10-YEAR 24-HOUR

FLOOD HYDROGRAPH ROUTING PROGRAM
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Study date: 10/22/14

14-0213 SHOPOFF
BASIN ROUTING
DMA A
10-YEAR 24-HOUR

Program License Serial Number 4010

********** HYDROGRAPH INFORMATION **********

From study/file name: APROP2410.rte
**********HYDROGRAPH DATA**********
Number of intervals = 294
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 21.522 (CFS)
Total volume = 10.870 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 294
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.100	0.003	0.001	0.003	0.003
1.000	0.163	0.342	0.162	0.164
2.000	0.741	0.497	0.739	0.743
3.000	1.753	0.614	1.751	1.755
3.400	2.222	0.656	2.220	2.224
4.000	2.978	2.841	2.968	2.988
4.400	3.517	3.817	3.504	3.530
5.000	4.378	12.529	4.335	4.421
5.200	4.679	15.300	4.626	4.732
5.500	5.144	23.007	5.065	5.223
6.000	5.955	42.225	5.810	6.100
6.500	6.811	66.515	6.582	7.040
7.000	7.713	94.837	7.386	8.040
7.500	8.662	126.640	8.226	9.098
8.000	9.656	161.558	9.100	10.212
8.500	10.697	199.324	10.011	11.383
9.000	11.786	239.733	10.960	12.612
9.500	12.922	282.618	11.949	13.895

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 5.4 10.76 16.14 21.52	Depth (Ft.)
0.083	0.23	0.00	0.001	O	0.03
0.167	0.94	0.00	0.005	OI	0.11
0.250	1.15	0.02	0.012	OI	0.15
0.333	1.34	0.04	0.020	OI	0.20
0.417	1.72	0.06	0.030	O I	0.25
0.500	1.83	0.08	0.042	O I	0.32
0.583	1.88	0.11	0.054	O I	0.39
0.667	1.89	0.14	0.066	O I	0.46
0.750	1.89	0.16	0.078	O I	0.52
0.833	2.01	0.19	0.091	O I	0.59
0.917	2.36	0.22	0.104	O I	0.67
1.000	2.47	0.25	0.119	O I	0.75
1.083	2.40	0.28	0.134	O I	0.84
1.167	2.05	0.31	0.147	O I	0.91
1.250	1.95	0.33	0.159	O I	0.98
1.333	1.91	0.34	0.170	O I	1.01
1.417	1.90	0.35	0.181	O I	1.03
1.500	1.90	0.35	0.191	O I	1.05
1.583	1.89	0.35	0.202	O I	1.07
1.667	1.89	0.36	0.213	O I	1.09
1.750	1.89	0.36	0.223	O I	1.10
1.833	2.01	0.36	0.234	O I	1.12
1.917	2.36	0.36	0.247	O I	1.14
2.000	2.47	0.37	0.261	O I	1.17
2.083	2.51	0.37	0.276	O I	1.19
2.167	2.52	0.38	0.290	O I	1.22
2.250	2.52	0.38	0.305	O I	1.25
2.333	2.53	0.38	0.320	O I	1.27
2.417	2.53	0.39	0.334	O I	1.30
2.500	2.53	0.39	0.349	O I	1.32
2.583	2.64	0.40	0.364	O I	1.35
2.667	2.99	0.40	0.381	O I	1.38
2.750	3.10	0.41	0.399	O I	1.41
2.833	3.14	0.41	0.418	O I	1.44
2.917	3.15	0.42	0.437	O I	1.47
3.000	3.16	0.42	0.455	O I	1.51
3.083	3.16	0.43	0.474	O I	1.54
3.167	3.16	0.43	0.493	O I	1.57
3.250	3.16	0.44	0.512	O I	1.60
3.333	3.16	0.44	0.531	O I	1.64
3.417	3.16	0.45	0.549	O I	1.67
3.500	3.16	0.45	0.568	O I	1.70
3.583	3.16	0.46	0.587	O I	1.73
3.667	3.16	0.46	0.605	O I	1.77
3.750	3.16	0.47	0.624	O I	1.80
3.833	3.27	0.47	0.643	O I	1.83
3.917	3.63	0.48	0.663	O I	1.87
4.000	3.73	0.48	0.685	O I	1.90
4.083	3.77	0.49	0.708	O I	1.94
4.167	3.78	0.49	0.730	O I	1.98
4.250	3.79	0.50	0.753	O I	2.01
4.333	3.90	0.50	0.776	O I	2.03
4.417	4.26	0.50	0.801	O I	2.06
4.500	4.36	0.51	0.827	O I	2.08
4.583	4.40	0.51	0.853	O I	2.11
4.667	4.41	0.51	0.880	O I	2.14
4.750	4.42	0.52	0.907	O I	2.16
4.833	4.53	0.52	0.934	O I	2.19
4.917	4.89	0.52	0.963	O I	2.22
5.000	5.00	0.53	0.994	O I	2.25
5.083	4.81	0.53	1.024	O I	2.28
5.167	4.11	0.53	1.051	O I	2.31
5.250	3.90	0.54	1.075	O I	2.33
5.333	3.94	0.54	1.098	O I	2.35
5.417	4.27	0.54	1.123	O I	2.38
5.500	4.37	0.54	1.149	O I	2.40
5.583	4.52	0.55	1.176	O I	2.43

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 5.667    4.88    0.55      1.204  O      I|       |       |       |     2.46
 5.750    4.99    0.55      1.234  O      I|       |       |       |     2.49
 5.833    5.03    0.56      1.265  O      I|       |       |       |     2.52
 5.917    5.05    0.56      1.296  O      I|       |       |       |     2.55
 6.000    5.05    0.56      1.327  O      I|       |       |       |     2.58
 6.083    5.17    0.57      1.358  O      I|       |       |       |     2.61
 6.167    5.52    0.57      1.391  O       I       |       |       |     2.64
 6.250    5.63    0.58      1.425  O       I       |       |       |     2.68
 6.333    5.67    0.58      1.460  O       I       |       |       |     2.71
 6.417    5.68    0.58      1.495  O       I       |       |       |     2.75
 6.500    5.68    0.59      1.530  O       I       |       |       |     2.78
 6.583    4.81    0.59      1.562  O      I|       |       |       |     2.81
 6.667    2.07    0.59      1.582  O  I    |       |       |       |     2.83
 6.750    1.27    0.60      1.589  OI      |       |       |       |     2.84
 6.833    0.99    0.60      1.593  OI      |       |       |       |     2.84
 6.917    0.94    0.60      1.596  OI      |       |       |       |     2.84
 7.000    0.93    0.60      1.598  OI      |       |       |       |     2.85
 7.083    0.95    0.60      1.600  OI      |       |       |       |     2.85
 7.167    0.98    0.60      1.603  OI      |       |       |       |     2.85
 7.250    1.01    0.60      1.606  OI      |       |       |       |     2.85
 7.333    1.18    0.60      1.609  OI      |       |       |       |     2.86
 7.417    1.64    0.60      1.615  O I     |       |       |       |     2.86
 7.500    1.80    0.60      1.622  O I     |       |       |       |     2.87
 7.583    2.02    0.60      1.631  O I     |       |       |       |     2.88
 7.667    2.49    0.60      1.643  O  I    |       |       |       |     2.89
 7.750    2.66    0.60      1.656  O  I    |       |       |       |     2.90
 7.833    2.88    0.60      1.671  O   I   |       |       |       |     2.92
 7.917    3.35    0.61      1.689  O   I   |       |       |       |     2.94
 8.000    3.52    0.61      1.708  O    I  |       |       |       |     2.96
 8.083    3.87    0.61      1.729  O    I  |       |       |       |     2.98
 8.167    4.78    0.61      1.755  O      I|       |       |       |     3.00
 8.250    5.08    0.62      1.785  O      I|       |       |       |     3.03
 8.333    5.21    0.62      1.816  O      I|       |       |       |     3.05
 8.417    5.26    0.62      1.847  O      I|       |       |       |     3.08
 8.500    5.30    0.63      1.880  O      I|       |       |       |     3.11
 8.583    5.47    0.63      1.912  O       I       |       |       |     3.14
 8.667    5.94    0.63      1.947  O       I       |       |       |     3.17
 8.750    6.10    0.63      1.984  O       |I      |       |       |     3.20
 8.833    6.31    0.64      2.023  O       |I      |       |       |     3.23
 8.917    6.79    0.64      2.063  O       | I     |       |       |     3.26
 9.000    6.95    0.65      2.106  O       | I     |       |       |     3.30
 9.083    7.31    0.65      2.151  O       | I     |       |       |     3.34
 9.167    8.21    0.65      2.200  O       |   I   |       |       |     3.38
 9.250    8.51    0.74      2.253  |O      |   I   |       |       |     3.42
 9.333    8.77    0.90      2.306  |O      |    I  |       |       |     3.47
 9.417    9.26    1.06      2.362  |O      |    I  |       |       |     3.51
 9.500    9.43    1.22      2.418  |O      |     I |       |       |     3.56
 9.583    9.65    1.39      2.475  | O     |     I |       |       |     3.60
 9.667   10.12    1.55      2.533  | O     |      I|       |       |     3.65
 9.750   10.29    1.73      2.592  | O     |      I|       |       |     3.69
 9.833   10.50    1.90      2.651  | O     |      I|       |       |     3.74
 9.917   10.98    2.07      2.711  |  O    |       I       |       |     3.79
10.000   11.14    2.25      2.773  |  O    |       I       |       |     3.84
10.083   10.25    2.41      2.830  |  O    |      I|       |       |     3.88
10.167    7.27    2.54      2.874  |  O    | I     |       |       |     3.92
10.250    6.39    2.62      2.903  |  O    |I      |       |       |     3.94
10.333    6.08    2.69      2.927  |   O   |I      |       |       |     3.96
10.417    6.02    2.76      2.950  |   O   I       |       |       |     3.98
10.500    6.00    2.82      2.972  |   O   I       |       |       |     4.00
10.583    6.70    2.87      2.997  |   O   |I      |       |       |     4.01
10.667    8.89    2.94      3.030  |   O   |    I  |       |       |     4.04
10.750    9.57    3.01      3.073  |   O   |     I |       |       |     4.07
10.833    9.84    3.10      3.119  |   O   |     I |       |       |     4.10
10.917    9.93    3.18      3.166  |   O   |     I |       |       |     4.14
11.000    9.98    3.26      3.212  |   O   |     I |       |       |     4.17
11.083    9.89    3.35      3.258  |   O   |     I |       |       |     4.21
11.167    9.48    3.43      3.301  |    O  |     I |       |       |     4.24
11.250    9.38    3.50      3.342  |    O  |    I  |       |       |     4.27
11.333    9.35    3.57      3.382  |    O  |    I  |       |       |     4.30
11.417    9.37    3.64      3.422  |    O  |    I  |       |       |     4.33
11.500    9.39    3.72      3.461  |    O  |    I  |       |       |     4.36
11.583    9.14    3.78      3.499  |    O  |    I  |       |       |     4.39
11.667    8.30    3.97      3.532  |    O  |   I   |       |       |     4.41
11.750    8.06    4.26      3.560  |     O |  I    |       |       |     4.43
11.833    8.13    4.51      3.586  |     O |   I   |       |       |     4.45
```

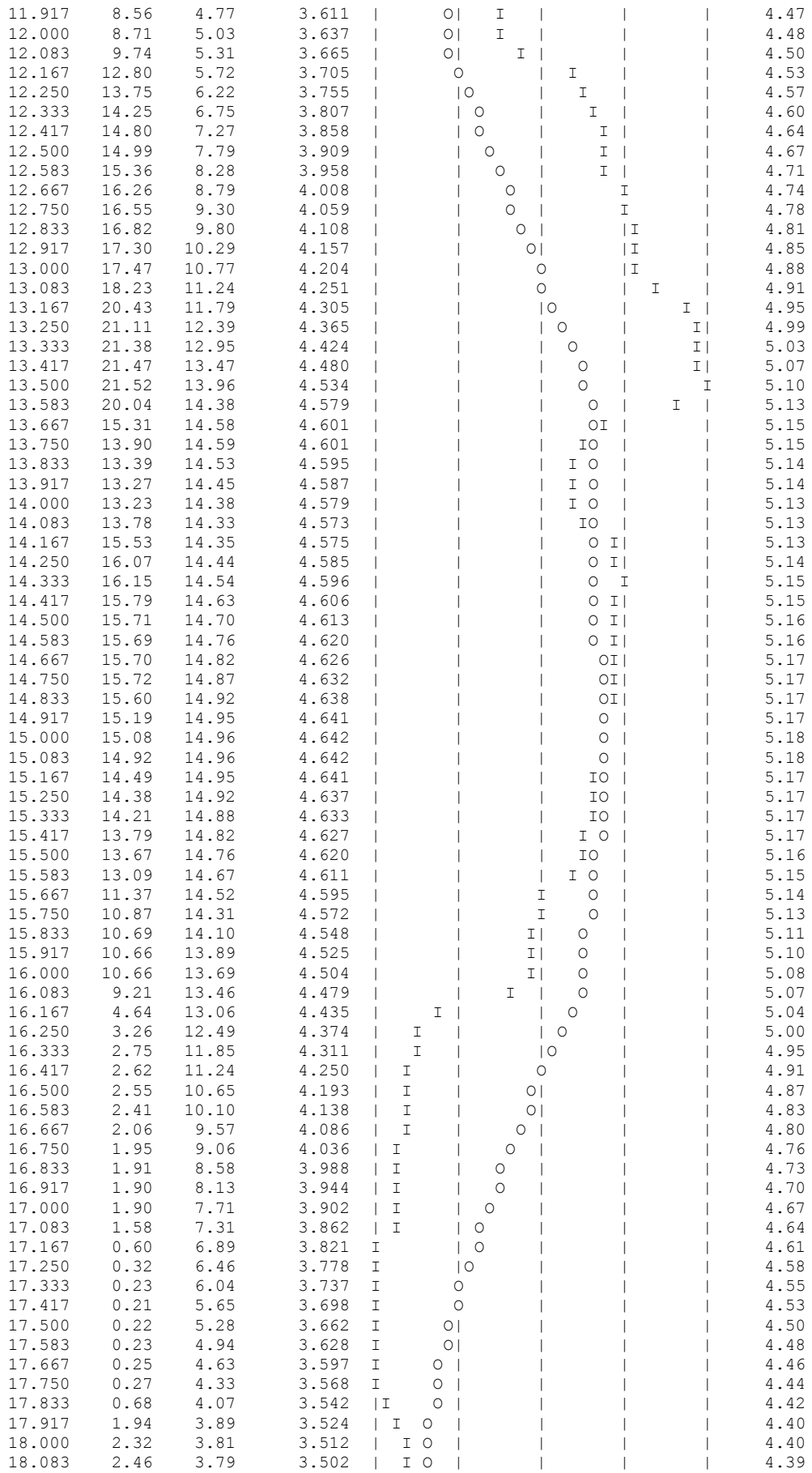

11.917	8.56	4.77	3.611	| O| I | | | 4.47
12.000	8.71	5.03	3.637	| O| I | | | 4.48
12.083	9.74	5.31	3.665	| O| I | | | 4.50
12.167	12.80	5.72	3.705	| O | I | | 4.53
12.250	13.75	6.22	3.755	| |O | I | | 4.57
12.333	14.25	6.75	3.807	| | O | I | | 4.60
12.417	14.80	7.27	3.858	| | O | I | | 4.64
12.500	14.99	7.79	3.909	| | O | I | | 4.67
12.583	15.36	8.28	3.958	| | O | I | | 4.71
12.667	16.26	8.79	4.008	| | O | I | | 4.74
12.750	16.55	9.30	4.059	| | O | I | | 4.78
12.833	16.82	9.80	4.108	| | O | |I | 4.81
12.917	17.30	10.29	4.157	| | O| |I | 4.85
13.000	17.47	10.77	4.204	| | O |I | 4.88
13.083	18.23	11.24	4.251	| | O | I | 4.91
13.167	20.43	11.79	4.305	| | |O | I | 4.95
13.250	21.11	12.39	4.365	| | | O | I| 4.99
13.333	21.38	12.95	4.424	| | | O | I| 5.03
13.417	21.47	13.47	4.480	| | | O | I| 5.07
13.500	21.52	13.96	4.534	| | | O | I 5.10
13.583	20.04	14.38	4.579	| | | O | I | 5.13
13.667	15.31	14.58	4.601	| | | OI | | 5.15
13.750	13.90	14.59	4.601	| | | IO | | 5.15
13.833	13.39	14.53	4.595	| | | I O | | 5.14
13.917	13.27	14.45	4.587	| | | I O | | 5.14
14.000	13.23	14.38	4.579	| | | I O | | 5.13
14.083	13.78	14.33	4.573	| | | IO | | 5.13
14.167	15.53	14.35	4.575	| | | O I| | 5.13
14.250	16.07	14.44	4.585	| | | O I| | 5.14
14.333	16.15	14.54	4.596	| | | O I | 5.15
14.417	15.79	14.63	4.606	| | | O I| | 5.15
14.500	15.71	14.70	4.613	| | | O I| | 5.16
14.583	15.69	14.76	4.620	| | | O I| | 5.16
14.667	15.70	14.82	4.626	| | | OI| | 5.17
14.750	15.72	14.87	4.632	| | | OI| | 5.17
14.833	15.60	14.92	4.638	| | | OI| | 5.17
14.917	15.19	14.95	4.641	| | | O | | 5.17
15.000	15.08	14.96	4.642	| | | O | | 5.18
15.083	14.92	14.96	4.642	| | | O | | 5.18
15.167	14.49	14.95	4.641	| | | IO | | 5.17
15.250	14.38	14.92	4.637	| | | IO | | 5.17
15.333	14.21	14.88	4.633	| | | IO | | 5.17
15.417	13.79	14.82	4.627	| | | I O | | 5.17
15.500	13.67	14.76	4.620	| | | IO | | 5.16
15.583	13.09	14.67	4.611	| | | I O | | 5.15
15.667	11.37	14.52	4.595	| | I O | | 5.14
15.750	10.87	14.31	4.572	| | I O | | 5.13
15.833	10.69	14.10	4.548	| | I| O | | 5.11
15.917	10.66	13.89	4.525	| | I| O | | 5.10
16.000	10.66	13.69	4.504	| | I| O | | 5.08
16.083	9.21	13.46	4.479	| | I | O | | 5.07
16.167	4.64	13.06	4.435	| I | | O | | 5.04
16.250	3.26	12.49	4.374	| I | | O | | 5.00
16.333	2.75	11.85	4.311	| I | |O | | 4.95
16.417	2.62	11.24	4.250	| I | O | | 4.91
16.500	2.55	10.65	4.193	| I | O| | | 4.87
16.583	2.41	10.10	4.138	| I | O| | | 4.83
16.667	2.06	9.57	4.086	| I | O | | | 4.80
16.750	1.95	9.06	4.036	| I | O | | | 4.76
16.833	1.91	8.58	3.988	| I | O | | | 4.73
16.917	1.90	8.13	3.944	| I | O | | | 4.70
17.000	1.90	7.71	3.902	| I | O | | | 4.67
17.083	1.58	7.31	3.862	| I | O | | | 4.64
17.167	0.60	6.89	3.821	I | O | | | 4.61
17.250	0.32	6.46	3.778	I |O | | | 4.58
17.333	0.23	6.04	3.737	I O | | | 4.55
17.417	0.21	5.65	3.698	I O | | | 4.53
17.500	0.22	5.28	3.662	I O| | | | 4.50
17.583	0.23	4.94	3.628	I O| | | | 4.48
17.667	0.25	4.63	3.597	I O | | | | 4.46
17.750	0.27	4.33	3.568	I O | | | | 4.44
17.833	0.68	4.07	3.542	|I O | | | | 4.42
17.917	1.94	3.89	3.524	| I O | | | | 4.40
18.000	2.32	3.81	3.512	| I O | | | | 4.40
18.083	2.46	3.79	3.502	| I O | | | | 4.39

18.167	2.50	3.77	3.494	| I O |				4.38
18.250	2.52	3.76	3.485	| I O |				4.38
18.333	2.53	3.74	3.476	| I O |				4.37
18.417	2.53	3.73	3.468	| I O |				4.36
18.500	2.53	3.71	3.460	| I O |				4.36
18.583	2.41	3.70	3.451	| I O |				4.35
18.667	2.06	3.68	3.441	| I O |				4.34
18.750	1.95	3.66	3.430	| I O |				4.34
18.833	1.80	3.64	3.418	| I O |				4.33
18.917	1.43	3.61	3.404	| I O |				4.32
19.000	1.32	3.58	3.389	|I O |				4.30
19.083	1.39	3.56	3.373	| I O |				4.29
19.167	1.74	3.53	3.360	| I O |				4.28
19.250	1.84	3.51	3.348	| I O |				4.27
19.333	1.99	3.49	3.337	| I O |				4.27
19.417	2.36	3.47	3.328	| I O |				4.26
19.500	2.47	3.46	3.320	| I O |				4.25
19.583	2.40	3.45	3.313	| I O |				4.25
19.667	2.05	3.43	3.305	| I O |				4.24
19.750	1.95	3.42	3.295	| I O |				4.24
19.833	1.80	3.40	3.285	| I O |				4.23
19.917	1.43	3.37	3.273	| I O |				4.22
20.000	1.32	3.35	3.259	|I O |				4.21
20.083	1.39	3.32	3.245	| I O |				4.20
20.167	1.74	3.30	3.233	| I O |				4.19
20.250	1.84	3.28	3.223	| I O |				4.18
20.333	1.88	3.27	3.213	| I O |				4.17
20.417	1.89	3.25	3.204	| I O |				4.17
20.500	1.89	3.23	3.194	| I O |				4.16
20.583	1.89	3.22	3.185	| I O |				4.15
20.667	1.89	3.20	3.176	| I O |				4.15
20.750	1.89	3.18	3.167	| I O |				4.14
20.833	1.78	3.17	3.158	| I O |				4.13
20.917	1.43	3.15	3.147	| I O |				4.13
21.000	1.32	3.13	3.135	|I O |				4.12
21.083	1.39	3.10	3.123	| I O |				4.11
21.167	1.74	3.08	3.112	| I O |				4.10
21.250	1.84	3.07	3.104	| I O |				4.09
21.333	1.76	3.05	3.095	| I O |				4.09
21.417	1.42	3.03	3.085	| I O |				4.08
21.500	1.32	3.01	3.074	|I O |				4.07
21.583	1.39	2.99	3.062	| I O |				4.06
21.667	1.74	2.98	3.052	| I O |				4.06
21.750	1.84	2.96	3.044	| I O |				4.05
21.833	1.76	2.95	3.036	| I O |				4.04
21.917	1.42	2.93	3.027	| I O |				4.04
22.000	1.32	2.91	3.016	|I O |				4.03
22.083	1.39	2.89	3.006	| I O |				4.02
22.167	1.74	2.87	2.997	| I O |				4.01
22.250	1.84	2.86	2.989	| I O |				4.01
22.333	1.76	2.85	2.982	| I O |				4.00
22.417	1.42	2.83	2.973	| I O |				4.00
22.500	1.32	2.80	2.963	|I O |				3.99
22.583	1.28	2.77	2.953	|I O |				3.98
22.667	1.27	2.74	2.943	|I O |				3.97
22.750	1.27	2.71	2.933	|I O |				3.96
22.833	1.26	2.68	2.923	|I O |				3.96
22.917	1.26	2.65	2.913	|I O |				3.95
23.000	1.26	2.63	2.904	|I O |				3.94
23.083	1.26	2.60	2.895	|I O |				3.93
23.167	1.26	2.57	2.886	|I O |				3.93
23.250	1.26	2.55	2.877	|I O |				3.92
23.333	1.26	2.52	2.868	|I O |				3.91
23.417	1.26	2.50	2.859	|I O |				3.91
23.500	1.26	2.47	2.851	|I O |				3.90
23.583	1.26	2.45	2.843	|I O |				3.89
23.667	1.26	2.43	2.834	|I O |				3.89
23.750	1.26	2.40	2.827	|I O |				3.88
23.833	1.26	2.38	2.819	|I O |				3.87
23.917	1.26	2.36	2.811	|I O |				3.87
24.000	1.26	2.34	2.804	|I O |				3.86
24.083	1.04	2.31	2.796	|I O |				3.86
24.167	0.33	2.28	2.784	I O |				3.85
24.250	0.11	2.24	2.770	I O |				3.84
24.333	0.04	2.20	2.756	I O |				3.82

24.417	0.01	2.16	2.741	I O	|	|	|	|	3.81
24.500	0.00	2.11	2.726	I O	|	|	|	|	3.80
24.583	0.00	2.07	2.712	I O	|	|	|	|	3.79
24.667	0.00	2.03	2.698	I O	|	|	|	|	3.78
24.750	0.00	1.99	2.684	I O	|	|	|	|	3.77
24.833	0.00	1.95	2.670	I O	|	|	|	|	3.76
24.917	0.00	1.91	2.657	I O	|	|	|	|	3.75
25.000	0.00	1.88	2.644	I O	|	|	|	|	3.73
25.083	0.00	1.84	2.631	I O	|	|	|	|	3.72
25.167	0.00	1.80	2.619	I O	|	|	|	|	3.71
25.250	0.00	1.77	2.606	I O	|	|	|	|	3.70
25.333	0.00	1.73	2.594	I O	|	|	|	|	3.70
25.417	0.00	1.70	2.582	I O	|	|	|	|	3.69
25.500	0.00	1.66	2.571	I O	|	|	|	|	3.68
25.583	0.00	1.63	2.559	I O	|	|	|	|	3.67
25.667	0.00	1.60	2.548	I O	|	|	|	|	3.66
25.750	0.00	1.57	2.537	I O	|	|	|	|	3.65
25.833	0.00	1.54	2.527	I O	|	|	|	|	3.64
25.917	0.00	1.51	2.516	I O	|	|	|	|	3.63
26.000	0.00	1.48	2.506	I O	|	|	|	|	3.63
26.083	0.00	1.45	2.496	I O	|	|	|	|	3.62
26.167	0.00	1.42	2.486	I O	|	|	|	|	3.61
26.250	0.00	1.39	2.476	I O	|	|	|	|	3.60
26.333	0.00	1.36	2.467	I O	|	|	|	|	3.59
26.417	0.00	1.34	2.458	IO	|	|	|	|	3.59
26.500	0.00	1.31	2.448	IO	|	|	|	|	3.58
26.583	0.00	1.28	2.440	IO	|	|	|	|	3.57
26.667	0.00	1.26	2.431	IO	|	|	|	|	3.57
26.750	0.00	1.23	2.422	IO	|	|	|	|	3.56
26.833	0.00	1.21	2.414	IO	|	|	|	|	3.55
26.917	0.00	1.19	2.406	IO	|	|	|	|	3.55
27.000	0.00	1.16	2.397	IO	|	|	|	|	3.54
27.083	0.00	1.14	2.390	IO	|	|	|	|	3.53
27.167	0.00	1.12	2.382	IO	|	|	|	|	3.53
27.250	0.00	1.10	2.374	IO	|	|	|	|	3.52
27.333	0.00	1.07	2.367	IO	|	|	|	|	3.51
27.417	0.00	1.05	2.359	IO	|	|	|	|	3.51
27.500	0.00	1.03	2.352	IO	|	|	|	|	3.50
27.583	0.00	1.01	2.345	IO	|	|	|	|	3.50
27.667	0.00	0.99	2.338	IO	|	|	|	|	3.49
27.750	0.00	0.97	2.331	IO	|	|	|	|	3.49
27.833	0.00	0.95	2.325	IO	|	|	|	|	3.48
27.917	0.00	0.93	2.318	IO	|	|	|	|	3.48
28.000	0.00	0.92	2.312	IO	|	|	|	|	3.47
28.083	0.00	0.90	2.306	IO	|	|	|	|	3.47
28.167	0.00	0.88	2.300	IO	|	|	|	|	3.46
28.250	0.00	0.86	2.294	IO	|	|	|	|	3.46
28.333	0.00	0.85	2.288	IO	|	|	|	|	3.45
28.417	0.00	0.83	2.282	IO	|	|	|	|	3.45
28.500	0.00	0.81	2.276	IO	|	|	|	|	3.44
28.583	0.00	0.80	2.271	IO	|	|	|	|	3.44
28.667	0.00	0.78	2.265	IO	|	|	|	|	3.43
28.750	0.00	0.77	2.260	IO	|	|	|	|	3.43
28.833	0.00	0.75	2.255	IO	|	|	|	|	3.43
28.917	0.00	0.74	2.250	IO	|	|	|	|	3.42
29.000	0.00	0.72	2.245	IO	|	|	|	|	3.42
29.083	0.00	0.71	2.240	IO	|	|	|	|	3.41
29.167	0.00	0.69	2.235	IO	|	|	|	|	3.41
29.250	0.00	0.68	2.230	IO	|	|	|	|	3.41
29.333	0.00	0.67	2.225	O	|	|	|	|	3.40
29.417	0.00	0.66	2.221	O	|	|	|	|	3.40
29.500	0.00	0.66	2.216	O	|	|	|	|	3.40
29.583	0.00	0.66	2.212	O	|	|	|	|	3.39
29.667	0.00	0.65	2.207	O	|	|	|	|	3.39
29.750	0.00	0.65	2.203	O	|	|	|	|	3.38
29.833	0.00	0.65	2.198	O	|	|	|	|	3.38
29.917	0.00	0.65	2.194	O	|	|	|	|	3.38
30.000	0.00	0.65	2.189	O	|	|	|	|	3.37
30.083	0.00	0.65	2.185	O	|	|	|	|	3.37
30.167	0.00	0.65	2.180	O	|	|	|	|	3.36
30.250	0.00	0.65	2.176	O	|	|	|	|	3.36
30.333	0.00	0.65	2.171	O	|	|	|	|	3.36
30.417	0.00	0.65	2.167	O	|	|	|	|	3.35
30.500	0.00	0.65	2.162	O	|	|	|	|	3.35
30.583	0.00	0.65	2.158	O	|	|	|	|	3.35

30.667	0.00	0.65	2.153	O					3.34
30.750	0.00	0.65	2.149	O					3.34
30.833	0.00	0.65	2.145	O					3.33
30.917	0.00	0.65	2.140	O					3.33
31.000	0.00	0.65	2.136	O					3.33
31.083	0.00	0.65	2.131	O					3.32
31.167	0.00	0.65	2.127	O					3.32
31.250	0.00	0.65	2.122	O					3.31
31.333	0.00	0.65	2.118	O					3.31
31.417	0.00	0.65	2.113	O					3.31
31.500	0.00	0.65	2.109	O					3.30
31.583	0.00	0.65	2.104	O					3.30
31.667	0.00	0.65	2.100	O					3.30
31.750	0.00	0.64	2.096	O					3.29
31.833	0.00	0.64	2.091	O					3.29
31.917	0.00	0.64	2.087	O					3.28
32.000	0.00	0.64	2.082	O					3.28
32.083	0.00	0.64	2.078	O					3.28
32.167	0.00	0.64	2.073	O					3.27
32.250	0.00	0.64	2.069	O					3.27
32.333	0.00	0.64	2.065	O					3.27
32.417	0.00	0.64	2.060	O					3.26
32.500	0.00	0.64	2.056	O					3.26
32.583	0.00	0.64	2.051	O					3.25
32.667	0.00	0.64	2.047	O					3.25
32.750	0.00	0.64	2.042	O					3.25
32.833	0.00	0.64	2.038	O					3.24
32.917	0.00	0.64	2.034	O					3.24
33.000	0.00	0.64	2.029	O					3.24
33.083	0.00	0.64	2.025	O					3.23
33.167	0.00	0.64	2.020	O					3.23
33.250	0.00	0.64	2.016	O					3.22
33.333	0.00	0.64	2.012	O					3.22
33.417	0.00	0.64	2.007	O					3.22
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34.167	0.00	0.63	1.968	O					3.18
34.250	0.00	0.63	1.964	O					3.18
34.333	0.00	0.63	1.959	O					3.18
34.417	0.00	0.63	1.955	O					3.17
34.500	0.00	0.63	1.951	O					3.17
34.583	0.00	0.63	1.946	O					3.16
34.667	0.00	0.63	1.942	O					3.16
34.750	0.00	0.63	1.937	O					3.16
34.833	0.00	0.63	1.933	O					3.15
34.917	0.00	0.63	1.929	O					3.15
35.000	0.00	0.63	1.924	O					3.15
35.083	0.00	0.63	1.920	O					3.14
35.167	0.00	0.63	1.916	O					3.14
35.250	0.00	0.63	1.911	O					3.14
35.333	0.00	0.63	1.907	O					3.13
35.417	0.00	0.63	1.903	O					3.13
35.500	0.00	0.63	1.898	O					3.12
35.583	0.00	0.63	1.894	O					3.12
35.667	0.00	0.63	1.890	O					3.12
35.750	0.00	0.63	1.886	O					3.11
35.833	0.00	0.63	1.881	O					3.11
35.917	0.00	0.63	1.877	O					3.11
36.000	0.00	0.62	1.873	O					3.10
36.083	0.00	0.62	1.868	O					3.10
36.167	0.00	0.62	1.864	O					3.09
36.250	0.00	0.62	1.860	O					3.09
36.333	0.00	0.62	1.855	O					3.09
36.417	0.00	0.62	1.851	O					3.08
36.500	0.00	0.62	1.847	O					3.08
36.583	0.00	0.62	1.843	O					3.08
36.667	0.00	0.62	1.838	O					3.07
36.750	0.00	0.62	1.834	O					3.07
36.833	0.00	0.62	1.830	O					3.07

36.917	0.00	0.62	1.825	O					3.06
37.000	0.00	0.62	1.821	O					3.06
37.083	0.00	0.62	1.817	O					3.05
37.167	0.00	0.62	1.813	O					3.05
37.250	0.00	0.62	1.808	O					3.05
37.333	0.00	0.62	1.804	O					3.04
37.417	0.00	0.62	1.800	O					3.04
37.500	0.00	0.62	1.796	O					3.04
37.583	0.00	0.62	1.791	O					3.03
37.667	0.00	0.62	1.787	O					3.03
37.750	0.00	0.62	1.783	O					3.03
37.833	0.00	0.62	1.779	O					3.02
37.917	0.00	0.62	1.774	O					3.02
38.000	0.00	0.62	1.770	O					3.01
38.083	0.00	0.62	1.766	O					3.01
38.167	0.00	0.61	1.762	O					3.01
38.250	0.00	0.61	1.757	O					3.00
38.333	0.00	0.61	1.753	O					3.00
38.417	0.00	0.61	1.749	O					3.00
38.500	0.00	0.61	1.745	O					2.99
38.583	0.00	0.61	1.741	O					2.99
38.667	0.00	0.61	1.736	O					2.98
38.750	0.00	0.61	1.732	O					2.98
38.833	0.00	0.61	1.728	O					2.98
38.917	0.00	0.61	1.724	O					2.97
39.000	0.00	0.61	1.719	O					2.97
39.083	0.00	0.61	1.715	O					2.96
39.167	0.00	0.61	1.711	O					2.96
39.250	0.00	0.61	1.707	O					2.95
39.333	0.00	0.61	1.703	O					2.95
39.417	0.00	0.61	1.699	O					2.95
39.500	0.00	0.61	1.694	O					2.94
39.583	0.00	0.61	1.690	O					2.94
39.667	0.00	0.61	1.686	O					2.93
39.750	0.00	0.61	1.682	O					2.93
39.833	0.00	0.61	1.678	O					2.93
39.917	0.00	0.60	1.673	O					2.92
40.000	0.00	0.60	1.669	O					2.92
40.083	0.00	0.60	1.665	O					2.91
40.167	0.00	0.60	1.661	O					2.91
40.250	0.00	0.60	1.657	O					2.90
40.333	0.00	0.60	1.653	O					2.90
40.417	0.00	0.60	1.649	O					2.90
40.500	0.00	0.60	1.644	O					2.89
40.583	0.00	0.60	1.640	O					2.89
40.667	0.00	0.60	1.636	O					2.88
40.750	0.00	0.60	1.632	O					2.88
40.833	0.00	0.60	1.628	O					2.88
40.917	0.00	0.60	1.624	O					2.87
41.000	0.00	0.60	1.620	O					2.87
41.083	0.00	0.60	1.615	O					2.86
41.167	0.00	0.60	1.611	O					2.86
41.250	0.00	0.60	1.607	O					2.86
41.333	0.00	0.60	1.603	O					2.85
41.417	0.00	0.60	1.599	O					2.85
41.500	0.00	0.60	1.595	O					2.84
41.583	0.00	0.60	1.591	O					2.84
41.667	0.00	0.59	1.587	O					2.84
41.750	0.00	0.59	1.583	O					2.83
41.833	0.00	0.59	1.579	O					2.83
41.917	0.00	0.59	1.574	O					2.82
42.000	0.00	0.59	1.570	O					2.82
42.083	0.00	0.59	1.566	O					2.82
42.167	0.00	0.59	1.562	O					2.81
42.250	0.00	0.59	1.558	O					2.81
42.333	0.00	0.59	1.554	O					2.80
42.417	0.00	0.59	1.550	O					2.80
42.500	0.00	0.59	1.546	O					2.80
42.583	0.00	0.59	1.542	O					2.79
42.667	0.00	0.59	1.538	O					2.79
42.750	0.00	0.59	1.534	O					2.78
42.833	0.00	0.59	1.530	O					2.78
42.917	0.00	0.59	1.526	O					2.78
43.000	0.00	0.59	1.522	O					2.77
43.083	0.00	0.59	1.518	O					2.77

43.167	0.00	0.59	1.514	O	|	|	|	|	2.76
43.250	0.00	0.59	1.509	O	|	|	|	|	2.76
43.333	0.00	0.59	1.505	O	|	|	|	|	2.76
43.417	0.00	0.58	1.501	O	|	|	|	|	2.75
43.500	0.00	0.58	1.497	O	|	|	|	|	2.75
43.583	0.00	0.58	1.493	O	|	|	|	|	2.74
43.667	0.00	0.58	1.489	O	|	|	|	|	2.74
43.750	0.00	0.58	1.485	O	|	|	|	|	2.74
43.833	0.00	0.58	1.481	O	|	|	|	|	2.73
43.917	0.00	0.58	1.477	O	|	|	|	|	2.73
44.000	0.00	0.58	1.473	O	|	|	|	|	2.72
44.083	0.00	0.58	1.469	O	|	|	|	|	2.72
44.167	0.00	0.58	1.465	O	|	|	|	|	2.72
44.250	0.00	0.58	1.461	O	|	|	|	|	2.71
44.333	0.00	0.58	1.457	O	|	|	|	|	2.71
44.417	0.00	0.58	1.453	O	|	|	|	|	2.70
44.500	0.00	0.58	1.449	O	|	|	|	|	2.70
44.583	0.00	0.58	1.445	O	|	|	|	|	2.70
44.667	0.00	0.58	1.441	O	|	|	|	|	2.69
44.750	0.00	0.58	1.437	O	|	|	|	|	2.69
44.833	0.00	0.58	1.433	O	|	|	|	|	2.68
44.917	0.00	0.58	1.429	O	|	|	|	|	2.68
45.000	0.00	0.58	1.425	O	|	|	|	|	2.68
45.083	0.00	0.58	1.421	O	|	|	|	|	2.67
45.167	0.00	0.58	1.418	O	|	|	|	|	2.67
45.250	0.00	0.57	1.414	O	|	|	|	|	2.66
45.333	0.00	0.57	1.410	O	|	|	|	|	2.66
45.417	0.00	0.57	1.406	O	|	|	|	|	2.66
45.500	0.00	0.57	1.402	O	|	|	|	|	2.65
45.583	0.00	0.57	1.398	O	|	|	|	|	2.65
45.667	0.00	0.57	1.394	O	|	|	|	|	2.65
45.750	0.00	0.57	1.390	O	|	|	|	|	2.64
45.833	0.00	0.57	1.386	O	|	|	|	|	2.64
45.917	0.00	0.57	1.382	O	|	|	|	|	2.63
46.000	0.00	0.57	1.378	O	|	|	|	|	2.63
46.083	0.00	0.57	1.374	O	|	|	|	|	2.63
46.167	0.00	0.57	1.370	O	|	|	|	|	2.62
46.250	0.00	0.57	1.366	O	|	|	|	|	2.62
46.333	0.00	0.57	1.362	O	|	|	|	|	2.61
46.417	0.00	0.57	1.358	O	|	|	|	|	2.61
46.500	0.00	0.57	1.355	O	|	|	|	|	2.61
46.583	0.00	0.57	1.351	O	|	|	|	|	2.60
46.667	0.00	0.57	1.347	O	|	|	|	|	2.60
46.750	0.00	0.57	1.343	O	|	|	|	|	2.59
46.833	0.00	0.57	1.339	O	|	|	|	|	2.59
46.917	0.00	0.57	1.335	O	|	|	|	|	2.59
47.000	0.00	0.57	1.331	O	|	|	|	|	2.58
47.083	0.00	0.56	1.327	O	|	|	|	|	2.58
47.167	0.00	0.56	1.323	O	|	|	|	|	2.58
47.250	0.00	0.56	1.319	O	|	|	|	|	2.57
47.333	0.00	0.56	1.316	O	|	|	|	|	2.57
47.417	0.00	0.56	1.312	O	|	|	|	|	2.56
47.500	0.00	0.56	1.308	O	|	|	|	|	2.56
47.583	0.00	0.56	1.304	O	|	|	|	|	2.56
47.667	0.00	0.56	1.300	O	|	|	|	|	2.55
47.750	0.00	0.56	1.296	O	|	|	|	|	2.55
47.833	0.00	0.56	1.292	O	|	|	|	|	2.54
47.917	0.00	0.56	1.288	O	|	|	|	|	2.54
48.000	0.00	0.56	1.285	O	|	|	|	|	2.54
48.083	0.00	0.56	1.281	O	|	|	|	|	2.53
48.167	0.00	0.56	1.277	O	|	|	|	|	2.53
48.250	0.00	0.56	1.273	O	|	|	|	|	2.53
48.333	0.00	0.56	1.269	O	|	|	|	|	2.52
48.417	0.00	0.56	1.265	O	|	|	|	|	2.52
48.500	0.00	0.56	1.262	O	|	|	|	|	2.51
48.583	0.00	0.56	1.258	O	|	|	|	|	2.51
48.667	0.00	0.56	1.254	O	|	|	|	|	2.51
48.750	0.00	0.56	1.250	O	|	|	|	|	2.50
48.833	0.00	0.56	1.246	O	|	|	|	|	2.50
48.917	0.00	0.55	1.242	O	|	|	|	|	2.50
49.000	0.00	0.55	1.239	O	|	|	|	|	2.49
49.083	0.00	0.55	1.235	O	|	|	|	|	2.49
49.167	0.00	0.55	1.231	O	|	|	|	|	2.48
49.250	0.00	0.55	1.227	O	|	|	|	|	2.48
49.333	0.00	0.55	1.223	O	|	|	|	|	2.48

49.417	0.00	0.55	1.220	O				2.47
49.500	0.00	0.55	1.216	O				2.47
49.583	0.00	0.55	1.212	O				2.47
49.667	0.00	0.55	1.208	O				2.46
49.750	0.00	0.55	1.204	O				2.46
49.833	0.00	0.55	1.201	O				2.45
49.917	0.00	0.55	1.197	O				2.45
50.000	0.00	0.55	1.193	O				2.45
50.083	0.00	0.55	1.189	O				2.44
50.167	0.00	0.55	1.185	O				2.44
50.250	0.00	0.55	1.182	O				2.44
50.333	0.00	0.55	1.178	O				2.43
50.417	0.00	0.55	1.174	O				2.43
50.500	0.00	0.55	1.170	O				2.42
50.583	0.00	0.55	1.167	O				2.42
50.667	0.00	0.55	1.163	O				2.42
50.750	0.00	0.55	1.159	O				2.41
50.833	0.00	0.54	1.155	O				2.41
50.917	0.00	0.54	1.152	O				2.41
51.000	0.00	0.54	1.148	O				2.40
51.083	0.00	0.54	1.144	O				2.40
51.167	0.00	0.54	1.140	O				2.39
51.250	0.00	0.54	1.137	O				2.39
51.333	0.00	0.54	1.133	O				2.39
51.417	0.00	0.54	1.129	O				2.38
51.500	0.00	0.54	1.125	O				2.38
51.583	0.00	0.54	1.122	O				2.38
51.667	0.00	0.54	1.118	O				2.37
51.750	0.00	0.54	1.114	O				2.37
51.833	0.00	0.54	1.110	O				2.37
51.917	0.00	0.54	1.107	O				2.36
52.000	0.00	0.54	1.103	O				2.36
52.083	0.00	0.54	1.099	O				2.35
52.167	0.00	0.54	1.096	O				2.35
52.250	0.00	0.54	1.092	O				2.35
52.333	0.00	0.54	1.088	O				2.34
52.417	0.00	0.54	1.085	O				2.34
52.500	0.00	0.54	1.081	O				2.34
52.583	0.00	0.54	1.077	O				2.33
52.667	0.00	0.54	1.073	O				2.33
52.750	0.00	0.54	1.070	O				2.32
52.833	0.00	0.53	1.066	O				2.32
52.917	0.00	0.53	1.062	O				2.32
53.000	0.00	0.53	1.059	O				2.31
53.083	0.00	0.53	1.055	O				2.31
53.167	0.00	0.53	1.051	O				2.31
53.250	0.00	0.53	1.048	O				2.30
53.333	0.00	0.53	1.044	O				2.30
53.417	0.00	0.53	1.040	O				2.30
53.500	0.00	0.53	1.037	O				2.29
53.583	0.00	0.53	1.033	O				2.29
53.667	0.00	0.53	1.029	O				2.28
53.750	0.00	0.53	1.026	O				2.28
53.833	0.00	0.53	1.022	O				2.28
53.917	0.00	0.53	1.018	O				2.27
54.000	0.00	0.53	1.015	O				2.27
54.083	0.00	0.53	1.011	O				2.27
54.167	0.00	0.53	1.008	O				2.26
54.250	0.00	0.53	1.004	O				2.26
54.333	0.00	0.53	1.000	O				2.26
54.417	0.00	0.53	0.997	O				2.25
54.500	0.00	0.53	0.993	O				2.25
54.583	0.00	0.53	0.989	O				2.25
54.667	0.00	0.53	0.986	O				2.24
54.750	0.00	0.52	0.982	O				2.24
54.833	0.00	0.52	0.979	O				2.23
54.917	0.00	0.52	0.975	O				2.23
55.000	0.00	0.52	0.971	O				2.23
55.083	0.00	0.52	0.968	O				2.22
55.167	0.00	0.52	0.964	O				2.22
55.250	0.00	0.52	0.961	O				2.22
55.333	0.00	0.52	0.957	O				2.21
55.417	0.00	0.52	0.953	O				2.21
55.500	0.00	0.52	0.950	O				2.21
55.583	0.00	0.52	0.946	O				2.20

55.667	0.00	0.52	0.943	O	|	|	|	|	2.20
55.750	0.00	0.52	0.939	O	|	|	|	|	2.20
55.833	0.00	0.52	0.935	O	|	|	|	|	2.19
55.917	0.00	0.52	0.932	O	|	|	|	|	2.19
56.000	0.00	0.52	0.928	O	|	|	|	|	2.19
56.083	0.00	0.52	0.925	O	|	|	|	|	2.18
56.167	0.00	0.52	0.921	O	|	|	|	|	2.18
56.250	0.00	0.52	0.918	O	|	|	|	|	2.17
56.333	0.00	0.52	0.914	O	|	|	|	|	2.17
56.417	0.00	0.52	0.910	O	|	|	|	|	2.17
56.500	0.00	0.52	0.907	O	|	|	|	|	2.16
56.583	0.00	0.52	0.903	O	|	|	|	|	2.16
56.667	0.00	0.52	0.900	O	|	|	|	|	2.16
56.750	0.00	0.51	0.896	O	|	|	|	|	2.15
56.833	0.00	0.51	0.893	O	|	|	|	|	2.15
56.917	0.00	0.51	0.889	O	|	|	|	|	2.15
57.000	0.00	0.51	0.886	O	|	|	|	|	2.14
57.083	0.00	0.51	0.882	O	|	|	|	|	2.14
57.167	0.00	0.51	0.879	O	|	|	|	|	2.14
57.250	0.00	0.51	0.875	O	|	|	|	|	2.13
57.333	0.00	0.51	0.871	O	|	|	|	|	2.13
57.417	0.00	0.51	0.868	O	|	|	|	|	2.13
57.500	0.00	0.51	0.864	O	|	|	|	|	2.12
57.583	0.00	0.51	0.861	O	|	|	|	|	2.12
57.667	0.00	0.51	0.857	O	|	|	|	|	2.12
57.750	0.00	0.51	0.854	O	|	|	|	|	2.11
57.833	0.00	0.51	0.850	O	|	|	|	|	2.11
57.917	0.00	0.51	0.847	O	|	|	|	|	2.10
58.000	0.00	0.51	0.843	O	|	|	|	|	2.10
58.083	0.00	0.51	0.840	O	|	|	|	|	2.10
58.167	0.00	0.51	0.836	O	|	|	|	|	2.09
58.250	0.00	0.51	0.833	O	|	|	|	|	2.09
58.333	0.00	0.51	0.829	O	|	|	|	|	2.09
58.417	0.00	0.51	0.826	O	|	|	|	|	2.08
58.500	0.00	0.51	0.822	O	|	|	|	|	2.08
58.583	0.00	0.51	0.819	O	|	|	|	|	2.08
58.667	0.00	0.51	0.815	O	|	|	|	|	2.07
58.750	0.00	0.51	0.812	O	|	|	|	|	2.07
58.833	0.00	0.50	0.808	O	|	|	|	|	2.07
58.917	0.00	0.50	0.805	O	|	|	|	|	2.06
59.000	0.00	0.50	0.802	O	|	|	|	|	2.06
59.083	0.00	0.50	0.798	O	|	|	|	|	2.06
59.167	0.00	0.50	0.795	O	|	|	|	|	2.05
59.250	0.00	0.50	0.791	O	|	|	|	|	2.05
59.333	0.00	0.50	0.788	O	|	|	|	|	2.05
59.417	0.00	0.50	0.784	O	|	|	|	|	2.04
59.500	0.00	0.50	0.781	O	|	|	|	|	2.04
59.583	0.00	0.50	0.777	O	|	|	|	|	2.04
59.667	0.00	0.50	0.774	O	|	|	|	|	2.03
59.750	0.00	0.50	0.770	O	|	|	|	|	2.03
59.833	0.00	0.50	0.767	O	|	|	|	|	2.03
59.917	0.00	0.50	0.763	O	|	|	|	|	2.02
60.000	0.00	0.50	0.760	O	|	|	|	|	2.02
60.083	0.00	0.50	0.757	O	|	|	|	|	2.02
60.167	0.00	0.50	0.753	O	|	|	|	|	2.01
60.250	0.00	0.50	0.750	O	|	|	|	|	2.01
60.333	0.00	0.50	0.746	O	|	|	|	|	2.01
60.417	0.00	0.50	0.743	O	|	|	|	|	2.00
60.500	0.00	0.50	0.739	O	|	|	|	|	2.00
60.583	0.00	0.50	0.736	O	|	|	|	|	1.99
60.667	0.00	0.49	0.733	O	|	|	|	|	1.99
60.750	0.00	0.49	0.729	O	|	|	|	|	1.98
60.833	0.00	0.49	0.726	O	|	|	|	|	1.97
60.917	0.00	0.49	0.722	O	|	|	|	|	1.97
61.000	0.00	0.49	0.719	O	|	|	|	|	1.96
61.083	0.00	0.49	0.716	O	|	|	|	|	1.96
61.167	0.00	0.49	0.712	O	|	|	|	|	1.95
61.250	0.00	0.49	0.709	O	|	|	|	|	1.94
61.333	0.00	0.49	0.706	O	|	|	|	|	1.94
61.417	0.00	0.49	0.702	O	|	|	|	|	1.93
61.500	0.00	0.49	0.699	O	|	|	|	|	1.93
61.583	0.00	0.48	0.696	O	|	|	|	|	1.92
61.667	0.00	0.48	0.692	O	|	|	|	|	1.92
61.750	0.00	0.48	0.689	O	|	|	|	|	1.91
61.833	0.00	0.48	0.686	O	|	|	|	|	1.90

61.917	0.00	0.48	0.682	O	|	|	|	1.90
62.000	0.00	0.48	0.679	O	|	|	|	1.89
62.083	0.00	0.48	0.676	O	|	|	|	1.89
62.167	0.00	0.48	0.672	O	|	|	|	1.88
62.250	0.00	0.48	0.669	O	|	|	|	1.88
62.333	0.00	0.48	0.666	O	|	|	|	1.87
62.417	0.00	0.48	0.662	O	|	|	|	1.86
62.500	0.00	0.48	0.659	O	|	|	|	1.86
62.583	0.00	0.47	0.656	O	|	|	|	1.85
62.667	0.00	0.47	0.653	O	|	|	|	1.85
62.750	0.00	0.47	0.649	O	|	|	|	1.84
62.833	0.00	0.47	0.646	O	|	|	|	1.84
62.917	0.00	0.47	0.643	O	|	|	|	1.83
63.000	0.00	0.47	0.640	O	|	|	|	1.82
63.083	0.00	0.47	0.636	O	|	|	|	1.82
63.167	0.00	0.47	0.633	O	|	|	|	1.81
63.250	0.00	0.47	0.630	O	|	|	|	1.81
63.333	0.00	0.47	0.627	O	|	|	|	1.80
63.417	0.00	0.47	0.624	O	|	|	|	1.80
63.500	0.00	0.46	0.620	O	|	|	|	1.79
63.583	0.00	0.46	0.617	O	|	|	|	1.79
63.667	0.00	0.46	0.614	O	|	|	|	1.78
63.750	0.00	0.46	0.611	O	|	|	|	1.77
63.833	0.00	0.46	0.608	O	|	|	|	1.77
63.917	0.00	0.46	0.604	O	|	|	|	1.76
64.000	0.00	0.46	0.601	O	|	|	|	1.76
64.083	0.00	0.46	0.598	O	|	|	|	1.75
64.167	0.00	0.46	0.595	O	|	|	|	1.75
64.250	0.00	0.46	0.592	O	|	|	|	1.74
64.333	0.00	0.46	0.589	O	|	|	|	1.74
64.417	0.00	0.46	0.586	O	|	|	|	1.73
64.500	0.00	0.45	0.582	O	|	|	|	1.73
64.583	0.00	0.45	0.579	O	|	|	|	1.72
64.667	0.00	0.45	0.576	O	|	|	|	1.71
64.750	0.00	0.45	0.573	O	|	|	|	1.71
64.833	0.00	0.45	0.570	O	|	|	|	1.70
64.917	0.00	0.45	0.567	O	|	|	|	1.70
65.000	0.00	0.45	0.564	O	|	|	|	1.69
65.083	0.00	0.45	0.561	O	|	|	|	1.69
65.167	0.00	0.45	0.558	O	|	|	|	1.68
65.250	0.00	0.45	0.554	O	|	|	|	1.68
65.333	0.00	0.45	0.551	O	|	|	|	1.67
65.417	0.00	0.45	0.548	O	|	|	|	1.67
65.500	0.00	0.44	0.545	O	|	|	|	1.66
65.583	0.00	0.44	0.542	O	|	|	|	1.66
65.667	0.00	0.44	0.539	O	|	|	|	1.65
65.750	0.00	0.44	0.536	O	|	|	|	1.65
65.833	0.00	0.44	0.533	O	|	|	|	1.64
65.917	0.00	0.44	0.530	O	|	|	|	1.63
66.000	0.00	0.44	0.527	O	|	|	|	1.63
66.083	0.00	0.44	0.524	O	|	|	|	1.62
66.167	0.00	0.44	0.521	O	|	|	|	1.62
66.250	0.00	0.44	0.518	O	|	|	|	1.61
66.333	0.00	0.44	0.515	O	|	|	|	1.61
66.417	0.00	0.44	0.512	O	|	|	|	1.60
66.500	0.00	0.43	0.509	O	|	|	|	1.60
66.583	0.00	0.43	0.506	O	|	|	|	1.59
66.667	0.00	0.43	0.503	O	|	|	|	1.59
66.750	0.00	0.43	0.500	O	|	|	|	1.58
66.833	0.00	0.43	0.497	O	|	|	|	1.58
66.917	0.00	0.43	0.494	O	|	|	|	1.57
67.000	0.00	0.43	0.491	O	|	|	|	1.57
67.083	0.00	0.43	0.488	O	|	|	|	1.56
67.167	0.00	0.43	0.485	O	|	|	|	1.56
67.250	0.00	0.43	0.482	O	|	|	|	1.55
67.333	0.00	0.43	0.479	O	|	|	|	1.55
67.417	0.00	0.43	0.476	O	|	|	|	1.54
67.500	0.00	0.43	0.473	O	|	|	|	1.54
67.583	0.00	0.42	0.470	O	|	|	|	1.53
67.667	0.00	0.42	0.468	O	|	|	|	1.53
67.750	0.00	0.42	0.465	O	|	|	|	1.52
67.833	0.00	0.42	0.462	O	|	|	|	1.52
67.917	0.00	0.42	0.459	O	|	|	|	1.51
68.000	0.00	0.42	0.456	O	|	|	|	1.51
68.083	0.00	0.42	0.453	O	|	|	|	1.50

68.167	0.00	0.42	0.450	O	|	|	|	|	1.50
68.250	0.00	0.42	0.447	O	|	|	|	|	1.49
68.333	0.00	0.42	0.444	O	|	|	|	|	1.49
68.417	0.00	0.42	0.441	O	|	|	|	|	1.48
68.500	0.00	0.42	0.439	O	|	|	|	|	1.48
68.583	0.00	0.42	0.436	O	|	|	|	|	1.47
68.667	0.00	0.41	0.433	O	|	|	|	|	1.47
68.750	0.00	0.41	0.430	O	|	|	|	|	1.46
68.833	0.00	0.41	0.427	O	|	|	|	|	1.46
68.917	0.00	0.41	0.424	O	|	|	|	|	1.45
69.000	0.00	0.41	0.422	O	|	|	|	|	1.45
69.083	0.00	0.41	0.419	O	|	|	|	|	1.44
69.167	0.00	0.41	0.416	O	|	|	|	|	1.44
69.250	0.00	0.41	0.413	O	|	|	|	|	1.43
69.333	0.00	0.41	0.410	O	|	|	|	|	1.43
69.417	0.00	0.41	0.407	O	|	|	|	|	1.42
69.500	0.00	0.41	0.405	O	|	|	|	|	1.42
69.583	0.00	0.41	0.402	O	|	|	|	|	1.41
69.667	0.00	0.41	0.399	O	|	|	|	|	1.41
69.750	0.00	0.40	0.396	O	|	|	|	|	1.40
69.833	0.00	0.40	0.393	O	|	|	|	|	1.40
69.917	0.00	0.40	0.391	O	|	|	|	|	1.39
70.000	0.00	0.40	0.388	O	|	|	|	|	1.39
70.083	0.00	0.40	0.385	O	|	|	|	|	1.38
70.167	0.00	0.40	0.382	O	|	|	|	|	1.38
70.250	0.00	0.40	0.380	O	|	|	|	|	1.37
70.333	0.00	0.40	0.377	O	|	|	|	|	1.37
70.417	0.00	0.40	0.374	O	|	|	|	|	1.37
70.500	0.00	0.40	0.371	O	|	|	|	|	1.36
70.583	0.00	0.40	0.369	O	|	|	|	|	1.36
70.667	0.00	0.40	0.366	O	|	|	|	|	1.35
70.750	0.00	0.40	0.363	O	|	|	|	|	1.35
70.833	0.00	0.39	0.360	O	|	|	|	|	1.34
70.917	0.00	0.39	0.358	O	|	|	|	|	1.34
71.000	0.00	0.39	0.355	O	|	|	|	|	1.33
71.083	0.00	0.39	0.352	O	|	|	|	|	1.33
71.167	0.00	0.39	0.350	O	|	|	|	|	1.32
71.250	0.00	0.39	0.347	O	|	|	|	|	1.32
71.333	0.00	0.39	0.344	O	|	|	|	|	1.31
71.417	0.00	0.39	0.342	O	|	|	|	|	1.31
71.500	0.00	0.39	0.339	O	|	|	|	|	1.30
71.583	0.00	0.39	0.336	O	|	|	|	|	1.30
71.667	0.00	0.39	0.333	O	|	|	|	|	1.29
71.750	0.00	0.39	0.331	O	|	|	|	|	1.29
71.833	0.00	0.39	0.328	O	|	|	|	|	1.29
71.917	0.00	0.39	0.326	O	|	|	|	|	1.28
72.000	0.00	0.38	0.323	O	|	|	|	|	1.28
72.083	0.00	0.38	0.320	O	|	|	|	|	1.27
72.167	0.00	0.38	0.318	O	|	|	|	|	1.27
72.250	0.00	0.38	0.315	O	|	|	|	|	1.26
72.333	0.00	0.38	0.312	O	|	|	|	|	1.26
72.417	0.00	0.38	0.310	O	|	|	|	|	1.25
72.500	0.00	0.38	0.307	O	|	|	|	|	1.25
72.583	0.00	0.38	0.304	O	|	|	|	|	1.24
72.667	0.00	0.38	0.302	O	|	|	|	|	1.24
72.750	0.00	0.38	0.299	O	|	|	|	|	1.24
72.833	0.00	0.38	0.297	O	|	|	|	|	1.23
72.917	0.00	0.38	0.294	O	|	|	|	|	1.23
73.000	0.00	0.38	0.291	O	|	|	|	|	1.22
73.083	0.00	0.38	0.289	O	|	|	|	|	1.22
73.167	0.00	0.38	0.286	O	|	|	|	|	1.21
73.250	0.00	0.37	0.284	O	|	|	|	|	1.21
73.333	0.00	0.37	0.281	O	|	|	|	|	1.20
73.417	0.00	0.37	0.278	O	|	|	|	|	1.20
73.500	0.00	0.37	0.276	O	|	|	|	|	1.20
73.583	0.00	0.37	0.273	O	|	|	|	|	1.19
73.667	0.00	0.37	0.271	O	|	|	|	|	1.19
73.750	0.00	0.37	0.268	O	|	|	|	|	1.18
73.833	0.00	0.37	0.266	O	|	|	|	|	1.18
73.917	0.00	0.37	0.263	O	|	|	|	|	1.17
74.000	0.00	0.37	0.261	O	|	|	|	|	1.17
74.083	0.00	0.37	0.258	O	|	|	|	|	1.16
74.167	0.00	0.37	0.256	O	|	|	|	|	1.16
74.250	0.00	0.37	0.253	O	|	|	|	|	1.16
74.333	0.00	0.37	0.251	O	|	|	|	|	1.15

74.417	0.00	0.36	0.248	O	|	|	|	|	1.15
74.500	0.00	0.36	0.245	O	|	|	|	|	1.14
74.583	0.00	0.36	0.243	O	|	|	|	|	1.14
74.667	0.00	0.36	0.240	O	|	|	|	|	1.13
74.750	0.00	0.36	0.238	O	|	|	|	|	1.13
74.833	0.00	0.36	0.236	O	|	|	|	|	1.13
74.917	0.00	0.36	0.233	O	|	|	|	|	1.12
75.000	0.00	0.36	0.231	O	|	|	|	|	1.12
75.083	0.00	0.36	0.228	O	|	|	|	|	1.11
75.167	0.00	0.36	0.226	O	|	|	|	|	1.11
75.250	0.00	0.36	0.223	O	|	|	|	|	1.10
75.333	0.00	0.36	0.221	O	|	|	|	|	1.10
75.417	0.00	0.36	0.218	O	|	|	|	|	1.10
75.500	0.00	0.36	0.216	O	|	|	|	|	1.09
75.583	0.00	0.36	0.213	O	|	|	|	|	1.09
75.667	0.00	0.35	0.211	O	|	|	|	|	1.08
75.750	0.00	0.35	0.208	O	|	|	|	|	1.08
75.833	0.00	0.35	0.206	O	|	|	|	|	1.07
75.917	0.00	0.35	0.204	O	|	|	|	|	1.07
76.000	0.00	0.35	0.201	O	|	|	|	|	1.07
76.083	0.00	0.35	0.199	O	|	|	|	|	1.06
76.167	0.00	0.35	0.196	O	|	|	|	|	1.06
76.250	0.00	0.35	0.194	O	|	|	|	|	1.05
76.333	0.00	0.35	0.191	O	|	|	|	|	1.05
76.417	0.00	0.35	0.189	O	|	|	|	|	1.05
76.500	0.00	0.35	0.187	O	|	|	|	|	1.04
76.583	0.00	0.35	0.184	O	|	|	|	|	1.04
76.667	0.00	0.35	0.182	O	|	|	|	|	1.03
76.750	0.00	0.35	0.179	O	|	|	|	|	1.03
76.833	0.00	0.35	0.177	O	|	|	|	|	1.02
76.917	0.00	0.35	0.175	O	|	|	|	|	1.02
77.000	0.00	0.34	0.172	O	|	|	|	|	1.02
77.083	0.00	0.34	0.170	O	|	|	|	|	1.01
77.167	0.00	0.34	0.168	O	|	|	|	|	1.01
77.250	0.00	0.34	0.165	O	|	|	|	|	1.00
77.333	0.00	0.34	0.163	O	|	|	|	|	1.00
77.417	0.00	0.34	0.161	O	|	|	|	|	0.99
77.500	0.00	0.33	0.158	O	|	|	|	|	0.97
77.583	0.00	0.33	0.156	O	|	|	|	|	0.96
77.667	0.00	0.32	0.154	O	|	|	|	|	0.95
77.750	0.00	0.32	0.152	O	|	|	|	|	0.94
77.833	0.00	0.31	0.149	O	|	|	|	|	0.92
77.917	0.00	0.31	0.147	O	|	|	|	|	0.91
78.000	0.00	0.30	0.145	O	|	|	|	|	0.90
78.083	0.00	0.30	0.143	O	|	|	|	|	0.89
78.167	0.00	0.30	0.141	O	|	|	|	|	0.88
78.250	0.00	0.29	0.139	O	|	|	|	|	0.86
78.333	0.00	0.29	0.137	O	|	|	|	|	0.85
78.417	0.00	0.28	0.135	O	|	|	|	|	0.84
78.500	0.00	0.28	0.133	O	|	|	|	|	0.83
78.583	0.00	0.27	0.131	O	|	|	|	|	0.82
78.667	0.00	0.27	0.129	O	|	|	|	|	0.81
78.750	0.00	0.27	0.127	O	|	|	|	|	0.80
78.833	0.00	0.26	0.126	O	|	|	|	|	0.79
78.917	0.00	0.26	0.124	O	|	|	|	|	0.78
79.000	0.00	0.25	0.122	O	|	|	|	|	0.77
79.083	0.00	0.25	0.120	O	|	|	|	|	0.76
79.167	0.00	0.25	0.119	O	|	|	|	|	0.75
79.250	0.00	0.24	0.117	O	|	|	|	|	0.74
79.333	0.00	0.24	0.115	O	|	|	|	|	0.73
79.417	0.00	0.24	0.114	O	|	|	|	|	0.72
79.500	0.00	0.23	0.112	O	|	|	|	|	0.71
79.583	0.00	0.23	0.110	O	|	|	|	|	0.70
79.667	0.00	0.23	0.109	O	|	|	|	|	0.70
79.750	0.00	0.22	0.107	O	|	|	|	|	0.69
79.833	0.00	0.22	0.106	O	|	|	|	|	0.68
79.917	0.00	0.22	0.104	O	|	|	|	|	0.67
80.000	0.00	0.21	0.103	O	|	|	|	|	0.66
80.083	0.00	0.21	0.101	O	|	|	|	|	0.65
80.167	0.00	0.21	0.100	O	|	|	|	|	0.64
80.250	0.00	0.20	0.098	O	|	|	|	|	0.64
80.333	0.00	0.20	0.097	O	|	|	|	|	0.63
80.417	0.00	0.20	0.096	O	|	|	|	|	0.62
80.500	0.00	0.20	0.094	O	|	|	|	|	0.61
80.583	0.00	0.19	0.093	O	|	|	|	|	0.61

80.667	0.00	0.19	0.092	O	|	|	|	|	0.60
80.750	0.00	0.19	0.090	O	|	|	|	|	0.59
80.833	0.00	0.18	0.089	O	|	|	|	|	0.58
80.917	0.00	0.18	0.088	O	|	|	|	|	0.58
81.000	0.00	0.18	0.087	O	|	|	|	|	0.57
81.083	0.00	0.18	0.085	O	|	|	|	|	0.56
81.167	0.00	0.17	0.084	O	|	|	|	|	0.56
81.250	0.00	0.17	0.083	O	|	|	|	|	0.55
81.333	0.00	0.17	0.082	O	|	|	|	|	0.54
81.417	0.00	0.17	0.081	O	|	|	|	|	0.54
81.500	0.00	0.16	0.079	O	|	|	|	|	0.53
81.583	0.00	0.16	0.078	O	|	|	|	|	0.52
81.667	0.00	0.16	0.077	O	|	|	|	|	0.52
81.750	0.00	0.16	0.076	O	|	|	|	|	0.51
81.833	0.00	0.15	0.075	O	|	|	|	|	0.51
81.917	0.00	0.15	0.074	O	|	|	|	|	0.50
82.000	0.00	0.15	0.073	O	|	|	|	|	0.49
82.083	0.00	0.15	0.072	O	|	|	|	|	0.49
82.167	0.00	0.15	0.071	O	|	|	|	|	0.48
82.250	0.00	0.14	0.070	O	|	|	|	|	0.48
82.333	0.00	0.14	0.069	O	|	|	|	|	0.47
82.417	0.00	0.14	0.068	O	|	|	|	|	0.47
82.500	0.00	0.14	0.067	O	|	|	|	|	0.46
82.583	0.00	0.14	0.066	O	|	|	|	|	0.46
82.667	0.00	0.13	0.065	O	|	|	|	|	0.45
82.750	0.00	0.13	0.064	O	|	|	|	|	0.44
82.833	0.00	0.13	0.063	O	|	|	|	|	0.44
82.917	0.00	0.13	0.062	O	|	|	|	|	0.43
83.000	0.00	0.13	0.062	O	|	|	|	|	0.43
83.083	0.00	0.12	0.061	O	|	|	|	|	0.42
83.167	0.00	0.12	0.060	O	|	|	|	|	0.42
83.250	0.00	0.12	0.059	O	|	|	|	|	0.42
83.333	0.00	0.12	0.058	O	|	|	|	|	0.41
83.417	0.00	0.12	0.057	O	|	|	|	|	0.41
83.500	0.00	0.12	0.057	O	|	|	|	|	0.40
83.583	0.00	0.11	0.056	O	|	|	|	|	0.40
83.667	0.00	0.11	0.055	O	|	|	|	|	0.39
83.750	0.00	0.11	0.054	O	|	|	|	|	0.39
83.833	0.00	0.11	0.054	O	|	|	|	|	0.38
83.917	0.00	0.11	0.053	O	|	|	|	|	0.38
84.000	0.00	0.11	0.052	O	|	|	|	|	0.38
84.083	0.00	0.10	0.051	O	|	|	|	|	0.37
84.167	0.00	0.10	0.051	O	|	|	|	|	0.37
84.250	0.00	0.10	0.050	O	|	|	|	|	0.36
84.333	0.00	0.10	0.049	O	|	|	|	|	0.36
84.417	0.00	0.10	0.049	O	|	|	|	|	0.36
84.500	0.00	0.10	0.048	O	|	|	|	|	0.35
84.583	0.00	0.10	0.047	O	|	|	|	|	0.35
84.667	0.00	0.09	0.047	O	|	|	|	|	0.35
84.750	0.00	0.09	0.046	O	|	|	|	|	0.34
84.833	0.00	0.09	0.045	O	|	|	|	|	0.34
84.917	0.00	0.09	0.045	O	|	|	|	|	0.33
85.000	0.00	0.09	0.044	O	|	|	|	|	0.33
85.083	0.00	0.09	0.043	O	|	|	|	|	0.33
85.167	0.00	0.09	0.043	O	|	|	|	|	0.32
85.250	0.00	0.08	0.042	O	|	|	|	|	0.32
85.333	0.00	0.08	0.042	O	|	|	|	|	0.32
85.417	0.00	0.08	0.041	O	|	|	|	|	0.31
85.500	0.00	0.08	0.041	O	|	|	|	|	0.31
85.583	0.00	0.08	0.040	O	|	|	|	|	0.31
85.667	0.00	0.08	0.039	O	|	|	|	|	0.31
85.750	0.00	0.08	0.039	O	|	|	|	|	0.30
85.833	0.00	0.08	0.038	O	|	|	|	|	0.30
85.917	0.00	0.08	0.038	O	|	|	|	|	0.30
86.000	0.00	0.07	0.037	O	|	|	|	|	0.29
86.083	0.00	0.07	0.037	O	|	|	|	|	0.29
86.167	0.00	0.07	0.036	O	|	|	|	|	0.29
86.250	0.00	0.07	0.036	O	|	|	|	|	0.28
86.333	0.00	0.07	0.035	O	|	|	|	|	0.28
86.417	0.00	0.07	0.035	O	|	|	|	|	0.28
86.500	0.00	0.07	0.034	O	|	|	|	|	0.28
86.583	0.00	0.07	0.034	O	|	|	|	|	0.27
86.667	0.00	0.07	0.034	O	|	|	|	|	0.27
86.750	0.00	0.07	0.033	O	|	|	|	|	0.27
86.833	0.00	0.06	0.033	O	|	|	|	|	0.27

86.917	0.00	0.06	0.032	O	|	|	|	|	0.26
87.000	0.00	0.06	0.032	O	|	|	|	|	0.26
87.083	0.00	0.06	0.031	O	|	|	|	|	0.26
87.167	0.00	0.06	0.031	O	|	|	|	|	0.26
87.250	0.00	0.06	0.030	O	|	|	|	|	0.25
87.333	0.00	0.06	0.030	O	|	|	|	|	0.25
87.417	0.00	0.06	0.030	O	|	|	|	|	0.25
87.500	0.00	0.06	0.029	O	|	|	|	|	0.25
87.583	0.00	0.06	0.029	O	|	|	|	|	0.25
87.667	0.00	0.06	0.029	O	|	|	|	|	0.24
87.750	0.00	0.05	0.028	O	|	|	|	|	0.24
87.833	0.00	0.05	0.028	O	|	|	|	|	0.24
87.917	0.00	0.05	0.027	O	|	|	|	|	0.24
88.000	0.00	0.05	0.027	O	|	|	|	|	0.24
88.083	0.00	0.05	0.027	O	|	|	|	|	0.23
88.167	0.00	0.05	0.026	O	|	|	|	|	0.23
88.250	0.00	0.05	0.026	O	|	|	|	|	0.23
88.333	0.00	0.05	0.026	O	|	|	|	|	0.23
88.417	0.00	0.05	0.025	O	|	|	|	|	0.23
88.500	0.00	0.05	0.025	O	|	|	|	|	0.22
88.583	0.00	0.05	0.025	O	|	|	|	|	0.22
88.667	0.00	0.05	0.024	O	|	|	|	|	0.22
88.750	0.00	0.05	0.024	O	|	|	|	|	0.22
88.833	0.00	0.05	0.024	O	|	|	|	|	0.22
88.917	0.00	0.04	0.023	O	|	|	|	|	0.21
89.000	0.00	0.04	0.023	O	|	|	|	|	0.21
89.083	0.00	0.04	0.023	O	|	|	|	|	0.21
89.167	0.00	0.04	0.022	O	|	|	|	|	0.21
89.250	0.00	0.04	0.022	O	|	|	|	|	0.21
89.333	0.00	0.04	0.022	O	|	|	|	|	0.21
89.417	0.00	0.04	0.022	O	|	|	|	|	0.20
89.500	0.00	0.04	0.021	O	|	|	|	|	0.20
89.583	0.00	0.04	0.021	O	|	|	|	|	0.20
89.667	0.00	0.04	0.021	O	|	|	|	|	0.20
89.750	0.00	0.04	0.021	O	|	|	|	|	0.20
89.833	0.00	0.04	0.020	O	|	|	|	|	0.20
89.917	0.00	0.04	0.020	O	|	|	|	|	0.20
90.000	0.00	0.04	0.020	O	|	|	|	|	0.19
90.083	0.00	0.04	0.020	O	|	|	|	|	0.19
90.167	0.00	0.04	0.019	O	|	|	|	|	0.19
90.250	0.00	0.04	0.019	O	|	|	|	|	0.19
90.333	0.00	0.03	0.019	O	|	|	|	|	0.19
90.417	0.00	0.03	0.019	O	|	|	|	|	0.19
90.500	0.00	0.03	0.018	O	|	|	|	|	0.19
90.583	0.00	0.03	0.018	O	|	|	|	|	0.18
90.667	0.00	0.03	0.018	O	|	|	|	|	0.18
90.750	0.00	0.03	0.018	O	|	|	|	|	0.18
90.833	0.00	0.03	0.017	O	|	|	|	|	0.18
90.917	0.00	0.03	0.017	O	|	|	|	|	0.18
91.000	0.00	0.03	0.017	O	|	|	|	|	0.18
91.083	0.00	0.03	0.017	O	|	|	|	|	0.18
91.167	0.00	0.03	0.017	O	|	|	|	|	0.18
91.250	0.00	0.03	0.016	O	|	|	|	|	0.18
91.333	0.00	0.03	0.016	O	|	|	|	|	0.17
91.417	0.00	0.03	0.016	O	|	|	|	|	0.17
91.500	0.00	0.03	0.016	O	|	|	|	|	0.17
91.583	0.00	0.03	0.016	O	|	|	|	|	0.17
91.667	0.00	0.03	0.015	O	|	|	|	|	0.17
91.750	0.00	0.03	0.015	O	|	|	|	|	0.17
91.833	0.00	0.03	0.015	O	|	|	|	|	0.17
91.917	0.00	0.03	0.015	O	|	|	|	|	0.17
92.000	0.00	0.03	0.015	O	|	|	|	|	0.17
92.083	0.00	0.03	0.014	O	|	|	|	|	0.16
92.167	0.00	0.03	0.014	O	|	|	|	|	0.16
92.250	0.00	0.02	0.014	O	|	|	|	|	0.16
92.333	0.00	0.02	0.014	O	|	|	|	|	0.16
92.417	0.00	0.02	0.014	O	|	|	|	|	0.16
92.500	0.00	0.02	0.014	O	|	|	|	|	0.16
92.583	0.00	0.02	0.013	O	|	|	|	|	0.16
92.667	0.00	0.02	0.013	O	|	|	|	|	0.16
92.750	0.00	0.02	0.013	O	|	|	|	|	0.16
92.833	0.00	0.02	0.013	O	|	|	|	|	0.16
92.917	0.00	0.02	0.013	O	|	|	|	|	0.16
93.000	0.00	0.02	0.013	O	|	|	|	|	0.15
93.083	0.00	0.02	0.013	O	|	|	|	|	0.15

93.167	0.00	0.02	0.012	O	|	|	|	|	0.15
93.250	0.00	0.02	0.012	O	|	|	|	|	0.15
93.333	0.00	0.02	0.012	O	|	|	|	|	0.15
93.417	0.00	0.02	0.012	O	|	|	|	|	0.15
93.500	0.00	0.02	0.012	O	|	|	|	|	0.15
93.583	0.00	0.02	0.012	O	|	|	|	|	0.15
93.667	0.00	0.02	0.012	O	|	|	|	|	0.15
93.750	0.00	0.02	0.011	O	|	|	|	|	0.15
93.833	0.00	0.02	0.011	O	|	|	|	|	0.15
93.917	0.00	0.02	0.011	O	|	|	|	|	0.15
94.000	0.00	0.02	0.011	O	|	|	|	|	0.15
94.083	0.00	0.02	0.011	O	|	|	|	|	0.14
94.167	0.00	0.02	0.011	O	|	|	|	|	0.14
94.250	0.00	0.02	0.011	O	|	|	|	|	0.14
94.333	0.00	0.02	0.011	O	|	|	|	|	0.14
94.417	0.00	0.02	0.010	O	|	|	|	|	0.14
94.500	0.00	0.02	0.010	O	|	|	|	|	0.14
94.583	0.00	0.02	0.010	O	|	|	|	|	0.14
94.667	0.00	0.02	0.010	O	|	|	|	|	0.14
94.750	0.00	0.02	0.010	O	|	|	|	|	0.14
94.833	0.00	0.02	0.010	O	|	|	|	|	0.14
94.917	0.00	0.02	0.010	O	|	|	|	|	0.14
95.000	0.00	0.02	0.010	O	|	|	|	|	0.14
95.083	0.00	0.01	0.010	O	|	|	|	|	0.14
95.167	0.00	0.01	0.009	O	|	|	|	|	0.14
95.250	0.00	0.01	0.009	O	|	|	|	|	0.14
95.333	0.00	0.01	0.009	O	|	|	|	|	0.14
95.417	0.00	0.01	0.009	O	|	|	|	|	0.13
95.500	0.00	0.01	0.009	O	|	|	|	|	0.13
95.583	0.00	0.01	0.009	O	|	|	|	|	0.13
95.667	0.00	0.01	0.009	O	|	|	|	|	0.13
95.750	0.00	0.01	0.009	O	|	|	|	|	0.13
95.833	0.00	0.01	0.009	O	|	|	|	|	0.13
95.917	0.00	0.01	0.009	O	|	|	|	|	0.13
96.000	0.00	0.01	0.009	O	|	|	|	|	0.13
96.083	0.00	0.01	0.008	O	|	|	|	|	0.13
96.167	0.00	0.01	0.008	O	|	|	|	|	0.13
96.250	0.00	0.01	0.008	O	|	|	|	|	0.13
96.333	0.00	0.01	0.008	O	|	|	|	|	0.13
96.417	0.00	0.01	0.008	O	|	|	|	|	0.13
96.500	0.00	0.01	0.008	O	|	|	|	|	0.13
96.583	0.00	0.01	0.008	O	|	|	|	|	0.13
96.667	0.00	0.01	0.008	O	|	|	|	|	0.13
96.750	0.00	0.01	0.008	O	|	|	|	|	0.13
96.833	0.00	0.01	0.008	O	|	|	|	|	0.13
96.917	0.00	0.01	0.008	O	|	|	|	|	0.13
97.000	0.00	0.01	0.008	O	|	|	|	|	0.13
97.083	0.00	0.01	0.007	O	|	|	|	|	0.13
97.167	0.00	0.01	0.007	O	|	|	|	|	0.12
97.250	0.00	0.01	0.007	O	|	|	|	|	0.12
97.333	0.00	0.01	0.007	O	|	|	|	|	0.12
97.417	0.00	0.01	0.007	O	|	|	|	|	0.12
97.500	0.00	0.01	0.007	O	|	|	|	|	0.12
97.583	0.00	0.01	0.007	O	|	|	|	|	0.12
97.667	0.00	0.01	0.007	O	|	|	|	|	0.12
97.750	0.00	0.01	0.007	O	|	|	|	|	0.12
97.833	0.00	0.01	0.007	O	|	|	|	|	0.12
97.917	0.00	0.01	0.007	O	|	|	|	|	0.12
98.000	0.00	0.01	0.007	O	|	|	|	|	0.12
98.083	0.00	0.01	0.007	O	|	|	|	|	0.12
98.167	0.00	0.01	0.007	O	|	|	|	|	0.12
98.250	0.00	0.01	0.007	O	|	|	|	|	0.12
98.333	0.00	0.01	0.006	O	|	|	|	|	0.12
98.417	0.00	0.01	0.006	O	|	|	|	|	0.12
98.500	0.00	0.01	0.006	O	|	|	|	|	0.12
98.583	0.00	0.01	0.006	O	|	|	|	|	0.12
98.667	0.00	0.01	0.006	O	|	|	|	|	0.12
98.750	0.00	0.01	0.006	O	|	|	|	|	0.12
98.833	0.00	0.01	0.006	O	|	|	|	|	0.12
98.917	0.00	0.01	0.006	O	|	|	|	|	0.12
99.000	0.00	0.01	0.006	O	|	|	|	|	0.12
99.083	0.00	0.01	0.006	O	|	|	|	|	0.12
99.167	0.00	0.01	0.006	O	|	|	|	|	0.12
99.250	0.00	0.01	0.006	O	|	|	|	|	0.12
99.333	0.00	0.01	0.006	O	|	|	|	|	0.12

99.417	0.00	0.01	0.006	O	|	|	|	|	0.12
99.500	0.00	0.01	0.006	O	|	|	|	|	0.12
99.583	0.00	0.01	0.006	O	|	|	|	|	0.12
99.667	0.00	0.01	0.006	O	|	|	|	|	0.12
99.750	0.00	0.01	0.006	O	|	|	|	|	0.11
99.833	0.00	0.01	0.006	O	|	|	|	|	0.11
99.917	0.00	0.01	0.006	O	|	|	|	|	0.11
100.000	0.00	0.01	0.005	O	|	|	|	|	0.11
100.083	0.00	0.01	0.005	O	|	|	|	|	0.11
100.167	0.00	0.01	0.005	O	|	|	|	|	0.11
100.250	0.00	0.01	0.005	O	|	|	|	|	0.11
100.333	0.00	0.01	0.005	O	|	|	|	|	0.11
100.417	0.00	0.01	0.005	O	|	|	|	|	0.11
100.500	0.00	0.01	0.005	O	|	|	|	|	0.11
100.583	0.00	0.01	0.005	O	|	|	|	|	0.11
100.667	0.00	0.01	0.005	O	|	|	|	|	0.11
100.750	0.00	0.01	0.005	O	|	|	|	|	0.11
100.833	0.00	0.01	0.005	O	|	|	|	|	0.11
100.917	0.00	0.01	0.005	O	|	|	|	|	0.11
101.000	0.00	0.01	0.005	O	|	|	|	|	0.11
101.083	0.00	0.01	0.005	O	|	|	|	|	0.11
101.167	0.00	0.01	0.005	O	|	|	|	|	0.11
101.250	0.00	0.01	0.005	O	|	|	|	|	0.11
101.333	0.00	0.00	0.005	O	|	|	|	|	0.11
101.417	0.00	0.00	0.005	O	|	|	|	|	0.11
101.500	0.00	0.00	0.005	O	|	|	|	|	0.11
101.583	0.00	0.00	0.005	O	|	|	|	|	0.11
101.667	0.00	0.00	0.005	O	|	|	|	|	0.11
101.750	0.00	0.00	0.005	O	|	|	|	|	0.11
101.833	0.00	0.00	0.005	O	|	|	|	|	0.11
101.917	0.00	0.00	0.005	O	|	|	|	|	0.11
102.000	0.00	0.00	0.005	O	|	|	|	|	0.11
102.083	0.00	0.00	0.005	O	|	|	|	|	0.11
102.167	0.00	0.00	0.005	O	|	|	|	|	0.11
102.250	0.00	0.00	0.005	O	|	|	|	|	0.11
102.333	0.00	0.00	0.004	O	|	|	|	|	0.11
102.417	0.00	0.00	0.004	O	|	|	|	|	0.11
102.500	0.00	0.00	0.004	O	|	|	|	|	0.11
102.583	0.00	0.00	0.004	O	|	|	|	|	0.11
102.667	0.00	0.00	0.004	O	|	|	|	|	0.11
102.750	0.00	0.00	0.004	O	|	|	|	|	0.11
102.833	0.00	0.00	0.004	O	|	|	|	|	0.11
102.917	0.00	0.00	0.004	O	|	|	|	|	0.11
103.000	0.00	0.00	0.004	O	|	|	|	|	0.11
103.083	0.00	0.00	0.004	O	|	|	|	|	0.11
103.167	0.00	0.00	0.004	O	|	|	|	|	0.11
103.250	0.00	0.00	0.004	O	|	|	|	|	0.11
103.333	0.00	0.00	0.004	O	|	|	|	|	0.11
103.417	0.00	0.00	0.004	O	|	|	|	|	0.11
103.500	0.00	0.00	0.004	O	|	|	|	|	0.11
103.583	0.00	0.00	0.004	O	|	|	|	|	0.11
103.667	0.00	0.00	0.004	O	|	|	|	|	0.11
103.750	0.00	0.00	0.004	O	|	|	|	|	0.11
103.833	0.00	0.00	0.004	O	|	|	|	|	0.11
103.917	0.00	0.00	0.004	O	|	|	|	|	0.11
104.000	0.00	0.00	0.004	O	|	|	|	|	0.11
104.083	0.00	0.00	0.004	O	|	|	|	|	0.11
104.167	0.00	0.00	0.004	O	|	|	|	|	0.11
104.250	0.00	0.00	0.004	O	|	|	|	|	0.11
104.333	0.00	0.00	0.004	O	|	|	|	|	0.11
104.417	0.00	0.00	0.004	O	|	|	|	|	0.11
104.500	0.00	0.00	0.004	O	|	|	|	|	0.10
104.583	0.00	0.00	0.004	O	|	|	|	|	0.10
104.667	0.00	0.00	0.004	O	|	|	|	|	0.10
104.750	0.00	0.00	0.004	O	|	|	|	|	0.10
104.833	0.00	0.00	0.004	O	|	|	|	|	0.10
104.917	0.00	0.00	0.004	O	|	|	|	|	0.10
105.000	0.00	0.00	0.004	O	|	|	|	|	0.10
105.083	0.00	0.00	0.004	O	|	|	|	|	0.10
105.167	0.00	0.00	0.004	O	|	|	|	|	0.10
105.250	0.00	0.00	0.004	O	|	|	|	|	0.10
105.333	0.00	0.00	0.004	O	|	|	|	|	0.10
105.417	0.00	0.00	0.004	O	|	|	|	|	0.10
105.500	0.00	0.00	0.004	O	|	|	|	|	0.10
105.583	0.00	0.00	0.004	O	|	|	|	|	0.10

105.667	0.00	0.00	0.004	O	|	|	|	|	0.10
105.750	0.00	0.00	0.004	O	|	|	|	|	0.10
105.833	0.00	0.00	0.004	O	|	|	|	|	0.10
105.917	0.00	0.00	0.004	O	|	|	|	|	0.10
106.000	0.00	0.00	0.004	O	|	|	|	|	0.10
106.083	0.00	0.00	0.004	O	|	|	|	|	0.10
106.167	0.00	0.00	0.004	O	|	|	|	|	0.10
106.250	0.00	0.00	0.004	O	|	|	|	|	0.10
106.333	0.00	0.00	0.004	O	|	|	|	|	0.10
106.417	0.00	0.00	0.003	O	|	|	|	|	0.10
106.500	0.00	0.00	0.003	O	|	|	|	|	0.10
106.583	0.00	0.00	0.003	O	|	|	|	|	0.10
106.667	0.00	0.00	0.003	O	|	|	|	|	0.10
106.750	0.00	0.00	0.003	O	|	|	|	|	0.10
106.833	0.00	0.00	0.003	O	|	|	|	|	0.10
106.917	0.00	0.00	0.003	O	|	|	|	|	0.10
107.000	0.00	0.00	0.003	O	|	|	|	|	0.10
107.083	0.00	0.00	0.003	O	|	|	|	|	0.10
107.167	0.00	0.00	0.003	O	|	|	|	|	0.10
107.250	0.00	0.00	0.003	O	|	|	|	|	0.10
107.333	0.00	0.00	0.003	O	|	|	|	|	0.10
107.417	0.00	0.00	0.003	O	|	|	|	|	0.10
107.500	0.00	0.00	0.003	O	|	|	|	|	0.10
107.583	0.00	0.00	0.003	O	|	|	|	|	0.10
107.667	0.00	0.00	0.003	O	|	|	|	|	0.10
107.750	0.00	0.00	0.003	O	|	|	|	|	0.10
107.833	0.00	0.00	0.003	O	|	|	|	|	0.10
107.917	0.00	0.00	0.003	O	|	|	|	|	0.10
108.000	0.00	0.00	0.003	O	|	|	|	|	0.10
108.083	0.00	0.00	0.003	O	|	|	|	|	0.10
108.167	0.00	0.00	0.003	O	|	|	|	|	0.10
108.250	0.00	0.00	0.003	O	|	|	|	|	0.10
108.333	0.00	0.00	0.003	O	|	|	|	|	0.10
108.417	0.00	0.00	0.003	O	|	|	|	|	0.10
108.500	0.00	0.00	0.003	O	|	|	|	|	0.10
108.583	0.00	0.00	0.003	O	|	|	|	|	0.10
108.667	0.00	0.00	0.003	O	|	|	|	|	0.10
108.750	0.00	0.00	0.003	O	|	|	|	|	0.10
108.833	0.00	0.00	0.003	O	|	|	|	|	0.10
108.917	0.00	0.00	0.003	O	|	|	|	|	0.10
109.000	0.00	0.00	0.003	O	|	|	|	|	0.10
109.083	0.00	0.00	0.003	O	|	|	|	|	0.10
109.167	0.00	0.00	0.003	O	|	|	|	|	0.10
109.250	0.00	0.00	0.003	O	|	|	|	|	0.10
109.333	0.00	0.00	0.003	O	|	|	|	|	0.10
109.417	0.00	0.00	0.003	O	|	|	|	|	0.10
109.500	0.00	0.00	0.003	O	|	|	|	|	0.10
109.583	0.00	0.00	0.003	O	|	|	|	|	0.10
109.667	0.00	0.00	0.003	O	|	|	|	|	0.10
109.750	0.00	0.00	0.003	O	|	|	|	|	0.10
109.833	0.00	0.00	0.003	O	|	|	|	|	0.10
109.917	0.00	0.00	0.003	O	|	|	|	|	0.10
110.000	0.00	0.00	0.003	O	|	|	|	|	0.10
110.083	0.00	0.00	0.003	O	|	|	|	|	0.10
110.167	0.00	0.00	0.003	O	|	|	|	|	0.10
110.250	0.00	0.00	0.003	O	|	|	|	|	0.10
110.333	0.00	0.00	0.003	O	|	|	|	|	0.10
110.417	0.00	0.00	0.003	O	|	|	|	|	0.10
110.500	0.00	0.00	0.003	O	|	|	|	|	0.10

Remaining water in basin = 0.00 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1326
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 14.963 (CFS)
Total volume = 10.867 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

BASIN ROUTING
DMA A
PROPOSED CONDITIONS
100-YEAR 1-HOUR

FLOOD HYDROGRAPH ROUTING PROGRAM
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Study date: 10/28/14

14-0213 SHOPOFF
BASIN ROUTING
DMA A
100-YEAR 1-HOUR

Program License Serial Number 4010

******************** HYDROGRAPH INFORMATION **********************

From study/file name: APROP1100.rte
*****************************HYDROGRAPH DATA*****************************
Number of intervals = 18
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 146.113 (CFS)
Total volume = 4.382 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

++
Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 18
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.100	0.003	0.001	0.003	0.003
1.000	0.163	0.342	0.162	0.164
2.000	0.741	0.497	0.739	0.743
3.000	1.753	0.614	1.751	1.755
3.400	2.222	0.656	2.220	2.224
4.000	2.978	2.841	2.968	2.988
4.400	3.517	3.817	3.504	3.530
5.000	4.378	12.529	4.335	4.421
5.200	4.679	15.300	4.626	4.732
5.500	5.144	23.007	5.065	5.223
6.000	5.955	42.225	5.810	6.100
6.500	6.811	66.515	6.582	7.040
7.000	7.713	94.837	7.386	8.040
7.500	8.662	126.640	8.226	9.098
8.000	9.656	161.558	9.100	10.212
8.500	10.697	199.324	10.011	11.383
9.000	11.786	239.733	10.960	12.612
9.500	12.922	282.618	11.949	13.895

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 36.5 73.06 109.58 146.11	Depth (Ft.)
0.083	3.35	0.02	0.011	O | | | | |	0.15
0.167	14.98	0.15	0.074	O I | | | | |	0.50
0.250	21.83	0.35	0.199	O I | | | | |	1.06
0.333	25.29	0.39	0.359	O I | | | | |	1.34
0.417	28.24	0.44	0.540	O I | | | | |	1.65
0.500	31.78	0.50	0.744	O I | | | | |	2.00
0.583	37.10	0.52	0.977	O I | | | | |	2.23
0.667	43.23	0.56	1.250	O |I | | | |	2.50
0.750	58.27	0.60	1.596	O | I | | | |	2.84
0.833	101.78	0.65	2.143	O | | I | | |	3.33
0.917	146.11	2.85	2.984	O | | | | I	4.00
1.000	72.00	5.73	3.706	|O | | I| | |	4.53
1.083	35.35	8.96	4.025	|O I| | | | |	4.75
1.167	11.00	9.91	4.119	| O | | | | |	4.82
1.250	4.07	9.75	4.104	I O | | | | |	4.81
1.333	1.42	9.28	4.057	I O | | | | |	4.78
1.417	0.32	8.71	4.001	IO | | | | |	4.74
1.500	0.07	8.14	3.944	IO | | | | |	4.70
1.583	0.00	7.60	3.890	IO | | | | |	4.66
1.667	0.00	7.08	3.840	IO | | | | |	4.62
1.750	0.00	6.61	3.793	IO | | | | |	4.59
1.833	0.00	6.16	3.749	IO | | | | |	4.56
1.917	0.00	5.75	3.708	IO | | | | |	4.53
2.000	0.00	5.36	3.669	IO | | | | |	4.51
2.083	0.00	5.00	3.634	IO | | | | |	4.48
2.167	0.00	4.66	3.601	IO | | | | |	4.46
2.250	0.00	4.35	3.570	O | | | | |	4.44
2.333	0.00	4.06	3.541	O | | | | |	4.42
2.417	0.00	3.81	3.513	O | | | | |	4.40
2.500	0.00	3.76	3.487	O | | | | |	4.38
2.583	0.00	3.72	3.462	O | | | | |	4.36
2.667	0.00	3.67	3.436	O | | | | |	4.34
2.750	0.00	3.63	3.411	O | | | | |	4.32
2.833	0.00	3.58	3.386	O | | | | |	4.30
2.917	0.00	3.54	3.362	O | | | | |	4.28
3.000	0.00	3.49	3.338	O | | | | |	4.27
3.083	0.00	3.45	3.314	O | | | | |	4.25
3.167	0.00	3.41	3.290	O | | | | |	4.23
3.250	0.00	3.36	3.267	O | | | | |	4.21
3.333	0.00	3.32	3.244	O | | | | |	4.20
3.417	0.00	3.28	3.221	O | | | | |	4.18
3.500	0.00	3.24	3.199	O | | | | |	4.16
3.583	0.00	3.20	3.176	O | | | | |	4.15
3.667	0.00	3.16	3.154	O | | | | |	4.13
3.750	0.00	3.12	3.133	O | | | | |	4.11
3.833	0.00	3.08	3.111	O | | | | |	4.10
3.917	0.00	3.04	3.090	O | | | | |	4.08
4.000	0.00	3.01	3.070	O | | | | |	4.07
4.083	0.00	2.97	3.049	O | | | | |	4.05
4.167	0.00	2.93	3.029	O | | | | |	4.04
4.250	0.00	2.90	3.009	O | | | | |	4.02
4.333	0.00	2.86	2.989	O | | | | |	4.01
4.417	0.00	2.82	2.969	O | | | | |	3.99
4.500	0.00	2.76	2.950	O | | | | |	3.98
4.583	0.00	2.71	2.931	O | | | | |	3.96
4.667	0.00	2.65	2.913	O | | | | |	3.95
4.750	0.00	2.60	2.895	O | | | | |	3.93
4.833	0.00	2.55	2.877	O | | | | |	3.92
4.917	0.00	2.50	2.860	O | | | | |	3.91
5.000	0.00	2.45	2.842	O | | | | |	3.89
5.083	0.00	2.40	2.826	O | | | | |	3.88
5.167	0.00	2.35	2.809	O | | | | |	3.87
5.250	0.00	2.31	2.793	O | | | | |	3.85
5.333	0.00	2.26	2.778	O | | | | |	3.84
5.417	0.00	2.22	2.762	O | | | | |	3.83
5.500	0.00	2.17	2.747	O | | | | |	3.82
5.583	0.00	2.13	2.732	O | | | | |	3.80

5.667	0.00	2.09	2.718	O					3.79
5.750	0.00	2.05	2.703	O					3.78
5.833	0.00	2.01	2.690	O					3.77
5.917	0.00	1.97	2.676	O					3.76
6.000	0.00	1.93	2.662	O					3.75
6.083	0.00	1.89	2.649	O					3.74
6.167	0.00	1.85	2.636	O					3.73
6.250	0.00	1.82	2.624	O					3.72
6.333	0.00	1.78	2.611	O					3.71
6.417	0.00	1.75	2.599	O					3.70
6.500	0.00	1.71	2.587	O					3.69
6.583	0.00	1.68	2.576	O					3.68
6.667	0.00	1.64	2.564	O					3.67
6.750	0.00	1.61	2.553	O					3.66
6.833	0.00	1.58	2.542	O					3.65
6.917	0.00	1.55	2.531	O					3.65
7.000	0.00	1.52	2.521	O					3.64
7.083	0.00	1.49	2.510	O					3.63
7.167	0.00	1.46	2.500	O					3.62
7.250	0.00	1.43	2.490	O					3.61
7.333	0.00	1.40	2.480	O					3.61
7.417	0.00	1.38	2.471	O					3.60
7.500	0.00	1.35	2.461	O					3.59
7.583	0.00	1.32	2.452	O					3.58
7.667	0.00	1.30	2.443	O					3.58
7.750	0.00	1.27	2.434	O					3.57
7.833	0.00	1.24	2.426	O					3.56
7.917	0.00	1.22	2.417	O					3.55
8.000	0.00	1.20	2.409	O					3.55
8.083	0.00	1.17	2.401	O					3.54
8.167	0.00	1.15	2.393	O					3.54
8.250	0.00	1.13	2.385	O					3.53
8.333	0.00	1.10	2.377	O					3.52
8.417	0.00	1.08	2.370	O					3.52
8.500	0.00	1.06	2.362	O					3.51
8.583	0.00	1.04	2.355	O					3.51
8.667	0.00	1.02	2.348	O					3.50
8.750	0.00	1.00	2.341	O					3.49
8.833	0.00	0.98	2.334	O					3.49
8.917	0.00	0.96	2.328	O					3.48
9.000	0.00	0.94	2.321	O					3.48
9.083	0.00	0.92	2.315	O					3.47
9.167	0.00	0.91	2.308	O					3.47
9.250	0.00	0.89	2.302	O					3.46
9.333	0.00	0.87	2.296	O					3.46
9.417	0.00	0.85	2.290	O					3.45
9.500	0.00	0.84	2.284	O					3.45
9.583	0.00	0.82	2.279	O					3.44
9.667	0.00	0.80	2.273	O					3.44
9.750	0.00	0.79	2.268	O					3.44
9.833	0.00	0.77	2.262	O					3.43
9.917	0.00	0.76	2.257	O					3.43
10.000	0.00	0.74	2.252	O					3.42
10.083	0.00	0.73	2.247	O					3.42
10.167	0.00	0.71	2.242	O					3.42
10.250	0.00	0.70	2.237	O					3.41
10.333	0.00	0.69	2.232	O					3.41
10.417	0.00	0.67	2.227	O					3.40
10.500	0.00	0.66	2.223	O					3.40
10.583	0.00	0.66	2.218	O					3.40
10.667	0.00	0.66	2.214	O					3.39
10.750	0.00	0.65	2.209	O					3.39
10.833	0.00	0.65	2.205	O					3.39
10.917	0.00	0.65	2.200	O					3.38
11.000	0.00	0.65	2.196	O					3.38
11.083	0.00	0.65	2.191	O					3.37
11.167	0.00	0.65	2.187	O					3.37
11.250	0.00	0.65	2.182	O					3.37
11.333	0.00	0.65	2.178	O					3.36
11.417	0.00	0.65	2.173	O					3.36
11.500	0.00	0.65	2.169	O					3.35
11.583	0.00	0.65	2.164	O					3.35
11.667	0.00	0.65	2.160	O					3.35
11.750	0.00	0.65	2.155	O					3.34
11.833	0.00	0.65	2.151	O					3.34

11.917	0.00	0.65	2.146	O	|	|	|	|	3.34
12.000	0.00	0.65	2.142	O	|	|	|	|	3.33
12.083	0.00	0.65	2.137	O	|	|	|	|	3.33
12.167	0.00	0.65	2.133	O	|	|	|	|	3.32
12.250	0.00	0.65	2.129	O	|	|	|	|	3.32
12.333	0.00	0.65	2.124	O	|	|	|	|	3.32
12.417	0.00	0.65	2.120	O	|	|	|	|	3.31
12.500	0.00	0.65	2.115	O	|	|	|	|	3.31
12.583	0.00	0.65	2.111	O	|	|	|	|	3.31
12.667	0.00	0.65	2.106	O	|	|	|	|	3.30
12.750	0.00	0.65	2.102	O	|	|	|	|	3.30
12.833	0.00	0.64	2.097	O	|	|	|	|	3.29
12.917	0.00	0.64	2.093	O	|	|	|	|	3.29
13.000	0.00	0.64	2.089	O	|	|	|	|	3.29
13.083	0.00	0.64	2.084	O	|	|	|	|	3.28
13.167	0.00	0.64	2.080	O	|	|	|	|	3.28
13.250	0.00	0.64	2.075	O	|	|	|	|	3.27
13.333	0.00	0.64	2.071	O	|	|	|	|	3.27
13.417	0.00	0.64	2.066	O	|	|	|	|	3.27
13.500	0.00	0.64	2.062	O	|	|	|	|	3.26
13.583	0.00	0.64	2.058	O	|	|	|	|	3.26
13.667	0.00	0.64	2.053	O	|	|	|	|	3.26
13.750	0.00	0.64	2.049	O	|	|	|	|	3.25
13.833	0.00	0.64	2.044	O	|	|	|	|	3.25
13.917	0.00	0.64	2.040	O	|	|	|	|	3.24
14.000	0.00	0.64	2.035	O	|	|	|	|	3.24
14.083	0.00	0.64	2.031	O	|	|	|	|	3.24
14.167	0.00	0.64	2.027	O	|	|	|	|	3.23
14.250	0.00	0.64	2.022	O	|	|	|	|	3.23
14.333	0.00	0.64	2.018	O	|	|	|	|	3.23
14.417	0.00	0.64	2.013	O	|	|	|	|	3.22
14.500	0.00	0.64	2.009	O	|	|	|	|	3.22
14.583	0.00	0.64	2.005	O	|	|	|	|	3.21
14.667	0.00	0.64	2.000	O	|	|	|	|	3.21
14.750	0.00	0.64	1.996	O	|	|	|	|	3.21
14.833	0.00	0.64	1.992	O	|	|	|	|	3.20
14.917	0.00	0.63	1.987	O	|	|	|	|	3.20
15.000	0.00	0.63	1.983	O	|	|	|	|	3.20
15.083	0.00	0.63	1.978	O	|	|	|	|	3.19
15.167	0.00	0.63	1.974	O	|	|	|	|	3.19
15.250	0.00	0.63	1.970	O	|	|	|	|	3.18
15.333	0.00	0.63	1.965	O	|	|	|	|	3.18
15.417	0.00	0.63	1.961	O	|	|	|	|	3.18
15.500	0.00	0.63	1.957	O	|	|	|	|	3.17
15.583	0.00	0.63	1.952	O	|	|	|	|	3.17
15.667	0.00	0.63	1.948	O	|	|	|	|	3.17
15.750	0.00	0.63	1.944	O	|	|	|	|	3.16
15.833	0.00	0.63	1.939	O	|	|	|	|	3.16
15.917	0.00	0.63	1.935	O	|	|	|	|	3.16
16.000	0.00	0.63	1.931	O	|	|	|	|	3.15
16.083	0.00	0.63	1.926	O	|	|	|	|	3.15
16.167	0.00	0.63	1.922	O	|	|	|	|	3.14
16.250	0.00	0.63	1.918	O	|	|	|	|	3.14
16.333	0.00	0.63	1.913	O	|	|	|	|	3.14
16.417	0.00	0.63	1.909	O	|	|	|	|	3.13
16.500	0.00	0.63	1.905	O	|	|	|	|	3.13
16.583	0.00	0.63	1.900	O	|	|	|	|	3.13
16.667	0.00	0.63	1.896	O	|	|	|	|	3.12
16.750	0.00	0.63	1.892	O	|	|	|	|	3.12
16.833	0.00	0.63	1.887	O	|	|	|	|	3.11
16.917	0.00	0.63	1.883	O	|	|	|	|	3.11
17.000	0.00	0.63	1.879	O	|	|	|	|	3.11
17.083	0.00	0.62	1.874	O	|	|	|	|	3.10
17.167	0.00	0.62	1.870	O	|	|	|	|	3.10
17.250	0.00	0.62	1.866	O	|	|	|	|	3.10
17.333	0.00	0.62	1.862	O	|	|	|	|	3.09
17.417	0.00	0.62	1.857	O	|	|	|	|	3.09
17.500	0.00	0.62	1.853	O	|	|	|	|	3.09
17.583	0.00	0.62	1.849	O	|	|	|	|	3.08
17.667	0.00	0.62	1.844	O	|	|	|	|	3.08
17.750	0.00	0.62	1.840	O	|	|	|	|	3.07
17.833	0.00	0.62	1.836	O	|	|	|	|	3.07
17.917	0.00	0.62	1.832	O	|	|	|	|	3.07
18.000	0.00	0.62	1.827	O	|	|	|	|	3.06
18.083	0.00	0.62	1.823	O	|	|	|	|	3.06

18.167	0.00	0.62	1.819	O	|	|	|	3.06
18.250	0.00	0.62	1.814	O	|	|	|	3.05
18.333	0.00	0.62	1.810	O	|	|	|	3.05
18.417	0.00	0.62	1.806	O	|	|	|	3.05
18.500	0.00	0.62	1.802	O	|	|	|	3.04
18.583	0.00	0.62	1.797	O	|	|	|	3.04
18.667	0.00	0.62	1.793	O	|	|	|	3.03
18.750	0.00	0.62	1.789	O	|	|	|	3.03
18.833	0.00	0.62	1.785	O	|	|	|	3.03
18.917	0.00	0.62	1.780	O	|	|	|	3.02
19.000	0.00	0.62	1.776	O	|	|	|	3.02
19.083	0.00	0.62	1.772	O	|	|	|	3.02
19.167	0.00	0.62	1.768	O	|	|	|	3.01
19.250	0.00	0.61	1.763	O	|	|	|	3.01
19.333	0.00	0.61	1.759	O	|	|	|	3.01
19.417	0.00	0.61	1.755	O	|	|	|	3.00
19.500	0.00	0.61	1.751	O	|	|	|	3.00
19.583	0.00	0.61	1.747	O	|	|	|	2.99
19.667	0.00	0.61	1.742	O	|	|	|	2.99
19.750	0.00	0.61	1.738	O	|	|	|	2.99
19.833	0.00	0.61	1.734	O	|	|	|	2.98
19.917	0.00	0.61	1.730	O	|	|	|	2.98
20.000	0.00	0.61	1.725	O	|	|	|	2.97
20.083	0.00	0.61	1.721	O	|	|	|	2.97
20.167	0.00	0.61	1.717	O	|	|	|	2.96
20.250	0.00	0.61	1.713	O	|	|	|	2.96
20.333	0.00	0.61	1.709	O	|	|	|	2.96
20.417	0.00	0.61	1.704	O	|	|	|	2.95
20.500	0.00	0.61	1.700	O	|	|	|	2.95
20.583	0.00	0.61	1.696	O	|	|	|	2.94
20.667	0.00	0.61	1.692	O	|	|	|	2.94
20.750	0.00	0.61	1.688	O	|	|	|	2.94
20.833	0.00	0.61	1.684	O	|	|	|	2.93
20.917	0.00	0.61	1.679	O	|	|	|	2.93
21.000	0.00	0.61	1.675	O	|	|	|	2.92
21.083	0.00	0.60	1.671	O	|	|	|	2.92
21.167	0.00	0.60	1.667	O	|	|	|	2.91
21.250	0.00	0.60	1.663	O	|	|	|	2.91
21.333	0.00	0.60	1.659	O	|	|	|	2.91
21.417	0.00	0.60	1.654	O	|	|	|	2.90
21.500	0.00	0.60	1.650	O	|	|	|	2.90
21.583	0.00	0.60	1.646	O	|	|	|	2.89
21.667	0.00	0.60	1.642	O	|	|	|	2.89
21.750	0.00	0.60	1.638	O	|	|	|	2.89
21.833	0.00	0.60	1.634	O	|	|	|	2.88
21.917	0.00	0.60	1.630	O	|	|	|	2.88
22.000	0.00	0.60	1.625	O	|	|	|	2.87
22.083	0.00	0.60	1.621	O	|	|	|	2.87
22.167	0.00	0.60	1.617	O	|	|	|	2.87
22.250	0.00	0.60	1.613	O	|	|	|	2.86
22.333	0.00	0.60	1.609	O	|	|	|	2.86
22.417	0.00	0.60	1.605	O	|	|	|	2.85
22.500	0.00	0.60	1.601	O	|	|	|	2.85
22.583	0.00	0.60	1.597	O	|	|	|	2.85
22.667	0.00	0.60	1.593	O	|	|	|	2.84
22.750	0.00	0.59	1.588	O	|	|	|	2.84
22.833	0.00	0.59	1.584	O	|	|	|	2.83
22.917	0.00	0.59	1.580	O	|	|	|	2.83
23.000	0.00	0.59	1.576	O	|	|	|	2.83
23.083	0.00	0.59	1.572	O	|	|	|	2.82
23.167	0.00	0.59	1.568	O	|	|	|	2.82
23.250	0.00	0.59	1.564	O	|	|	|	2.81
23.333	0.00	0.59	1.560	O	|	|	|	2.81
23.417	0.00	0.59	1.556	O	|	|	|	2.81
23.500	0.00	0.59	1.552	O	|	|	|	2.80
23.583	0.00	0.59	1.548	O	|	|	|	2.80
23.667	0.00	0.59	1.544	O	|	|	|	2.79
23.750	0.00	0.59	1.539	O	|	|	|	2.79
23.833	0.00	0.59	1.535	O	|	|	|	2.78
23.917	0.00	0.59	1.531	O	|	|	|	2.78
24.000	0.00	0.59	1.527	O	|	|	|	2.78
24.083	0.00	0.59	1.523	O	|	|	|	2.77
24.167	0.00	0.59	1.519	O	|	|	|	2.77
24.250	0.00	0.59	1.515	O	|	|	|	2.77
24.333	0.00	0.59	1.511	O	|	|	|	2.76

24.417	0.00	0.59	1.507	O	|	|	|	|	2.76
24.500	0.00	0.59	1.503	O	|	|	|	|	2.75
24.583	0.00	0.58	1.499	O	|	|	|	|	2.75
24.667	0.00	0.58	1.495	O	|	|	|	|	2.75
24.750	0.00	0.58	1.491	O	|	|	|	|	2.74
24.833	0.00	0.58	1.487	O	|	|	|	|	2.74
24.917	0.00	0.58	1.483	O	|	|	|	|	2.73
25.000	0.00	0.58	1.479	O	|	|	|	|	2.73
25.083	0.00	0.58	1.475	O	|	|	|	|	2.73
25.167	0.00	0.58	1.471	O	|	|	|	|	2.72
25.250	0.00	0.58	1.467	O	|	|	|	|	2.72
25.333	0.00	0.58	1.463	O	|	|	|	|	2.71
25.417	0.00	0.58	1.459	O	|	|	|	|	2.71
25.500	0.00	0.58	1.455	O	|	|	|	|	2.71
25.583	0.00	0.58	1.451	O	|	|	|	|	2.70
25.667	0.00	0.58	1.447	O	|	|	|	|	2.70
25.750	0.00	0.58	1.443	O	|	|	|	|	2.69
25.833	0.00	0.58	1.439	O	|	|	|	|	2.69
25.917	0.00	0.58	1.435	O	|	|	|	|	2.69
26.000	0.00	0.58	1.431	O	|	|	|	|	2.68
26.083	0.00	0.58	1.427	O	|	|	|	|	2.68
26.167	0.00	0.58	1.423	O	|	|	|	|	2.67
26.250	0.00	0.58	1.419	O	|	|	|	|	2.67
26.333	0.00	0.57	1.415	O	|	|	|	|	2.67
26.417	0.00	0.57	1.411	O	|	|	|	|	2.66
26.500	0.00	0.57	1.407	O	|	|	|	|	2.66
26.583	0.00	0.57	1.403	O	|	|	|	|	2.65
26.667	0.00	0.57	1.399	O	|	|	|	|	2.65
26.750	0.00	0.57	1.395	O	|	|	|	|	2.65
26.833	0.00	0.57	1.391	O	|	|	|	|	2.64
26.917	0.00	0.57	1.388	O	|	|	|	|	2.64
27.000	0.00	0.57	1.384	O	|	|	|	|	2.64
27.083	0.00	0.57	1.380	O	|	|	|	|	2.63
27.167	0.00	0.57	1.376	O	|	|	|	|	2.63
27.250	0.00	0.57	1.372	O	|	|	|	|	2.62
27.333	0.00	0.57	1.368	O	|	|	|	|	2.62
27.417	0.00	0.57	1.364	O	|	|	|	|	2.62
27.500	0.00	0.57	1.360	O	|	|	|	|	2.61
27.583	0.00	0.57	1.356	O	|	|	|	|	2.61
27.667	0.00	0.57	1.352	O	|	|	|	|	2.60
27.750	0.00	0.57	1.348	O	|	|	|	|	2.60
27.833	0.00	0.57	1.344	O	|	|	|	|	2.60
27.917	0.00	0.57	1.341	O	|	|	|	|	2.59
28.000	0.00	0.57	1.337	O	|	|	|	|	2.59
28.083	0.00	0.57	1.333	O	|	|	|	|	2.58
28.167	0.00	0.56	1.329	O	|	|	|	|	2.58
28.250	0.00	0.56	1.325	O	|	|	|	|	2.58
28.333	0.00	0.56	1.321	O	|	|	|	|	2.57
28.417	0.00	0.56	1.317	O	|	|	|	|	2.57
28.500	0.00	0.56	1.313	O	|	|	|	|	2.57
28.583	0.00	0.56	1.309	O	|	|	|	|	2.56
28.667	0.00	0.56	1.306	O	|	|	|	|	2.56
28.750	0.00	0.56	1.302	O	|	|	|	|	2.55
28.833	0.00	0.56	1.298	O	|	|	|	|	2.55
28.917	0.00	0.56	1.294	O	|	|	|	|	2.55
29.000	0.00	0.56	1.290	O	|	|	|	|	2.54
29.083	0.00	0.56	1.286	O	|	|	|	|	2.54
29.167	0.00	0.56	1.282	O	|	|	|	|	2.53
29.250	0.00	0.56	1.279	O	|	|	|	|	2.53
29.333	0.00	0.56	1.275	O	|	|	|	|	2.53
29.417	0.00	0.56	1.271	O	|	|	|	|	2.52
29.500	0.00	0.56	1.267	O	|	|	|	|	2.52
29.583	0.00	0.56	1.263	O	|	|	|	|	2.52
29.667	0.00	0.56	1.259	O	|	|	|	|	2.51
29.750	0.00	0.56	1.255	O	|	|	|	|	2.51
29.833	0.00	0.56	1.252	O	|	|	|	|	2.50
29.917	0.00	0.56	1.248	O	|	|	|	|	2.50
30.000	0.00	0.56	1.244	O	|	|	|	|	2.50
30.083	0.00	0.55	1.240	O	|	|	|	|	2.49
30.167	0.00	0.55	1.236	O	|	|	|	|	2.49
30.250	0.00	0.55	1.233	O	|	|	|	|	2.49
30.333	0.00	0.55	1.229	O	|	|	|	|	2.48
30.417	0.00	0.55	1.225	O	|	|	|	|	2.48
30.500	0.00	0.55	1.221	O	|	|	|	|	2.47
30.583	0.00	0.55	1.217	O	|	|	|	|	2.47

30.667	0.00	0.55	1.213	O					2.47
30.750	0.00	0.55	1.210	O					2.46
30.833	0.00	0.55	1.206	O					2.46
30.917	0.00	0.55	1.202	O					2.46
31.000	0.00	0.55	1.198	O					2.45
31.083	0.00	0.55	1.195	O					2.45
31.167	0.00	0.55	1.191	O					2.44
31.250	0.00	0.55	1.187	O					2.44
31.333	0.00	0.55	1.183	O					2.44
31.417	0.00	0.55	1.179	O					2.43
31.500	0.00	0.55	1.176	O					2.43
31.583	0.00	0.55	1.172	O					2.43
31.667	0.00	0.55	1.168	O					2.42
31.750	0.00	0.55	1.164	O					2.42
31.833	0.00	0.55	1.161	O					2.41
31.917	0.00	0.55	1.157	O					2.41
32.000	0.00	0.54	1.153	O					2.41
32.083	0.00	0.54	1.149	O					2.40
32.167	0.00	0.54	1.146	O					2.40
32.250	0.00	0.54	1.142	O					2.40
32.333	0.00	0.54	1.138	O					2.39
32.417	0.00	0.54	1.134	O					2.39
32.500	0.00	0.54	1.131	O					2.39
32.583	0.00	0.54	1.127	O					2.38
32.667	0.00	0.54	1.123	O					2.38
32.750	0.00	0.54	1.119	O					2.37
32.833	0.00	0.54	1.116	O					2.37
32.917	0.00	0.54	1.112	O					2.37
33.000	0.00	0.54	1.108	O					2.36
33.083	0.00	0.54	1.105	O					2.36
33.167	0.00	0.54	1.101	O					2.36
33.250	0.00	0.54	1.097	O					2.35
33.333	0.00	0.54	1.093	O					2.35
33.417	0.00	0.54	1.090	O					2.34
33.500	0.00	0.54	1.086	O					2.34
33.583	0.00	0.54	1.082	O					2.34
33.667	0.00	0.54	1.079	O					2.33
33.750	0.00	0.54	1.075	O					2.33
33.833	0.00	0.54	1.071	O					2.33
33.917	0.00	0.53	1.068	O					2.32
34.000	0.00	0.53	1.064	O					2.32
34.083	0.00	0.53	1.060	O					2.32
34.167	0.00	0.53	1.057	O					2.31
34.250	0.00	0.53	1.053	O					2.31
34.333	0.00	0.53	1.049	O					2.30
34.417	0.00	0.53	1.046	O					2.30
34.500	0.00	0.53	1.042	O					2.30
34.583	0.00	0.53	1.038	O					2.29
34.667	0.00	0.53	1.035	O					2.29
34.750	0.00	0.53	1.031	O					2.29
34.833	0.00	0.53	1.027	O					2.28
34.917	0.00	0.53	1.024	O					2.28
35.000	0.00	0.53	1.020	O					2.28
35.083	0.00	0.53	1.016	O					2.27
35.167	0.00	0.53	1.013	O					2.27
35.250	0.00	0.53	1.009	O					2.26
35.333	0.00	0.53	1.005	O					2.26
35.417	0.00	0.53	1.002	O					2.26
35.500	0.00	0.53	0.998	O					2.25
35.583	0.00	0.53	0.995	O					2.25
35.667	0.00	0.53	0.991	O					2.25
35.750	0.00	0.53	0.987	O					2.24
35.833	0.00	0.53	0.984	O					2.24
35.917	0.00	0.52	0.980	O					2.24
36.000	0.00	0.52	0.976	O					2.23
36.083	0.00	0.52	0.973	O					2.23
36.167	0.00	0.52	0.969	O					2.23
36.250	0.00	0.52	0.966	O					2.22
36.333	0.00	0.52	0.962	O					2.22
36.417	0.00	0.52	0.958	O					2.21
36.500	0.00	0.52	0.955	O					2.21
36.583	0.00	0.52	0.951	O					2.21
36.667	0.00	0.52	0.948	O					2.20
36.750	0.00	0.52	0.944	O					2.20
36.833	0.00	0.52	0.940	O					2.20

36.917	0.00	0.52	0.937	O	|	|	|	|	2.19
37.000	0.00	0.52	0.933	O	|	|	|	|	2.19
37.083	0.00	0.52	0.930	O	|	|	|	|	2.19
37.167	0.00	0.52	0.926	O	|	|	|	|	2.18
37.250	0.00	0.52	0.923	O	|	|	|	|	2.18
37.333	0.00	0.52	0.919	O	|	|	|	|	2.18
37.417	0.00	0.52	0.915	O	|	|	|	|	2.17
37.500	0.00	0.52	0.912	O	|	|	|	|	2.17
37.583	0.00	0.52	0.908	O	|	|	|	|	2.17
37.667	0.00	0.52	0.905	O	|	|	|	|	2.16
37.750	0.00	0.52	0.901	O	|	|	|	|	2.16
37.833	0.00	0.52	0.898	O	|	|	|	|	2.15
37.917	0.00	0.51	0.894	O	|	|	|	|	2.15
38.000	0.00	0.51	0.891	O	|	|	|	|	2.15
38.083	0.00	0.51	0.887	O	|	|	|	|	2.14
38.167	0.00	0.51	0.884	O	|	|	|	|	2.14
38.250	0.00	0.51	0.880	O	|	|	|	|	2.14
38.333	0.00	0.51	0.876	O	|	|	|	|	2.13
38.417	0.00	0.51	0.873	O	|	|	|	|	2.13
38.500	0.00	0.51	0.869	O	|	|	|	|	2.13
38.583	0.00	0.51	0.866	O	|	|	|	|	2.12
38.667	0.00	0.51	0.862	O	|	|	|	|	2.12
38.750	0.00	0.51	0.859	O	|	|	|	|	2.12
38.833	0.00	0.51	0.855	O	|	|	|	|	2.11
38.917	0.00	0.51	0.852	O	|	|	|	|	2.11
39.000	0.00	0.51	0.848	O	|	|	|	|	2.11
39.083	0.00	0.51	0.845	O	|	|	|	|	2.10
39.167	0.00	0.51	0.841	O	|	|	|	|	2.10
39.250	0.00	0.51	0.838	O	|	|	|	|	2.10
39.333	0.00	0.51	0.834	O	|	|	|	|	2.09
39.417	0.00	0.51	0.831	O	|	|	|	|	2.09
39.500	0.00	0.51	0.827	O	|	|	|	|	2.09
39.583	0.00	0.51	0.824	O	|	|	|	|	2.08
39.667	0.00	0.51	0.820	O	|	|	|	|	2.08
39.750	0.00	0.51	0.817	O	|	|	|	|	2.07
39.833	0.00	0.51	0.813	O	|	|	|	|	2.07
39.917	0.00	0.50	0.810	O	|	|	|	|	2.07
40.000	0.00	0.50	0.806	O	|	|	|	|	2.06
40.083	0.00	0.50	0.803	O	|	|	|	|	2.06
40.167	0.00	0.50	0.799	O	|	|	|	|	2.06
40.250	0.00	0.50	0.796	O	|	|	|	|	2.05
40.333	0.00	0.50	0.793	O	|	|	|	|	2.05
40.417	0.00	0.50	0.789	O	|	|	|	|	2.05
40.500	0.00	0.50	0.786	O	|	|	|	|	2.04
40.583	0.00	0.50	0.782	O	|	|	|	|	2.04
40.667	0.00	0.50	0.779	O	|	|	|	|	2.04
40.750	0.00	0.50	0.775	O	|	|	|	|	2.03
40.833	0.00	0.50	0.772	O	|	|	|	|	2.03
40.917	0.00	0.50	0.768	O	|	|	|	|	2.03
41.000	0.00	0.50	0.765	O	|	|	|	|	2.02
41.083	0.00	0.50	0.761	O	|	|	|	|	2.02
41.167	0.00	0.50	0.758	O	|	|	|	|	2.02
41.250	0.00	0.50	0.755	O	|	|	|	|	2.01
41.333	0.00	0.50	0.751	O	|	|	|	|	2.01
41.417	0.00	0.50	0.748	O	|	|	|	|	2.01
41.500	0.00	0.50	0.744	O	|	|	|	|	2.00
41.583	0.00	0.50	0.741	O	|	|	|	|	2.00
41.667	0.00	0.50	0.737	O	|	|	|	|	1.99
41.750	0.00	0.50	0.734	O	|	|	|	|	1.99
41.833	0.00	0.49	0.731	O	|	|	|	|	1.98
41.917	0.00	0.49	0.727	O	|	|	|	|	1.98
42.000	0.00	0.49	0.724	O	|	|	|	|	1.97
42.083	0.00	0.49	0.720	O	|	|	|	|	1.96
42.167	0.00	0.49	0.717	O	|	|	|	|	1.96
42.250	0.00	0.49	0.714	O	|	|	|	|	1.95
42.333	0.00	0.49	0.710	O	|	|	|	|	1.95
42.417	0.00	0.49	0.707	O	|	|	|	|	1.94
42.500	0.00	0.49	0.704	O	|	|	|	|	1.94
42.583	0.00	0.49	0.700	O	|	|	|	|	1.93
42.667	0.00	0.49	0.697	O	|	|	|	|	1.92
42.750	0.00	0.48	0.694	O	|	|	|	|	1.92
42.833	0.00	0.48	0.690	O	|	|	|	|	1.91
42.917	0.00	0.48	0.687	O	|	|	|	|	1.91
43.000	0.00	0.48	0.684	O	|	|	|	|	1.90
43.083	0.00	0.48	0.680	O	|	|	|	|	1.89

43.167	0.00	0.48	0.677	O	|	|	|	|	1.89
43.250	0.00	0.48	0.674	O	|	|	|	|	1.88
43.333	0.00	0.48	0.670	O	|	|	|	|	1.88
43.417	0.00	0.48	0.667	O	|	|	|	|	1.87
43.500	0.00	0.48	0.664	O	|	|	|	|	1.87
43.583	0.00	0.48	0.661	O	|	|	|	|	1.86
43.667	0.00	0.47	0.657	O	|	|	|	|	1.86
43.750	0.00	0.47	0.654	O	|	|	|	|	1.85
43.833	0.00	0.47	0.651	O	|	|	|	|	1.84
43.917	0.00	0.47	0.647	O	|	|	|	|	1.84
44.000	0.00	0.47	0.644	O	|	|	|	|	1.83
44.083	0.00	0.47	0.641	O	|	|	|	|	1.83
44.167	0.00	0.47	0.638	O	|	|	|	|	1.82
44.250	0.00	0.47	0.635	O	|	|	|	|	1.82
44.333	0.00	0.47	0.631	O	|	|	|	|	1.81
44.417	0.00	0.47	0.628	O	|	|	|	|	1.80
44.500	0.00	0.47	0.625	O	|	|	|	|	1.80
44.583	0.00	0.47	0.622	O	|	|	|	|	1.79
44.667	0.00	0.46	0.618	O	|	|	|	|	1.79
44.750	0.00	0.46	0.615	O	|	|	|	|	1.78
44.833	0.00	0.46	0.612	O	|	|	|	|	1.78
44.917	0.00	0.46	0.609	O	|	|	|	|	1.77
45.000	0.00	0.46	0.606	O	|	|	|	|	1.77
45.083	0.00	0.46	0.603	O	|	|	|	|	1.76
45.167	0.00	0.46	0.599	O	|	|	|	|	1.76
45.250	0.00	0.46	0.596	O	|	|	|	|	1.75
45.333	0.00	0.46	0.593	O	|	|	|	|	1.74
45.417	0.00	0.46	0.590	O	|	|	|	|	1.74
45.500	0.00	0.46	0.587	O	|	|	|	|	1.73
45.583	0.00	0.45	0.584	O	|	|	|	|	1.73
45.667	0.00	0.45	0.581	O	|	|	|	|	1.72
45.750	0.00	0.45	0.577	O	|	|	|	|	1.72
45.833	0.00	0.45	0.574	O	|	|	|	|	1.71
45.917	0.00	0.45	0.571	O	|	|	|	|	1.71
46.000	0.00	0.45	0.568	O	|	|	|	|	1.70
46.083	0.00	0.45	0.565	O	|	|	|	|	1.70
46.167	0.00	0.45	0.562	O	|	|	|	|	1.69
46.250	0.00	0.45	0.559	O	|	|	|	|	1.68
46.333	0.00	0.45	0.556	O	|	|	|	|	1.68
46.417	0.00	0.45	0.553	O	|	|	|	|	1.67
46.500	0.00	0.45	0.550	O	|	|	|	|	1.67
46.583	0.00	0.44	0.547	O	|	|	|	|	1.66
46.667	0.00	0.44	0.543	O	|	|	|	|	1.66
46.750	0.00	0.44	0.540	O	|	|	|	|	1.65
46.833	0.00	0.44	0.537	O	|	|	|	|	1.65
46.917	0.00	0.44	0.534	O	|	|	|	|	1.64
47.000	0.00	0.44	0.531	O	|	|	|	|	1.64
47.083	0.00	0.44	0.528	O	|	|	|	|	1.63
47.167	0.00	0.44	0.525	O	|	|	|	|	1.63
47.250	0.00	0.44	0.522	O	|	|	|	|	1.62
47.333	0.00	0.44	0.519	O	|	|	|	|	1.62
47.417	0.00	0.44	0.516	O	|	|	|	|	1.61
47.500	0.00	0.44	0.513	O	|	|	|	|	1.61
47.583	0.00	0.44	0.510	O	|	|	|	|	1.60
47.667	0.00	0.43	0.507	O	|	|	|	|	1.60
47.750	0.00	0.43	0.504	O	|	|	|	|	1.59
47.833	0.00	0.43	0.501	O	|	|	|	|	1.59
47.917	0.00	0.43	0.498	O	|	|	|	|	1.58
48.000	0.00	0.43	0.495	O	|	|	|	|	1.57
48.083	0.00	0.43	0.492	O	|	|	|	|	1.57
48.167	0.00	0.43	0.489	O	|	|	|	|	1.56
48.250	0.00	0.43	0.486	O	|	|	|	|	1.56
48.333	0.00	0.43	0.483	O	|	|	|	|	1.55
48.417	0.00	0.43	0.480	O	|	|	|	|	1.55
48.500	0.00	0.43	0.478	O	|	|	|	|	1.54
48.583	0.00	0.43	0.475	O	|	|	|	|	1.54
48.667	0.00	0.42	0.472	O	|	|	|	|	1.53
48.750	0.00	0.42	0.469	O	|	|	|	|	1.53
48.833	0.00	0.42	0.466	O	|	|	|	|	1.52
48.917	0.00	0.42	0.463	O	|	|	|	|	1.52
49.000	0.00	0.42	0.460	O	|	|	|	|	1.51
49.083	0.00	0.42	0.457	O	|	|	|	|	1.51
49.167	0.00	0.42	0.454	O	|	|	|	|	1.50
49.250	0.00	0.42	0.451	O	|	|	|	|	1.50
49.333	0.00	0.42	0.448	O	|	|	|	|	1.49

49.417	0.00	0.42	0.446	O					1.49
49.500	0.00	0.42	0.443	O					1.48
49.583	0.00	0.42	0.440	O					1.48
49.667	0.00	0.42	0.437	O					1.47
49.750	0.00	0.41	0.434	O					1.47
49.833	0.00	0.41	0.431	O					1.46
49.917	0.00	0.41	0.428	O					1.46
50.000	0.00	0.41	0.426	O					1.45
50.083	0.00	0.41	0.423	O					1.45
50.167	0.00	0.41	0.420	O					1.44
50.250	0.00	0.41	0.417	O					1.44
50.333	0.00	0.41	0.414	O					1.43
50.417	0.00	0.41	0.411	O					1.43
50.500	0.00	0.41	0.409	O					1.42
50.583	0.00	0.41	0.406	O					1.42
50.667	0.00	0.41	0.403	O					1.42
50.750	0.00	0.41	0.400	O					1.41
50.833	0.00	0.40	0.397	O					1.41
50.917	0.00	0.40	0.395	O					1.40
51.000	0.00	0.40	0.392	O					1.40
51.083	0.00	0.40	0.389	O					1.39
51.167	0.00	0.40	0.386	O					1.39
51.250	0.00	0.40	0.384	O					1.38
51.333	0.00	0.40	0.381	O					1.38
51.417	0.00	0.40	0.378	O					1.37
51.500	0.00	0.40	0.375	O					1.37
51.583	0.00	0.40	0.373	O					1.36
51.667	0.00	0.40	0.370	O					1.36
51.750	0.00	0.40	0.367	O					1.35
51.833	0.00	0.40	0.364	O					1.35
51.917	0.00	0.40	0.362	O					1.34
52.000	0.00	0.39	0.359	O					1.34
52.083	0.00	0.39	0.356	O					1.33
52.167	0.00	0.39	0.353	O					1.33
52.250	0.00	0.39	0.351	O					1.32
52.333	0.00	0.39	0.348	O					1.32
52.417	0.00	0.39	0.345	O					1.32
52.500	0.00	0.39	0.343	O					1.31
52.583	0.00	0.39	0.340	O					1.31
52.667	0.00	0.39	0.337	O					1.30
52.750	0.00	0.39	0.335	O					1.30
52.833	0.00	0.39	0.332	O					1.29
52.917	0.00	0.39	0.329	O					1.29
53.000	0.00	0.39	0.327	O					1.28
53.083	0.00	0.39	0.324	O					1.28
53.167	0.00	0.38	0.321	O					1.27
53.250	0.00	0.38	0.319	O					1.27
53.333	0.00	0.38	0.316	O					1.26
53.417	0.00	0.38	0.313	O					1.26
53.500	0.00	0.38	0.311	O					1.26
53.583	0.00	0.38	0.308	O					1.25
53.667	0.00	0.38	0.306	O					1.25
53.750	0.00	0.38	0.303	O					1.24
53.833	0.00	0.38	0.300	O					1.24
53.917	0.00	0.38	0.298	O					1.23
54.000	0.00	0.38	0.295	O					1.23
54.083	0.00	0.38	0.292	O					1.22
54.167	0.00	0.38	0.290	O					1.22
54.250	0.00	0.38	0.287	O					1.22
54.333	0.00	0.37	0.285	O					1.21
54.417	0.00	0.37	0.282	O					1.21
54.500	0.00	0.37	0.280	O					1.20
54.583	0.00	0.37	0.277	O					1.20
54.667	0.00	0.37	0.274	O					1.19
54.750	0.00	0.37	0.272	O					1.19
54.833	0.00	0.37	0.269	O					1.18
54.917	0.00	0.37	0.267	O					1.18
55.000	0.00	0.37	0.264	O					1.18
55.083	0.00	0.37	0.262	O					1.17
55.167	0.00	0.37	0.259	O					1.17
55.250	0.00	0.37	0.257	O					1.16
55.333	0.00	0.37	0.254	O					1.16
55.417	0.00	0.37	0.252	O					1.15
55.500	0.00	0.37	0.249	O					1.15
55.583	0.00	0.36	0.247	O					1.14

55.667	0.00	0.36	0.244	O					1.14
55.750	0.00	0.36	0.242	O					1.14
55.833	0.00	0.36	0.239	O					1.13
55.917	0.00	0.36	0.237	O					1.13
56.000	0.00	0.36	0.234	O					1.12
56.083	0.00	0.36	0.232	O					1.12
56.167	0.00	0.36	0.229	O					1.11
56.250	0.00	0.36	0.227	O					1.11
56.333	0.00	0.36	0.224	O					1.11
56.417	0.00	0.36	0.222	O					1.10
56.500	0.00	0.36	0.219	O					1.10
56.583	0.00	0.36	0.217	O					1.09
56.667	0.00	0.36	0.214	O					1.09
56.750	0.00	0.36	0.212	O					1.08
56.833	0.00	0.35	0.209	O					1.08
56.917	0.00	0.35	0.207	O					1.08
57.000	0.00	0.35	0.205	O					1.07
57.083	0.00	0.35	0.202	O					1.07
57.167	0.00	0.35	0.200	O					1.06
57.250	0.00	0.35	0.197	O					1.06
57.333	0.00	0.35	0.195	O					1.06
57.417	0.00	0.35	0.192	O					1.05
57.500	0.00	0.35	0.190	O					1.05
57.583	0.00	0.35	0.188	O					1.04
57.667	0.00	0.35	0.185	O					1.04
57.750	0.00	0.35	0.183	O					1.03
57.833	0.00	0.35	0.180	O					1.03
57.917	0.00	0.35	0.178	O					1.03
58.000	0.00	0.35	0.176	O					1.02
58.083	0.00	0.34	0.173	O					1.02
58.167	0.00	0.34	0.171	O					1.01
58.250	0.00	0.34	0.169	O					1.01
58.333	0.00	0.34	0.166	O					1.01
58.417	0.00	0.34	0.164	O					1.00
58.500	0.00	0.34	0.161	O					0.99
58.583	0.00	0.33	0.159	O					0.98
58.667	0.00	0.33	0.157	O					0.97
58.750	0.00	0.32	0.155	O					0.95
58.833	0.00	0.32	0.152	O					0.94
58.917	0.00	0.31	0.150	O					0.93
59.000	0.00	0.31	0.148	O					0.92
59.083	0.00	0.31	0.146	O					0.90
59.167	0.00	0.30	0.144	O					0.89
59.250	0.00	0.30	0.142	O					0.88
59.333	0.00	0.29	0.140	O					0.87
59.417	0.00	0.29	0.138	O					0.86
59.500	0.00	0.28	0.136	O					0.85
59.583	0.00	0.28	0.134	O					0.84
59.667	0.00	0.28	0.132	O					0.83
59.750	0.00	0.27	0.130	O					0.81
59.833	0.00	0.27	0.128	O					0.80
59.917	0.00	0.26	0.126	O					0.79
60.000	0.00	0.26	0.125	O					0.78
60.083	0.00	0.26	0.123	O					0.77
60.167	0.00	0.25	0.121	O					0.76
60.250	0.00	0.25	0.119	O					0.75
60.333	0.00	0.25	0.118	O					0.74
60.417	0.00	0.24	0.116	O					0.74
60.500	0.00	0.24	0.114	O					0.73
60.583	0.00	0.23	0.113	O					0.72
60.667	0.00	0.23	0.111	O					0.71
60.750	0.00	0.23	0.109	O					0.70
60.833	0.00	0.22	0.108	O					0.69
60.917	0.00	0.22	0.106	O					0.68
61.000	0.00	0.22	0.105	O					0.67
61.083	0.00	0.21	0.103	O					0.66
61.167	0.00	0.21	0.102	O					0.66
61.250	0.00	0.21	0.100	O					0.65
61.333	0.00	0.21	0.099	O					0.64
61.417	0.00	0.20	0.098	O					0.63
61.500	0.00	0.20	0.096	O					0.62
61.583	0.00	0.20	0.095	O					0.62
61.667	0.00	0.19	0.094	O					0.61
61.750	0.00	0.19	0.092	O					0.60
61.833	0.00	0.19	0.091	O					0.59

61.917	0.00	0.19	0.090	O	|	|	|	|	0.59
62.000	0.00	0.18	0.088	O	|	|	|	|	0.58
62.083	0.00	0.18	0.087	O	|	|	|	|	0.57
62.167	0.00	0.18	0.086	O	|	|	|	|	0.57
62.250	0.00	0.18	0.085	O	|	|	|	|	0.56
62.333	0.00	0.17	0.083	O	|	|	|	|	0.55
62.417	0.00	0.17	0.082	O	|	|	|	|	0.55
62.500	0.00	0.17	0.081	O	|	|	|	|	0.54
62.583	0.00	0.17	0.080	O	|	|	|	|	0.53
62.667	0.00	0.16	0.079	O	|	|	|	|	0.53
62.750	0.00	0.16	0.078	O	|	|	|	|	0.52
62.833	0.00	0.16	0.077	O	|	|	|	|	0.51
62.917	0.00	0.16	0.076	O	|	|	|	|	0.51
63.000	0.00	0.15	0.074	O	|	|	|	|	0.50
63.083	0.00	0.15	0.073	O	|	|	|	|	0.50
63.167	0.00	0.15	0.072	O	|	|	|	|	0.49
63.250	0.00	0.15	0.071	O	|	|	|	|	0.48
63.333	0.00	0.14	0.070	O	|	|	|	|	0.48
63.417	0.00	0.14	0.069	O	|	|	|	|	0.47
63.500	0.00	0.14	0.068	O	|	|	|	|	0.47
63.583	0.00	0.14	0.067	O	|	|	|	|	0.46
63.667	0.00	0.14	0.067	O	|	|	|	|	0.46
63.750	0.00	0.13	0.066	O	|	|	|	|	0.45
63.833	0.00	0.13	0.065	O	|	|	|	|	0.45
63.917	0.00	0.13	0.064	O	|	|	|	|	0.44
64.000	0.00	0.13	0.063	O	|	|	|	|	0.44
64.083	0.00	0.13	0.062	O	|	|	|	|	0.43
64.167	0.00	0.12	0.061	O	|	|	|	|	0.43
64.250	0.00	0.12	0.060	O	|	|	|	|	0.42
64.333	0.00	0.12	0.059	O	|	|	|	|	0.42
64.417	0.00	0.12	0.059	O	|	|	|	|	0.41
64.500	0.00	0.12	0.058	O	|	|	|	|	0.41
64.583	0.00	0.12	0.057	O	|	|	|	|	0.40
64.667	0.00	0.11	0.056	O	|	|	|	|	0.40
64.750	0.00	0.11	0.055	O	|	|	|	|	0.39
64.833	0.00	0.11	0.055	O	|	|	|	|	0.39
64.917	0.00	0.11	0.054	O	|	|	|	|	0.39
65.000	0.00	0.11	0.053	O	|	|	|	|	0.38
65.083	0.00	0.11	0.052	O	|	|	|	|	0.38
65.167	0.00	0.10	0.052	O	|	|	|	|	0.37
65.250	0.00	0.10	0.051	O	|	|	|	|	0.37
65.333	0.00	0.10	0.050	O	|	|	|	|	0.37
65.417	0.00	0.10	0.050	O	|	|	|	|	0.36
65.500	0.00	0.10	0.049	O	|	|	|	|	0.36
65.583	0.00	0.10	0.048	O	|	|	|	|	0.35
65.667	0.00	0.10	0.048	O	|	|	|	|	0.35
65.750	0.00	0.09	0.047	O	|	|	|	|	0.35
65.833	0.00	0.09	0.046	O	|	|	|	|	0.34
65.917	0.00	0.09	0.046	O	|	|	|	|	0.34
66.000	0.00	0.09	0.045	O	|	|	|	|	0.34
66.083	0.00	0.09	0.044	O	|	|	|	|	0.33
66.167	0.00	0.09	0.044	O	|	|	|	|	0.33
66.250	0.00	0.09	0.043	O	|	|	|	|	0.33
66.333	0.00	0.09	0.043	O	|	|	|	|	0.32
66.417	0.00	0.08	0.042	O	|	|	|	|	0.32
66.500	0.00	0.08	0.041	O	|	|	|	|	0.32
66.583	0.00	0.08	0.041	O	|	|	|	|	0.31
66.667	0.00	0.08	0.040	O	|	|	|	|	0.31
66.750	0.00	0.08	0.040	O	|	|	|	|	0.31
66.833	0.00	0.08	0.039	O	|	|	|	|	0.30
66.917	0.00	0.08	0.039	O	|	|	|	|	0.30
67.000	0.00	0.08	0.038	O	|	|	|	|	0.30
67.083	0.00	0.07	0.038	O	|	|	|	|	0.29
67.167	0.00	0.07	0.037	O	|	|	|	|	0.29
67.250	0.00	0.07	0.037	O	|	|	|	|	0.29
67.333	0.00	0.07	0.036	O	|	|	|	|	0.29
67.417	0.00	0.07	0.036	O	|	|	|	|	0.28
67.500	0.00	0.07	0.035	O	|	|	|	|	0.28
67.583	0.00	0.07	0.035	O	|	|	|	|	0.28
67.667	0.00	0.07	0.034	O	|	|	|	|	0.28
67.750	0.00	0.07	0.034	O	|	|	|	|	0.27
67.833	0.00	0.07	0.033	O	|	|	|	|	0.27
67.917	0.00	0.06	0.033	O	|	|	|	|	0.27
68.000	0.00	0.06	0.032	O	|	|	|	|	0.27
68.083	0.00	0.06	0.032	O	|	|	|	|	0.26

68.167	0.00	0.06	0.031	O	|	|	|	|	0.26
68.250	0.00	0.06	0.031	O	|	|	|	|	0.26
68.333	0.00	0.06	0.031	O	|	|	|	|	0.26
68.417	0.00	0.06	0.030	O	|	|	|	|	0.25
68.500	0.00	0.06	0.030	O	|	|	|	|	0.25
68.583	0.00	0.06	0.029	O	|	|	|	|	0.25
68.667	0.00	0.06	0.029	O	|	|	|	|	0.25
68.750	0.00	0.06	0.029	O	|	|	|	|	0.24
68.833	0.00	0.05	0.028	O	|	|	|	|	0.24
68.917	0.00	0.05	0.028	O	|	|	|	|	0.24
69.000	0.00	0.05	0.028	O	|	|	|	|	0.24
69.083	0.00	0.05	0.027	O	|	|	|	|	0.24
69.167	0.00	0.05	0.027	O	|	|	|	|	0.23
69.250	0.00	0.05	0.026	O	|	|	|	|	0.23
69.333	0.00	0.05	0.026	O	|	|	|	|	0.23
69.417	0.00	0.05	0.026	O	|	|	|	|	0.23
69.500	0.00	0.05	0.025	O	|	|	|	|	0.23
69.583	0.00	0.05	0.025	O	|	|	|	|	0.22
69.667	0.00	0.05	0.025	O	|	|	|	|	0.22
69.750	0.00	0.05	0.024	O	|	|	|	|	0.22
69.833	0.00	0.05	0.024	O	|	|	|	|	0.22
69.917	0.00	0.05	0.024	O	|	|	|	|	0.22
70.000	0.00	0.04	0.023	O	|	|	|	|	0.22
70.083	0.00	0.04	0.023	O	|	|	|	|	0.21
70.167	0.00	0.04	0.023	O	|	|	|	|	0.21
70.250	0.00	0.04	0.023	O	|	|	|	|	0.21
70.333	0.00	0.04	0.022	O	|	|	|	|	0.21
70.417	0.00	0.04	0.022	O	|	|	|	|	0.21
70.500	0.00	0.04	0.022	O	|	|	|	|	0.21
70.583	0.00	0.04	0.021	O	|	|	|	|	0.20
70.667	0.00	0.04	0.021	O	|	|	|	|	0.20
70.750	0.00	0.04	0.021	O	|	|	|	|	0.20
70.833	0.00	0.04	0.021	O	|	|	|	|	0.20
70.917	0.00	0.04	0.020	O	|	|	|	|	0.20
71.000	0.00	0.04	0.020	O	|	|	|	|	0.20
71.083	0.00	0.04	0.020	O	|	|	|	|	0.19
71.167	0.00	0.04	0.020	O	|	|	|	|	0.19
71.250	0.00	0.04	0.019	O	|	|	|	|	0.19
71.333	0.00	0.04	0.019	O	|	|	|	|	0.19
71.417	0.00	0.03	0.019	O	|	|	|	|	0.19
71.500	0.00	0.03	0.019	O	|	|	|	|	0.19
71.583	0.00	0.03	0.018	O	|	|	|	|	0.19
71.667	0.00	0.03	0.018	O	|	|	|	|	0.19
71.750	0.00	0.03	0.018	O	|	|	|	|	0.18
71.833	0.00	0.03	0.018	O	|	|	|	|	0.18
71.917	0.00	0.03	0.017	O	|	|	|	|	0.18
72.000	0.00	0.03	0.017	O	|	|	|	|	0.18
72.083	0.00	0.03	0.017	O	|	|	|	|	0.18
72.167	0.00	0.03	0.017	O	|	|	|	|	0.18
72.250	0.00	0.03	0.017	O	|	|	|	|	0.18
72.333	0.00	0.03	0.016	O	|	|	|	|	0.18
72.417	0.00	0.03	0.016	O	|	|	|	|	0.17
72.500	0.00	0.03	0.016	O	|	|	|	|	0.17
72.583	0.00	0.03	0.016	O	|	|	|	|	0.17
72.667	0.00	0.03	0.016	O	|	|	|	|	0.17
72.750	0.00	0.03	0.015	O	|	|	|	|	0.17
72.833	0.00	0.03	0.015	O	|	|	|	|	0.17
72.917	0.00	0.03	0.015	O	|	|	|	|	0.17
73.000	0.00	0.03	0.015	O	|	|	|	|	0.17
73.083	0.00	0.03	0.015	O	|	|	|	|	0.17
73.167	0.00	0.03	0.015	O	|	|	|	|	0.16
73.250	0.00	0.03	0.014	O	|	|	|	|	0.16
73.333	0.00	0.02	0.014	O	|	|	|	|	0.16
73.417	0.00	0.02	0.014	O	|	|	|	|	0.16
73.500	0.00	0.02	0.014	O	|	|	|	|	0.16
73.583	0.00	0.02	0.014	O	|	|	|	|	0.16
73.667	0.00	0.02	0.014	O	|	|	|	|	0.16
73.750	0.00	0.02	0.013	O	|	|	|	|	0.16
73.833	0.00	0.02	0.013	O	|	|	|	|	0.16
73.917	0.00	0.02	0.013	O	|	|	|	|	0.16
74.000	0.00	0.02	0.013	O	|	|	|	|	0.16
74.083	0.00	0.02	0.013	O	|	|	|	|	0.15
74.167	0.00	0.02	0.013	O	|	|	|	|	0.15
74.250	0.00	0.02	0.012	O	|	|	|	|	0.15
74.333	0.00	0.02	0.012	O	|	|	|	|	0.15

74.417	0.00	0.02	0.012	O	|	|	|	|	0.15
74.500	0.00	0.02	0.012	O	|	|	|	|	0.15
74.583	0.00	0.02	0.012	O	|	|	|	|	0.15
74.667	0.00	0.02	0.012	O	|	|	|	|	0.15
74.750	0.00	0.02	0.012	O	|	|	|	|	0.15
74.833	0.00	0.02	0.011	O	|	|	|	|	0.15
74.917	0.00	0.02	0.011	O	|	|	|	|	0.15
75.000	0.00	0.02	0.011	O	|	|	|	|	0.15
75.083	0.00	0.02	0.011	O	|	|	|	|	0.15
75.167	0.00	0.02	0.011	O	|	|	|	|	0.14
75.250	0.00	0.02	0.011	O	|	|	|	|	0.14
75.333	0.00	0.02	0.011	O	|	|	|	|	0.14
75.417	0.00	0.02	0.011	O	|	|	|	|	0.14
75.500	0.00	0.02	0.010	O	|	|	|	|	0.14
75.583	0.00	0.02	0.010	O	|	|	|	|	0.14
75.667	0.00	0.02	0.010	O	|	|	|	|	0.14
75.750	0.00	0.02	0.010	O	|	|	|	|	0.14
75.833	0.00	0.02	0.010	O	|	|	|	|	0.14
75.917	0.00	0.02	0.010	O	|	|	|	|	0.14
76.000	0.00	0.02	0.010	O	|	|	|	|	0.14
76.083	0.00	0.02	0.010	O	|	|	|	|	0.14
76.167	0.00	0.02	0.010	O	|	|	|	|	0.14
76.250	0.00	0.01	0.010	O	|	|	|	|	0.14
76.333	0.00	0.01	0.009	O	|	|	|	|	0.14
76.417	0.00	0.01	0.009	O	|	|	|	|	0.14
76.500	0.00	0.01	0.009	O	|	|	|	|	0.13
76.583	0.00	0.01	0.009	O	|	|	|	|	0.13
76.667	0.00	0.01	0.009	O	|	|	|	|	0.13
76.750	0.00	0.01	0.009	O	|	|	|	|	0.13
76.833	0.00	0.01	0.009	O	|	|	|	|	0.13
76.917	0.00	0.01	0.009	O	|	|	|	|	0.13
77.000	0.00	0.01	0.009	O	|	|	|	|	0.13
77.083	0.00	0.01	0.009	O	|	|	|	|	0.13
77.167	0.00	0.01	0.008	O	|	|	|	|	0.13
77.250	0.00	0.01	0.008	O	|	|	|	|	0.13
77.333	0.00	0.01	0.008	O	|	|	|	|	0.13
77.417	0.00	0.01	0.008	O	|	|	|	|	0.13
77.500	0.00	0.01	0.008	O	|	|	|	|	0.13
77.583	0.00	0.01	0.008	O	|	|	|	|	0.13
77.667	0.00	0.01	0.008	O	|	|	|	|	0.13
77.750	0.00	0.01	0.008	O	|	|	|	|	0.13
77.833	0.00	0.01	0.008	O	|	|	|	|	0.13
77.917	0.00	0.01	0.008	O	|	|	|	|	0.13
78.000	0.00	0.01	0.008	O	|	|	|	|	0.13
78.083	0.00	0.01	0.008	O	|	|	|	|	0.13
78.167	0.00	0.01	0.008	O	|	|	|	|	0.13
78.250	0.00	0.01	0.007	O	|	|	|	|	0.12
78.333	0.00	0.01	0.007	O	|	|	|	|	0.12
78.417	0.00	0.01	0.007	O	|	|	|	|	0.12
78.500	0.00	0.01	0.007	O	|	|	|	|	0.12
78.583	0.00	0.01	0.007	O	|	|	|	|	0.12
78.667	0.00	0.01	0.007	O	|	|	|	|	0.12
78.750	0.00	0.01	0.007	O	|	|	|	|	0.12
78.833	0.00	0.01	0.007	O	|	|	|	|	0.12
78.917	0.00	0.01	0.007	O	|	|	|	|	0.12
79.000	0.00	0.01	0.007	O	|	|	|	|	0.12
79.083	0.00	0.01	0.007	O	|	|	|	|	0.12
79.167	0.00	0.01	0.007	O	|	|	|	|	0.12
79.250	0.00	0.01	0.007	O	|	|	|	|	0.12
79.333	0.00	0.01	0.007	O	|	|	|	|	0.12
79.417	0.00	0.01	0.007	O	|	|	|	|	0.12
79.500	0.00	0.01	0.006	O	|	|	|	|	0.12
79.583	0.00	0.01	0.006	O	|	|	|	|	0.12
79.667	0.00	0.01	0.006	O	|	|	|	|	0.12
79.750	0.00	0.01	0.006	O	|	|	|	|	0.12
79.833	0.00	0.01	0.006	O	|	|	|	|	0.12
79.917	0.00	0.01	0.006	O	|	|	|	|	0.12
80.000	0.00	0.01	0.006	O	|	|	|	|	0.12
80.083	0.00	0.01	0.006	O	|	|	|	|	0.12
80.167	0.00	0.01	0.006	O	|	|	|	|	0.12
80.250	0.00	0.01	0.006	O	|	|	|	|	0.12
80.333	0.00	0.01	0.006	O	|	|	|	|	0.12
80.417	0.00	0.01	0.006	O	|	|	|	|	0.12
80.500	0.00	0.01	0.006	O	|	|	|	|	0.12
80.583	0.00	0.01	0.006	O	|	|	|	|	0.12

80.667	0.00	0.01	0.006	O	|	|	|	|	0.12
80.750	0.00	0.01	0.006	O	|	|	|	|	0.12
80.833	0.00	0.01	0.006	O	|	|	|	|	0.11
80.917	0.00	0.01	0.006	O	|	|	|	|	0.11
81.000	0.00	0.01	0.006	O	|	|	|	|	0.11
81.083	0.00	0.01	0.006	O	|	|	|	|	0.11
81.167	0.00	0.01	0.005	O	|	|	|	|	0.11
81.250	0.00	0.01	0.005	O	|	|	|	|	0.11
81.333	0.00	0.01	0.005	O	|	|	|	|	0.11
81.417	0.00	0.01	0.005	O	|	|	|	|	0.11
81.500	0.00	0.01	0.005	O	|	|	|	|	0.11
81.583	0.00	0.01	0.005	O	|	|	|	|	0.11
81.667	0.00	0.01	0.005	O	|	|	|	|	0.11
81.750	0.00	0.01	0.005	O	|	|	|	|	0.11
81.833	0.00	0.01	0.005	O	|	|	|	|	0.11
81.917	0.00	0.01	0.005	O	|	|	|	|	0.11
82.000	0.00	0.01	0.005	O	|	|	|	|	0.11
82.083	0.00	0.01	0.005	O	|	|	|	|	0.11
82.167	0.00	0.01	0.005	O	|	|	|	|	0.11
82.250	0.00	0.01	0.005	O	|	|	|	|	0.11
82.333	0.00	0.01	0.005	O	|	|	|	|	0.11
82.417	0.00	0.01	0.005	O	|	|	|	|	0.11
82.500	0.00	0.00	0.005	O	|	|	|	|	0.11
82.583	0.00	0.00	0.005	O	|	|	|	|	0.11
82.667	0.00	0.00	0.005	O	|	|	|	|	0.11
82.750	0.00	0.00	0.005	O	|	|	|	|	0.11
82.833	0.00	0.00	0.005	O	|	|	|	|	0.11
82.917	0.00	0.00	0.005	O	|	|	|	|	0.11
83.000	0.00	0.00	0.005	O	|	|	|	|	0.11
83.083	0.00	0.00	0.005	O	|	|	|	|	0.11
83.167	0.00	0.00	0.005	O	|	|	|	|	0.11
83.250	0.00	0.00	0.005	O	|	|	|	|	0.11
83.333	0.00	0.00	0.005	O	|	|	|	|	0.11
83.417	0.00	0.00	0.005	O	|	|	|	|	0.11
83.500	0.00	0.00	0.004	O	|	|	|	|	0.11
83.583	0.00	0.00	0.004	O	|	|	|	|	0.11
83.667	0.00	0.00	0.004	O	|	|	|	|	0.11
83.750	0.00	0.00	0.004	O	|	|	|	|	0.11
83.833	0.00	0.00	0.004	O	|	|	|	|	0.11
83.917	0.00	0.00	0.004	O	|	|	|	|	0.11
84.000	0.00	0.00	0.004	O	|	|	|	|	0.11
84.083	0.00	0.00	0.004	O	|	|	|	|	0.11
84.167	0.00	0.00	0.004	O	|	|	|	|	0.11
84.250	0.00	0.00	0.004	O	|	|	|	|	0.11
84.333	0.00	0.00	0.004	O	|	|	|	|	0.11
84.417	0.00	0.00	0.004	O	|	|	|	|	0.11
84.500	0.00	0.00	0.004	O	|	|	|	|	0.11
84.583	0.00	0.00	0.004	O	|	|	|	|	0.11
84.667	0.00	0.00	0.004	O	|	|	|	|	0.11
84.750	0.00	0.00	0.004	O	|	|	|	|	0.11
84.833	0.00	0.00	0.004	O	|	|	|	|	0.11
84.917	0.00	0.00	0.004	O	|	|	|	|	0.11
85.000	0.00	0.00	0.004	O	|	|	|	|	0.11
85.083	0.00	0.00	0.004	O	|	|	|	|	0.11
85.167	0.00	0.00	0.004	O	|	|	|	|	0.11
85.250	0.00	0.00	0.004	O	|	|	|	|	0.11
85.333	0.00	0.00	0.004	O	|	|	|	|	0.11
85.417	0.00	0.00	0.004	O	|	|	|	|	0.11
85.500	0.00	0.00	0.004	O	|	|	|	|	0.11
85.583	0.00	0.00	0.004	O	|	|	|	|	0.10
85.667	0.00	0.00	0.004	O	|	|	|	|	0.10
85.750	0.00	0.00	0.004	O	|	|	|	|	0.10
85.833	0.00	0.00	0.004	O	|	|	|	|	0.10
85.917	0.00	0.00	0.004	O	|	|	|	|	0.10
86.000	0.00	0.00	0.004	O	|	|	|	|	0.10
86.083	0.00	0.00	0.004	O	|	|	|	|	0.10
86.167	0.00	0.00	0.004	O	|	|	|	|	0.10
86.250	0.00	0.00	0.004	O	|	|	|	|	0.10
86.333	0.00	0.00	0.004	O	|	|	|	|	0.10
86.417	0.00	0.00	0.004	O	|	|	|	|	0.10
86.500	0.00	0.00	0.004	O	|	|	|	|	0.10
86.583	0.00	0.00	0.004	O	|	|	|	|	0.10
86.667	0.00	0.00	0.004	O	|	|	|	|	0.10
86.750	0.00	0.00	0.004	O	|	|	|	|	0.10
86.833	0.00	0.00	0.004	O	|	|	|	|	0.10

86.917	0.00	0.00	0.004	O	|	|	|	|	0.10
87.000	0.00	0.00	0.004	O	|	|	|	|	0.10
87.083	0.00	0.00	0.004	O	|	|	|	|	0.10
87.167	0.00	0.00	0.004	O	|	|	|	|	0.10
87.250	0.00	0.00	0.004	O	|	|	|	|	0.10
87.333	0.00	0.00	0.004	O	|	|	|	|	0.10
87.417	0.00	0.00	0.004	O	|	|	|	|	0.10
87.500	0.00	0.00	0.003	O	|	|	|	|	0.10
87.583	0.00	0.00	0.003	O	|	|	|	|	0.10
87.667	0.00	0.00	0.003	O	|	|	|	|	0.10
87.750	0.00	0.00	0.003	O	|	|	|	|	0.10
87.833	0.00	0.00	0.003	O	|	|	|	|	0.10
87.917	0.00	0.00	0.003	O	|	|	|	|	0.10
88.000	0.00	0.00	0.003	O	|	|	|	|	0.10
88.083	0.00	0.00	0.003	O	|	|	|	|	0.10
88.167	0.00	0.00	0.003	O	|	|	|	|	0.10
88.250	0.00	0.00	0.003	O	|	|	|	|	0.10
88.333	0.00	0.00	0.003	O	|	|	|	|	0.10
88.417	0.00	0.00	0.003	O	|	|	|	|	0.10
88.500	0.00	0.00	0.003	O	|	|	|	|	0.10
88.583	0.00	0.00	0.003	O	|	|	|	|	0.10
88.667	0.00	0.00	0.003	O	|	|	|	|	0.10
88.750	0.00	0.00	0.003	O	|	|	|	|	0.10
88.833	0.00	0.00	0.003	O	|	|	|	|	0.10
88.917	0.00	0.00	0.003	O	|	|	|	|	0.10
89.000	0.00	0.00	0.003	O	|	|	|	|	0.10
89.083	0.00	0.00	0.003	O	|	|	|	|	0.10
89.167	0.00	0.00	0.003	O	|	|	|	|	0.10
89.250	0.00	0.00	0.003	O	|	|	|	|	0.10
89.333	0.00	0.00	0.003	O	|	|	|	|	0.10
89.417	0.00	0.00	0.003	O	|	|	|	|	0.10
89.500	0.00	0.00	0.003	O	|	|	|	|	0.10
89.583	0.00	0.00	0.003	O	|	|	|	|	0.10
89.667	0.00	0.00	0.003	O	|	|	|	|	0.10
89.750	0.00	0.00	0.003	O	|	|	|	|	0.10
89.833	0.00	0.00	0.003	O	|	|	|	|	0.10
89.917	0.00	0.00	0.003	O	|	|	|	|	0.10
90.000	0.00	0.00	0.003	O	|	|	|	|	0.10
90.083	0.00	0.00	0.003	O	|	|	|	|	0.10
90.167	0.00	0.00	0.003	O	|	|	|	|	0.10
90.250	0.00	0.00	0.003	O	|	|	|	|	0.10
90.333	0.00	0.00	0.003	O	|	|	|	|	0.10
90.417	0.00	0.00	0.003	O	|	|	|	|	0.10
90.500	0.00	0.00	0.003	O	|	|	|	|	0.10
90.583	0.00	0.00	0.003	O	|	|	|	|	0.10
90.667	0.00	0.00	0.003	O	|	|	|	|	0.10
90.750	0.00	0.00	0.003	O	|	|	|	|	0.10
90.833	0.00	0.00	0.003	O	|	|	|	|	0.10
90.917	0.00	0.00	0.003	O	|	|	|	|	0.10
91.000	0.00	0.00	0.003	O	|	|	|	|	0.10
91.083	0.00	0.00	0.003	O	|	|	|	|	0.10
91.167	0.00	0.00	0.003	O	|	|	|	|	0.10
91.250	0.00	0.00	0.003	O	|	|	|	|	0.10
91.333	0.00	0.00	0.003	O	|	|	|	|	0.10
91.417	0.00	0.00	0.003	O	|	|	|	|	0.10
91.500	0.00	0.00	0.003	O	|	|	|	|	0.10
91.583	0.00	0.00	0.003	O	|	|	|	|	0.10

Remaining water in basin = 0.00 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1099
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 9.913 (CFS)
Total volume = 4.379 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

BASIN ROUTING
DMA A
PROPOSED CONDITIONS
100-YEAR 3-HOUR

FLOOD HYDROGRAPH ROUTING PROGRAM
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Study date: 10/22/14

14-0213 SHOPOFF
BASIN ROUTING
DMA A
100-YEAR 3-HOUR

Program License Serial Number 4010

******************** HYDROGRAPH INFORMATION **********************

From study/file name: APROP3100.rte
*****************************HYDROGRAPH DATA*****************************
Number of intervals = 42
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 81.930 (CFS)
Total volume = 7.015 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

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Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 42
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.100	0.003	0.001	0.003	0.003
1.000	0.163	0.342	0.162	0.164
2.000	0.741	0.497	0.739	0.743
3.000	1.753	0.614	1.751	1.755
3.400	2.222	0.656	2.220	2.224
4.000	2.978	2.841	2.968	2.988
4.400	3.517	3.817	3.504	3.530
5.000	4.378	12.529	4.335	4.421
5.200	4.679	15.300	4.626	4.732
5.500	5.144	23.007	5.065	5.223
6.000	5.955	42.225	5.810	6.100
6.500	6.811	66.515	6.582	7.040
7.000	7.713	94.837	7.386	8.040
7.500	8.662	126.640	8.226	9.098
8.000	9.656	161.558	9.100	10.212
8.500	10.697	199.324	10.011	11.383
9.000	11.786	239.733	10.960	12.612
9.500	12.922	282.618	11.949	13.895

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 20.5 40.97 61.45 81.93	Depth (Ft.)
0.083	2.01	0.01	0.007	O	0.12
0.167	8.34	0.08	0.042	O I	0.32
0.250	9.83	0.22	0.104	O I	0.67
0.333	10.07	0.34	0.170	O I	1.01
0.417	12.45	0.36	0.245	O I	1.14
0.500	13.79	0.39	0.333	O I	1.29
0.583	15.41	0.41	0.431	O I	1.46
0.667	14.73	0.44	0.532	O I	1.64
0.750	16.33	0.47	0.636	O I	1.82
0.833	16.15	0.50	0.744	O I	2.00
0.917	14.60	0.51	0.847	O I	2.10
1.000	15.12	0.52	0.945	O I	2.20
1.083	17.23	0.53	1.053	O I	2.31
1.167	20.24	0.55	1.178	O I	2.43
1.250	21.15	0.56	1.317	O I	2.57
1.333	21.06	0.58	1.459	O I	2.71
1.417	21.10	0.60	1.600	O I	2.85
1.500	24.85	0.61	1.754	O I	3.00
1.583	25.92	0.63	1.924	O I	3.15
1.667	25.18	0.64	2.096	O I	3.29
1.750	27.95	0.81	2.274	O I	3.44
1.833	31.85	1.38	2.472	O I	3.60
1.917	31.50	1.98	2.679	O I	3.76
2.000	30.49	2.55	2.877	O I	3.92
2.083	30.94	3.01	3.069	O I	4.07
2.167	33.94	3.37	3.271	O I	4.22
2.250	42.94	3.81	3.511	O I	4.40
2.333	47.24	6.53	3.786	O I	4.59
2.417	46.69	9.26	4.055	O I	4.77
2.500	66.97	12.46	4.371	O I	5.00
2.583	77.66	16.79	4.769	O I	5.26
2.667	81.93	23.82	5.178	O I	5.52
2.750	61.65	31.06	5.484	O I	5.71
2.833	32.49	33.48	5.586	O IO	5.77
2.917	22.29	32.56	5.547	O I	5.75
3.000	16.27	30.55	5.463	O I	5.70
3.083	6.86	27.69	5.342	O I	5.62
3.167	2.26	24.20	5.194	O I	5.53
3.250	0.68	21.41	5.047	O I	5.44
3.333	0.24	19.14	4.911	O I	5.35
3.417	0.08	17.09	4.787	O I	5.27
3.500	0.01	15.27	4.676	O I	5.20
3.583	0.00	14.34	4.574	O I	5.13
3.667	0.00	13.45	4.479	O I	5.07
3.750	0.00	12.63	4.389	O I	5.01
3.833	0.00	11.79	4.305	O I	4.95
3.917	0.00	10.99	4.226	O I	4.89
4.000	0.00	10.25	4.153	O I	4.84
4.083	0.00	9.56	4.085	O I	4.80
4.167	0.00	8.92	4.021	O I	4.75
4.250	0.00	8.32	3.962	O I	4.71
4.333	0.00	7.76	3.906	O I	4.67
4.417	0.00	7.24	3.855	O I	4.64
4.500	0.00	6.75	3.807	O I	4.60
4.583	0.00	6.29	3.762	O I	4.57
4.667	0.00	5.87	3.720	O I	4.54
4.750	0.00	5.47	3.681	O I	4.51
4.833	0.00	5.11	3.644	OI	4.49
4.917	0.00	4.76	3.610	OI	4.47
5.000	0.00	4.44	3.579	OI	4.44
5.083	0.00	4.14	3.549	OI	4.42
5.167	0.00	3.86	3.522	OI	4.40
5.250	0.00	3.78	3.495	OI	4.38
5.333	0.00	3.73	3.469	OI	4.36
5.417	0.00	3.68	3.444	OI	4.35
5.500	0.00	3.64	3.419	OI	4.33
5.583	0.00	3.59	3.394	OI	4.31

5.667	0.00	3.55	3.369	IO				4.29
5.750	0.00	3.51	3.345	IO				4.27
5.833	0.00	3.46	3.321	IO				4.25
5.917	0.00	3.42	3.297	IO				4.24
6.000	0.00	3.38	3.274	IO				4.22
6.083	0.00	3.33	3.251	IO				4.20
6.167	0.00	3.29	3.228	IO				4.19
6.250	0.00	3.25	3.205	IO				4.17
6.333	0.00	3.21	3.183	IO				4.15
6.417	0.00	3.17	3.161	IO				4.14
6.500	0.00	3.13	3.139	IO				4.12
6.583	0.00	3.09	3.118	IO				4.10
6.667	0.00	3.06	3.097	IO				4.09
6.750	0.00	3.02	3.076	IO				4.07
6.833	0.00	2.98	3.055	IO				4.06
6.917	0.00	2.94	3.035	IO				4.04
7.000	0.00	2.91	3.015	IO				4.03
7.083	0.00	2.87	2.995	IO				4.01
7.167	0.00	2.83	2.975	IO				4.00
7.250	0.00	2.78	2.956	IO				3.98
7.333	0.00	2.72	2.937	IO				3.97
7.417	0.00	2.67	2.918	IO				3.95
7.500	0.00	2.62	2.900	IO				3.94
7.583	0.00	2.56	2.882	IO				3.92
7.667	0.00	2.51	2.865	O				3.91
7.750	0.00	2.46	2.848	O				3.90
7.833	0.00	2.42	2.831	O				3.88
7.917	0.00	2.37	2.814	O				3.87
8.000	0.00	2.32	2.798	O				3.86
8.083	0.00	2.28	2.782	O				3.84
8.167	0.00	2.23	2.767	O				3.83
8.250	0.00	2.19	2.752	O				3.82
8.333	0.00	2.14	2.737	O				3.81
8.417	0.00	2.10	2.722	O				3.80
8.500	0.00	2.06	2.708	O				3.79
8.583	0.00	2.02	2.694	O				3.77
8.667	0.00	1.98	2.680	O				3.76
8.750	0.00	1.94	2.666	O				3.75
8.833	0.00	1.90	2.653	O				3.74
8.917	0.00	1.86	2.640	O				3.73
9.000	0.00	1.83	2.628	O				3.72
9.083	0.00	1.79	2.615	O				3.71
9.167	0.00	1.76	2.603	O				3.70
9.250	0.00	1.72	2.591	O				3.69
9.333	0.00	1.69	2.579	O				3.68
9.417	0.00	1.65	2.568	O				3.67
9.500	0.00	1.62	2.556	O				3.67
9.583	0.00	1.59	2.545	O				3.66
9.667	0.00	1.56	2.534	O				3.65
9.750	0.00	1.53	2.524	O				3.64
9.833	0.00	1.50	2.513	O				3.63
9.917	0.00	1.47	2.503	O				3.62
10.000	0.00	1.44	2.493	O				3.62
10.083	0.00	1.41	2.483	O				3.61
10.167	0.00	1.38	2.474	O				3.60
10.250	0.00	1.36	2.464	O				3.59
10.333	0.00	1.33	2.455	O				3.58
10.417	0.00	1.30	2.446	O				3.58
10.500	0.00	1.28	2.437	O				3.57
10.583	0.00	1.25	2.428	O				3.56
10.667	0.00	1.23	2.420	O				3.56
10.750	0.00	1.20	2.411	O				3.55
10.833	0.00	1.18	2.403	O				3.54
10.917	0.00	1.16	2.395	O				3.54
11.000	0.00	1.13	2.387	O				3.53
11.083	0.00	1.11	2.380	O				3.53
11.167	0.00	1.09	2.372	O				3.52
11.250	0.00	1.07	2.365	O				3.51
11.333	0.00	1.05	2.357	O				3.51
11.417	0.00	1.03	2.350	O				3.50
11.500	0.00	1.01	2.343	O				3.50
11.583	0.00	0.99	2.336	O				3.49
11.667	0.00	0.97	2.330	O				3.49
11.750	0.00	0.95	2.323	O				3.48
11.833	0.00	0.93	2.316	O				3.47

11.917	0.00	0.91	2.310	O	|	|	|	|	3.47
12.000	0.00	0.89	2.304	O	|	|	|	|	3.47
12.083	0.00	0.88	2.298	O	|	|	|	|	3.46
12.167	0.00	0.86	2.292	O	|	|	|	|	3.46
12.250	0.00	0.84	2.286	O	|	|	|	|	3.45
12.333	0.00	0.82	2.280	O	|	|	|	|	3.45
12.417	0.00	0.81	2.275	O	|	|	|	|	3.44
12.500	0.00	0.79	2.269	O	|	|	|	|	3.44
12.583	0.00	0.78	2.264	O	|	|	|	|	3.43
12.667	0.00	0.76	2.258	O	|	|	|	|	3.43
12.750	0.00	0.75	2.253	O	|	|	|	|	3.42
12.833	0.00	0.73	2.248	O	|	|	|	|	3.42
12.917	0.00	0.72	2.243	O	|	|	|	|	3.42
13.000	0.00	0.70	2.238	O	|	|	|	|	3.41
13.083	0.00	0.69	2.234	O	|	|	|	|	3.41
13.167	0.00	0.68	2.229	O	|	|	|	|	3.41
13.250	0.00	0.66	2.224	O	|	|	|	|	3.40
13.333	0.00	0.66	2.220	O	|	|	|	|	3.40
13.417	0.00	0.66	2.215	O	|	|	|	|	3.39
13.500	0.00	0.65	2.211	O	|	|	|	|	3.39
13.583	0.00	0.65	2.206	O	|	|	|	|	3.39
13.667	0.00	0.65	2.202	O	|	|	|	|	3.38
13.750	0.00	0.65	2.197	O	|	|	|	|	3.38
13.833	0.00	0.65	2.193	O	|	|	|	|	3.37
13.917	0.00	0.65	2.188	O	|	|	|	|	3.37
14.000	0.00	0.65	2.184	O	|	|	|	|	3.37
14.083	0.00	0.65	2.179	O	|	|	|	|	3.36
14.167	0.00	0.65	2.175	O	|	|	|	|	3.36
14.250	0.00	0.65	2.170	O	|	|	|	|	3.36
14.333	0.00	0.65	2.166	O	|	|	|	|	3.35
14.417	0.00	0.65	2.161	O	|	|	|	|	3.35
14.500	0.00	0.65	2.157	O	|	|	|	|	3.34
14.583	0.00	0.65	2.152	O	|	|	|	|	3.34
14.667	0.00	0.65	2.148	O	|	|	|	|	3.34
14.750	0.00	0.65	2.143	O	|	|	|	|	3.33
14.833	0.00	0.65	2.139	O	|	|	|	|	3.33
14.917	0.00	0.65	2.134	O	|	|	|	|	3.33
15.000	0.00	0.65	2.130	O	|	|	|	|	3.32
15.083	0.00	0.65	2.125	O	|	|	|	|	3.32
15.167	0.00	0.65	2.121	O	|	|	|	|	3.31
15.250	0.00	0.65	2.117	O	|	|	|	|	3.31
15.333	0.00	0.65	2.112	O	|	|	|	|	3.31
15.417	0.00	0.65	2.108	O	|	|	|	|	3.30
15.500	0.00	0.65	2.103	O	|	|	|	|	3.30
15.583	0.00	0.64	2.099	O	|	|	|	|	3.29
15.667	0.00	0.64	2.094	O	|	|	|	|	3.29
15.750	0.00	0.64	2.090	O	|	|	|	|	3.29
15.833	0.00	0.64	2.085	O	|	|	|	|	3.28
15.917	0.00	0.64	2.081	O	|	|	|	|	3.28
16.000	0.00	0.64	2.077	O	|	|	|	|	3.28
16.083	0.00	0.64	2.072	O	|	|	|	|	3.27
16.167	0.00	0.64	2.068	O	|	|	|	|	3.27
16.250	0.00	0.64	2.063	O	|	|	|	|	3.26
16.333	0.00	0.64	2.059	O	|	|	|	|	3.26
16.417	0.00	0.64	2.054	O	|	|	|	|	3.26
16.500	0.00	0.64	2.050	O	|	|	|	|	3.25
16.583	0.00	0.64	2.046	O	|	|	|	|	3.25
16.667	0.00	0.64	2.041	O	|	|	|	|	3.25
16.750	0.00	0.64	2.037	O	|	|	|	|	3.24
16.833	0.00	0.64	2.032	O	|	|	|	|	3.24
16.917	0.00	0.64	2.028	O	|	|	|	|	3.23
17.000	0.00	0.64	2.024	O	|	|	|	|	3.23
17.083	0.00	0.64	2.019	O	|	|	|	|	3.23
17.167	0.00	0.64	2.015	O	|	|	|	|	3.22
17.250	0.00	0.64	2.010	O	|	|	|	|	3.22
17.333	0.00	0.64	2.006	O	|	|	|	|	3.22
17.417	0.00	0.64	2.002	O	|	|	|	|	3.21
17.500	0.00	0.64	1.997	O	|	|	|	|	3.21
17.583	0.00	0.64	1.993	O	|	|	|	|	3.20
17.667	0.00	0.64	1.989	O	|	|	|	|	3.20
17.750	0.00	0.63	1.984	O	|	|	|	|	3.20
17.833	0.00	0.63	1.980	O	|	|	|	|	3.19
17.917	0.00	0.63	1.975	O	|	|	|	|	3.19
18.000	0.00	0.63	1.971	O	|	|	|	|	3.19
18.083	0.00	0.63	1.967	O	|	|	|	|	3.18

18.167	0.00	0.63	1.962	O	|	|	|	3.18
18.250	0.00	0.63	1.958	O	|	|	|	3.17
18.333	0.00	0.63	1.954	O	|	|	|	3.17
18.417	0.00	0.63	1.949	O	|	|	|	3.17
18.500	0.00	0.63	1.945	O	|	|	|	3.16
18.583	0.00	0.63	1.941	O	|	|	|	3.16
18.667	0.00	0.63	1.936	O	|	|	|	3.16
18.750	0.00	0.63	1.932	O	|	|	|	3.15
18.833	0.00	0.63	1.928	O	|	|	|	3.15
18.917	0.00	0.63	1.923	O	|	|	|	3.15
19.000	0.00	0.63	1.919	O	|	|	|	3.14
19.083	0.00	0.63	1.915	O	|	|	|	3.14
19.167	0.00	0.63	1.910	O	|	|	|	3.13
19.250	0.00	0.63	1.906	O	|	|	|	3.13
19.333	0.00	0.63	1.902	O	|	|	|	3.13
19.417	0.00	0.63	1.897	O	|	|	|	3.12
19.500	0.00	0.63	1.893	O	|	|	|	3.12
19.583	0.00	0.63	1.889	O	|	|	|	3.12
19.667	0.00	0.63	1.884	O	|	|	|	3.11
19.750	0.00	0.63	1.880	O	|	|	|	3.11
19.833	0.00	0.62	1.876	O	|	|	|	3.10
19.917	0.00	0.62	1.871	O	|	|	|	3.10
20.000	0.00	0.62	1.867	O	|	|	|	3.10
20.083	0.00	0.62	1.863	O	|	|	|	3.09
20.167	0.00	0.62	1.859	O	|	|	|	3.09
20.250	0.00	0.62	1.854	O	|	|	|	3.09
20.333	0.00	0.62	1.850	O	|	|	|	3.08
20.417	0.00	0.62	1.846	O	|	|	|	3.08
20.500	0.00	0.62	1.841	O	|	|	|	3.08
20.583	0.00	0.62	1.837	O	|	|	|	3.07
20.667	0.00	0.62	1.833	O	|	|	|	3.07
20.750	0.00	0.62	1.829	O	|	|	|	3.06
20.833	0.00	0.62	1.824	O	|	|	|	3.06
20.917	0.00	0.62	1.820	O	|	|	|	3.06
21.000	0.00	0.62	1.816	O	|	|	|	3.05
21.083	0.00	0.62	1.811	O	|	|	|	3.05
21.167	0.00	0.62	1.807	O	|	|	|	3.05
21.250	0.00	0.62	1.803	O	|	|	|	3.04
21.333	0.00	0.62	1.799	O	|	|	|	3.04
21.417	0.00	0.62	1.794	O	|	|	|	3.04
21.500	0.00	0.62	1.790	O	|	|	|	3.03
21.583	0.00	0.62	1.786	O	|	|	|	3.03
21.667	0.00	0.62	1.782	O	|	|	|	3.02
21.750	0.00	0.62	1.777	O	|	|	|	3.02
21.833	0.00	0.62	1.773	O	|	|	|	3.02
21.917	0.00	0.62	1.769	O	|	|	|	3.01
22.000	0.00	0.62	1.765	O	|	|	|	3.01
22.083	0.00	0.61	1.760	O	|	|	|	3.01
22.167	0.00	0.61	1.756	O	|	|	|	3.00
22.250	0.00	0.61	1.752	O	|	|	|	3.00
22.333	0.00	0.61	1.748	O	|	|	|	2.99
22.417	0.00	0.61	1.744	O	|	|	|	2.99
22.500	0.00	0.61	1.739	O	|	|	|	2.99
22.583	0.00	0.61	1.735	O	|	|	|	2.98
22.667	0.00	0.61	1.731	O	|	|	|	2.98
22.750	0.00	0.61	1.727	O	|	|	|	2.97
22.833	0.00	0.61	1.722	O	|	|	|	2.97
22.917	0.00	0.61	1.718	O	|	|	|	2.97
23.000	0.00	0.61	1.714	O	|	|	|	2.96
23.083	0.00	0.61	1.710	O	|	|	|	2.96
23.167	0.00	0.61	1.706	O	|	|	|	2.95
23.250	0.00	0.61	1.702	O	|	|	|	2.95
23.333	0.00	0.61	1.697	O	|	|	|	2.94
23.417	0.00	0.61	1.693	O	|	|	|	2.94
23.500	0.00	0.61	1.689	O	|	|	|	2.94
23.583	0.00	0.61	1.685	O	|	|	|	2.93
23.667	0.00	0.61	1.681	O	|	|	|	2.93
23.750	0.00	0.61	1.676	O	|	|	|	2.92
23.833	0.00	0.60	1.672	O	|	|	|	2.92
23.917	0.00	0.60	1.668	O	|	|	|	2.92
24.000	0.00	0.60	1.664	O	|	|	|	2.91
24.083	0.00	0.60	1.660	O	|	|	|	2.91
24.167	0.00	0.60	1.656	O	|	|	|	2.90
24.250	0.00	0.60	1.651	O	|	|	|	2.90
24.333	0.00	0.60	1.647	O	|	|	|	2.90

24.417	0.00	0.60	1.643	O	|	|	|	2.89
24.500	0.00	0.60	1.639	O	|	|	|	2.89
24.583	0.00	0.60	1.635	O	|	|	|	2.88
24.667	0.00	0.60	1.631	O	|	|	|	2.88
24.750	0.00	0.60	1.627	O	|	|	|	2.88
24.833	0.00	0.60	1.623	O	|	|	|	2.87
24.917	0.00	0.60	1.618	O	|	|	|	2.87
25.000	0.00	0.60	1.614	O	|	|	|	2.86
25.083	0.00	0.60	1.610	O	|	|	|	2.86
25.167	0.00	0.60	1.606	O	|	|	|	2.85
25.250	0.00	0.60	1.602	O	|	|	|	2.85
25.333	0.00	0.60	1.598	O	|	|	|	2.85
25.417	0.00	0.60	1.594	O	|	|	|	2.84
25.500	0.00	0.60	1.590	O	|	|	|	2.84
25.583	0.00	0.59	1.586	O	|	|	|	2.83
25.667	0.00	0.59	1.581	O	|	|	|	2.83
25.750	0.00	0.59	1.577	O	|	|	|	2.83
25.833	0.00	0.59	1.573	O	|	|	|	2.82
25.917	0.00	0.59	1.569	O	|	|	|	2.82
26.000	0.00	0.59	1.565	O	|	|	|	2.81
26.083	0.00	0.59	1.561	O	|	|	|	2.81
26.167	0.00	0.59	1.557	O	|	|	|	2.81
26.250	0.00	0.59	1.553	O	|	|	|	2.80
26.333	0.00	0.59	1.549	O	|	|	|	2.80
26.417	0.00	0.59	1.545	O	|	|	|	2.79
26.500	0.00	0.59	1.541	O	|	|	|	2.79
26.583	0.00	0.59	1.537	O	|	|	|	2.79
26.667	0.00	0.59	1.533	O	|	|	|	2.78
26.750	0.00	0.59	1.529	O	|	|	|	2.78
26.833	0.00	0.59	1.524	O	|	|	|	2.77
26.917	0.00	0.59	1.520	O	|	|	|	2.77
27.000	0.00	0.59	1.516	O	|	|	|	2.77
27.083	0.00	0.59	1.512	O	|	|	|	2.76
27.167	0.00	0.59	1.508	O	|	|	|	2.76
27.250	0.00	0.59	1.504	O	|	|	|	2.75
27.333	0.00	0.58	1.500	O	|	|	|	2.75
27.417	0.00	0.58	1.496	O	|	|	|	2.75
27.500	0.00	0.58	1.492	O	|	|	|	2.74
27.583	0.00	0.58	1.488	O	|	|	|	2.74
27.667	0.00	0.58	1.484	O	|	|	|	2.73
27.750	0.00	0.58	1.480	O	|	|	|	2.73
27.833	0.00	0.58	1.476	O	|	|	|	2.73
27.917	0.00	0.58	1.472	O	|	|	|	2.72
28.000	0.00	0.58	1.468	O	|	|	|	2.72
28.083	0.00	0.58	1.464	O	|	|	|	2.71
28.167	0.00	0.58	1.460	O	|	|	|	2.71
28.250	0.00	0.58	1.456	O	|	|	|	2.71
28.333	0.00	0.58	1.452	O	|	|	|	2.70
28.417	0.00	0.58	1.448	O	|	|	|	2.70
28.500	0.00	0.58	1.444	O	|	|	|	2.69
28.583	0.00	0.58	1.440	O	|	|	|	2.69
28.667	0.00	0.58	1.436	O	|	|	|	2.69
28.750	0.00	0.58	1.432	O	|	|	|	2.68
28.833	0.00	0.58	1.428	O	|	|	|	2.68
28.917	0.00	0.58	1.424	O	|	|	|	2.68
29.000	0.00	0.58	1.420	O	|	|	|	2.67
29.083	0.00	0.58	1.416	O	|	|	|	2.67
29.167	0.00	0.57	1.412	O	|	|	|	2.66
29.250	0.00	0.57	1.408	O	|	|	|	2.66
29.333	0.00	0.57	1.405	O	|	|	|	2.66
29.417	0.00	0.57	1.401	O	|	|	|	2.65
29.500	0.00	0.57	1.397	O	|	|	|	2.65
29.583	0.00	0.57	1.393	O	|	|	|	2.64
29.667	0.00	0.57	1.389	O	|	|	|	2.64
29.750	0.00	0.57	1.385	O	|	|	|	2.64
29.833	0.00	0.57	1.381	O	|	|	|	2.63
29.917	0.00	0.57	1.377	O	|	|	|	2.63
30.000	0.00	0.57	1.373	O	|	|	|	2.62
30.083	0.00	0.57	1.369	O	|	|	|	2.62
30.167	0.00	0.57	1.365	O	|	|	|	2.62
30.250	0.00	0.57	1.361	O	|	|	|	2.61
30.333	0.00	0.57	1.357	O	|	|	|	2.61
30.417	0.00	0.57	1.353	O	|	|	|	2.61
30.500	0.00	0.57	1.350	O	|	|	|	2.60
30.583	0.00	0.57	1.346	O	|	|	|	2.60

30.667	0.00	0.57	1.342	O	|	|	|	2.59
30.750	0.00	0.57	1.338	O	|	|	|	2.59
30.833	0.00	0.57	1.334	O	|	|	|	2.59
30.917	0.00	0.57	1.330	O	|	|	|	2.58
31.000	0.00	0.56	1.326	O	|	|	|	2.58
31.083	0.00	0.56	1.322	O	|	|	|	2.57
31.167	0.00	0.56	1.318	O	|	|	|	2.57
31.250	0.00	0.56	1.314	O	|	|	|	2.57
31.333	0.00	0.56	1.311	O	|	|	|	2.56
31.417	0.00	0.56	1.307	O	|	|	|	2.56
31.500	0.00	0.56	1.303	O	|	|	|	2.56
31.583	0.00	0.56	1.299	O	|	|	|	2.55
31.667	0.00	0.56	1.295	O	|	|	|	2.55
31.750	0.00	0.56	1.291	O	|	|	|	2.54
31.833	0.00	0.56	1.287	O	|	|	|	2.54
31.917	0.00	0.56	1.284	O	|	|	|	2.54
32.000	0.00	0.56	1.280	O	|	|	|	2.53
32.083	0.00	0.56	1.276	O	|	|	|	2.53
32.167	0.00	0.56	1.272	O	|	|	|	2.52
32.250	0.00	0.56	1.268	O	|	|	|	2.52
32.333	0.00	0.56	1.264	O	|	|	|	2.52
32.417	0.00	0.56	1.260	O	|	|	|	2.51
32.500	0.00	0.56	1.257	O	|	|	|	2.51
32.583	0.00	0.56	1.253	O	|	|	|	2.51
32.667	0.00	0.56	1.249	O	|	|	|	2.50
32.750	0.00	0.56	1.245	O	|	|	|	2.50
32.833	0.00	0.55	1.241	O	|	|	|	2.49
32.917	0.00	0.55	1.237	O	|	|	|	2.49
33.000	0.00	0.55	1.234	O	|	|	|	2.49
33.083	0.00	0.55	1.230	O	|	|	|	2.48
33.167	0.00	0.55	1.226	O	|	|	|	2.48
33.250	0.00	0.55	1.222	O	|	|	|	2.48
33.333	0.00	0.55	1.218	O	|	|	|	2.47
33.417	0.00	0.55	1.215	O	|	|	|	2.47
33.500	0.00	0.55	1.211	O	|	|	|	2.46
33.583	0.00	0.55	1.207	O	|	|	|	2.46
33.667	0.00	0.55	1.203	O	|	|	|	2.46
33.750	0.00	0.55	1.199	O	|	|	|	2.45
33.833	0.00	0.55	1.196	O	|	|	|	2.45
33.917	0.00	0.55	1.192	O	|	|	|	2.45
34.000	0.00	0.55	1.188	O	|	|	|	2.44
34.083	0.00	0.55	1.184	O	|	|	|	2.44
34.167	0.00	0.55	1.181	O	|	|	|	2.43
34.250	0.00	0.55	1.177	O	|	|	|	2.43
34.333	0.00	0.55	1.173	O	|	|	|	2.43
34.417	0.00	0.55	1.169	O	|	|	|	2.42
34.500	0.00	0.55	1.165	O	|	|	|	2.42
34.583	0.00	0.55	1.162	O	|	|	|	2.42
34.667	0.00	0.55	1.158	O	|	|	|	2.41
34.750	0.00	0.54	1.154	O	|	|	|	2.41
34.833	0.00	0.54	1.150	O	|	|	|	2.40
34.917	0.00	0.54	1.147	O	|	|	|	2.40
35.000	0.00	0.54	1.143	O	|	|	|	2.40
35.083	0.00	0.54	1.139	O	|	|	|	2.39
35.167	0.00	0.54	1.136	O	|	|	|	2.39
35.250	0.00	0.54	1.132	O	|	|	|	2.39
35.333	0.00	0.54	1.128	O	|	|	|	2.38
35.417	0.00	0.54	1.124	O	|	|	|	2.38
35.500	0.00	0.54	1.121	O	|	|	|	2.38
35.583	0.00	0.54	1.117	O	|	|	|	2.37
35.667	0.00	0.54	1.113	O	|	|	|	2.37
35.750	0.00	0.54	1.109	O	|	|	|	2.36
35.833	0.00	0.54	1.106	O	|	|	|	2.36
35.917	0.00	0.54	1.102	O	|	|	|	2.36
36.000	0.00	0.54	1.098	O	|	|	|	2.35
36.083	0.00	0.54	1.095	O	|	|	|	2.35
36.167	0.00	0.54	1.091	O	|	|	|	2.35
36.250	0.00	0.54	1.087	O	|	|	|	2.34
36.333	0.00	0.54	1.083	O	|	|	|	2.34
36.417	0.00	0.54	1.080	O	|	|	|	2.33
36.500	0.00	0.54	1.076	O	|	|	|	2.33
36.583	0.00	0.54	1.072	O	|	|	|	2.33
36.667	0.00	0.53	1.069	O	|	|	|	2.32
36.750	0.00	0.53	1.065	O	|	|	|	2.32
36.833	0.00	0.53	1.061	O	|	|	|	2.32

36.917	0.00	0.53	1.058	O					2.31
37.000	0.00	0.53	1.054	O					2.31
37.083	0.00	0.53	1.050	O					2.31
37.167	0.00	0.53	1.047	O					2.30
37.250	0.00	0.53	1.043	O					2.30
37.333	0.00	0.53	1.039	O					2.29
37.417	0.00	0.53	1.036	O					2.29
37.500	0.00	0.53	1.032	O					2.29
37.583	0.00	0.53	1.028	O					2.28
37.667	0.00	0.53	1.025	O					2.28
37.750	0.00	0.53	1.021	O					2.28
37.833	0.00	0.53	1.017	O					2.27
37.917	0.00	0.53	1.014	O					2.27
38.000	0.00	0.53	1.010	O					2.27
38.083	0.00	0.53	1.007	O					2.26
38.167	0.00	0.53	1.003	O					2.26
38.250	0.00	0.53	0.999	O					2.26
38.333	0.00	0.53	0.996	O					2.25
38.417	0.00	0.53	0.992	O					2.25
38.500	0.00	0.53	0.988	O					2.24
38.583	0.00	0.53	0.985	O					2.24
38.667	0.00	0.52	0.981	O					2.24
38.750	0.00	0.52	0.978	O					2.23
38.833	0.00	0.52	0.974	O					2.23
38.917	0.00	0.52	0.970	O					2.23
39.000	0.00	0.52	0.967	O					2.22
39.083	0.00	0.52	0.963	O					2.22
39.167	0.00	0.52	0.960	O					2.22
39.250	0.00	0.52	0.956	O					2.21
39.333	0.00	0.52	0.952	O					2.21
39.417	0.00	0.52	0.949	O					2.21
39.500	0.00	0.52	0.945	O					2.20
39.583	0.00	0.52	0.942	O					2.20
39.667	0.00	0.52	0.938	O					2.19
39.750	0.00	0.52	0.934	O					2.19
39.833	0.00	0.52	0.931	O					2.19
39.917	0.00	0.52	0.927	O					2.18
40.000	0.00	0.52	0.924	O					2.18
40.083	0.00	0.52	0.920	O					2.18
40.167	0.00	0.52	0.917	O					2.17
40.250	0.00	0.52	0.913	O					2.17
40.333	0.00	0.52	0.909	O					2.17
40.417	0.00	0.52	0.906	O					2.16
40.500	0.00	0.52	0.902	O					2.16
40.583	0.00	0.52	0.899	O					2.16
40.667	0.00	0.51	0.895	O					2.15
40.750	0.00	0.51	0.892	O					2.15
40.833	0.00	0.51	0.888	O					2.15
40.917	0.00	0.51	0.885	O					2.14
41.000	0.00	0.51	0.881	O					2.14
41.083	0.00	0.51	0.878	O					2.13
41.167	0.00	0.51	0.874	O					2.13
41.250	0.00	0.51	0.870	O					2.13
41.333	0.00	0.51	0.867	O					2.12
41.417	0.00	0.51	0.863	O					2.12
41.500	0.00	0.51	0.860	O					2.12
41.583	0.00	0.51	0.856	O					2.11
41.667	0.00	0.51	0.853	O					2.11
41.750	0.00	0.51	0.849	O					2.11
41.833	0.00	0.51	0.846	O					2.10
41.917	0.00	0.51	0.842	O					2.10
42.000	0.00	0.51	0.839	O					2.10
42.083	0.00	0.51	0.835	O					2.09
42.167	0.00	0.51	0.832	O					2.09
42.250	0.00	0.51	0.828	O					2.09
42.333	0.00	0.51	0.825	O					2.08
42.417	0.00	0.51	0.821	O					2.08
42.500	0.00	0.51	0.818	O					2.08
42.583	0.00	0.51	0.814	O					2.07
42.667	0.00	0.51	0.811	O					2.07
42.750	0.00	0.50	0.807	O					2.07
42.833	0.00	0.50	0.804	O					2.06
42.917	0.00	0.50	0.801	O					2.06
43.000	0.00	0.50	0.797	O					2.06
43.083	0.00	0.50	0.794	O					2.05

43.167	0.00	0.50	0.790	O	|	|	|	2.05
43.250	0.00	0.50	0.787	O	|	|	|	2.05
43.333	0.00	0.50	0.783	O	|	|	|	2.04
43.417	0.00	0.50	0.780	O	|	|	|	2.04
43.500	0.00	0.50	0.776	O	|	|	|	2.03
43.583	0.00	0.50	0.773	O	|	|	|	2.03
43.667	0.00	0.50	0.769	O	|	|	|	2.03
43.750	0.00	0.50	0.766	O	|	|	|	2.02
43.833	0.00	0.50	0.763	O	|	|	|	2.02
43.917	0.00	0.50	0.759	O	|	|	|	2.02
44.000	0.00	0.50	0.756	O	|	|	|	2.01
44.083	0.00	0.50	0.752	O	|	|	|	2.01
44.167	0.00	0.50	0.749	O	|	|	|	2.01
44.250	0.00	0.50	0.745	O	|	|	|	2.00
44.333	0.00	0.50	0.742	O	|	|	|	2.00
44.417	0.00	0.50	0.739	O	|	|	|	2.00
44.500	0.00	0.50	0.735	O	|	|	|	1.99
44.583	0.00	0.49	0.732	O	|	|	|	1.98
44.667	0.00	0.49	0.728	O	|	|	|	1.98
44.750	0.00	0.49	0.725	O	|	|	|	1.97
44.833	0.00	0.49	0.721	O	|	|	|	1.97
44.917	0.00	0.49	0.718	O	|	|	|	1.96
45.000	0.00	0.49	0.715	O	|	|	|	1.95
45.083	0.00	0.49	0.711	O	|	|	|	1.95
45.167	0.00	0.49	0.708	O	|	|	|	1.94
45.250	0.00	0.49	0.705	O	|	|	|	1.94
45.333	0.00	0.49	0.701	O	|	|	|	1.93
45.417	0.00	0.49	0.698	O	|	|	|	1.93
45.500	0.00	0.48	0.695	O	|	|	|	1.92
45.583	0.00	0.48	0.691	O	|	|	|	1.91
45.667	0.00	0.48	0.688	O	|	|	|	1.91
45.750	0.00	0.48	0.685	O	|	|	|	1.90
45.833	0.00	0.48	0.681	O	|	|	|	1.90
45.917	0.00	0.48	0.678	O	|	|	|	1.89
46.000	0.00	0.48	0.675	O	|	|	|	1.89
46.083	0.00	0.48	0.671	O	|	|	|	1.88
46.167	0.00	0.48	0.668	O	|	|	|	1.87
46.250	0.00	0.48	0.665	O	|	|	|	1.87
46.333	0.00	0.48	0.662	O	|	|	|	1.86
46.417	0.00	0.47	0.658	O	|	|	|	1.86
46.500	0.00	0.47	0.655	O	|	|	|	1.85
46.583	0.00	0.47	0.652	O	|	|	|	1.85
46.667	0.00	0.47	0.648	O	|	|	|	1.84
46.750	0.00	0.47	0.645	O	|	|	|	1.83
46.833	0.00	0.47	0.642	O	|	|	|	1.83
46.917	0.00	0.47	0.639	O	|	|	|	1.82
47.000	0.00	0.47	0.636	O	|	|	|	1.82
47.083	0.00	0.47	0.632	O	|	|	|	1.81
47.167	0.00	0.47	0.629	O	|	|	|	1.81
47.250	0.00	0.47	0.626	O	|	|	|	1.80
47.333	0.00	0.47	0.623	O	|	|	|	1.80
47.417	0.00	0.46	0.619	O	|	|	|	1.79
47.500	0.00	0.46	0.616	O	|	|	|	1.78
47.583	0.00	0.46	0.613	O	|	|	|	1.78
47.667	0.00	0.46	0.610	O	|	|	|	1.77
47.750	0.00	0.46	0.607	O	|	|	|	1.77
47.833	0.00	0.46	0.604	O	|	|	|	1.76
47.917	0.00	0.46	0.600	O	|	|	|	1.76
48.000	0.00	0.46	0.597	O	|	|	|	1.75
48.083	0.00	0.46	0.594	O	|	|	|	1.75
48.167	0.00	0.46	0.591	O	|	|	|	1.74
48.250	0.00	0.46	0.588	O	|	|	|	1.73
48.333	0.00	0.46	0.585	O	|	|	|	1.73
48.417	0.00	0.45	0.581	O	|	|	|	1.72
48.500	0.00	0.45	0.578	O	|	|	|	1.72
48.583	0.00	0.45	0.575	O	|	|	|	1.71
48.667	0.00	0.45	0.572	O	|	|	|	1.71
48.750	0.00	0.45	0.569	O	|	|	|	1.70
48.833	0.00	0.45	0.566	O	|	|	|	1.70
48.917	0.00	0.45	0.563	O	|	|	|	1.69
49.000	0.00	0.45	0.560	O	|	|	|	1.69
49.083	0.00	0.45	0.557	O	|	|	|	1.68
49.167	0.00	0.45	0.554	O	|	|	|	1.68
49.250	0.00	0.45	0.550	O	|	|	|	1.67
49.333	0.00	0.45	0.547	O	|	|	|	1.67

49.417	0.00	0.44	0.544	O					1.66
49.500	0.00	0.44	0.541	O					1.65
49.583	0.00	0.44	0.538	O					1.65
49.667	0.00	0.44	0.535	O					1.64
49.750	0.00	0.44	0.532	O					1.64
49.833	0.00	0.44	0.529	O					1.63
49.917	0.00	0.44	0.526	O					1.63
50.000	0.00	0.44	0.523	O					1.62
50.083	0.00	0.44	0.520	O					1.62
50.167	0.00	0.44	0.517	O					1.61
50.250	0.00	0.44	0.514	O					1.61
50.333	0.00	0.44	0.511	O					1.60
50.417	0.00	0.43	0.508	O					1.60
50.500	0.00	0.43	0.505	O					1.59
50.583	0.00	0.43	0.502	O					1.59
50.667	0.00	0.43	0.499	O					1.58
50.750	0.00	0.43	0.496	O					1.58
50.833	0.00	0.43	0.493	O					1.57
50.917	0.00	0.43	0.490	O					1.57
51.000	0.00	0.43	0.487	O					1.56
51.083	0.00	0.43	0.484	O					1.56
51.167	0.00	0.43	0.481	O					1.55
51.250	0.00	0.43	0.478	O					1.55
51.333	0.00	0.43	0.475	O					1.54
51.417	0.00	0.43	0.473	O					1.54
51.500	0.00	0.42	0.470	O					1.53
51.583	0.00	0.42	0.467	O					1.53
51.667	0.00	0.42	0.464	O					1.52
51.750	0.00	0.42	0.461	O					1.52
51.833	0.00	0.42	0.458	O					1.51
51.917	0.00	0.42	0.455	O					1.51
52.000	0.00	0.42	0.452	O					1.50
52.083	0.00	0.42	0.449	O					1.50
52.167	0.00	0.42	0.446	O					1.49
52.250	0.00	0.42	0.444	O					1.49
52.333	0.00	0.42	0.441	O					1.48
52.417	0.00	0.42	0.438	O					1.48
52.500	0.00	0.41	0.435	O					1.47
52.583	0.00	0.41	0.432	O					1.47
52.667	0.00	0.41	0.429	O					1.46
52.750	0.00	0.41	0.426	O					1.46
52.833	0.00	0.41	0.424	O					1.45
52.917	0.00	0.41	0.421	O					1.45
53.000	0.00	0.41	0.418	O					1.44
53.083	0.00	0.41	0.415	O					1.44
53.167	0.00	0.41	0.412	O					1.43
53.250	0.00	0.41	0.409	O					1.43
53.333	0.00	0.41	0.407	O					1.42
53.417	0.00	0.41	0.404	O					1.42
53.500	0.00	0.41	0.401	O					1.41
53.583	0.00	0.41	0.398	O					1.41
53.667	0.00	0.40	0.395	O					1.40
53.750	0.00	0.40	0.393	O					1.40
53.833	0.00	0.40	0.390	O					1.39
53.917	0.00	0.40	0.387	O					1.39
54.000	0.00	0.40	0.384	O					1.38
54.083	0.00	0.40	0.382	O					1.38
54.167	0.00	0.40	0.379	O					1.37
54.250	0.00	0.40	0.376	O					1.37
54.333	0.00	0.40	0.373	O					1.36
54.417	0.00	0.40	0.371	O					1.36
54.500	0.00	0.40	0.368	O					1.35
54.583	0.00	0.40	0.365	O					1.35
54.667	0.00	0.40	0.362	O					1.34
54.750	0.00	0.39	0.360	O					1.34
54.833	0.00	0.39	0.357	O					1.34
54.917	0.00	0.39	0.354	O					1.33
55.000	0.00	0.39	0.352	O					1.33
55.083	0.00	0.39	0.349	O					1.32
55.167	0.00	0.39	0.346	O					1.32
55.250	0.00	0.39	0.343	O					1.31
55.333	0.00	0.39	0.341	O					1.31
55.417	0.00	0.39	0.338	O					1.30
55.500	0.00	0.39	0.335	O					1.30
55.583	0.00	0.39	0.333	O					1.29

55.667	0.00	0.39	0.330	O	|	|	|	|	1.29
55.750	0.00	0.39	0.327	O	|	|	|	|	1.28
55.833	0.00	0.39	0.325	O	|	|	|	|	1.28
55.917	0.00	0.38	0.322	O	|	|	|	|	1.28
56.000	0.00	0.38	0.319	O	|	|	|	|	1.27
56.083	0.00	0.38	0.317	O	|	|	|	|	1.27
56.167	0.00	0.38	0.314	O	|	|	|	|	1.26
56.250	0.00	0.38	0.312	O	|	|	|	|	1.26
56.333	0.00	0.38	0.309	O	|	|	|	|	1.25
56.417	0.00	0.38	0.306	O	|	|	|	|	1.25
56.500	0.00	0.38	0.304	O	|	|	|	|	1.24
56.583	0.00	0.38	0.301	O	|	|	|	|	1.24
56.667	0.00	0.38	0.298	O	|	|	|	|	1.23
56.750	0.00	0.38	0.296	O	|	|	|	|	1.23
56.833	0.00	0.38	0.293	O	|	|	|	|	1.23
56.917	0.00	0.38	0.291	O	|	|	|	|	1.22
57.000	0.00	0.38	0.288	O	|	|	|	|	1.22
57.083	0.00	0.37	0.285	O	|	|	|	|	1.21
57.167	0.00	0.37	0.283	O	|	|	|	|	1.21
57.250	0.00	0.37	0.280	O	|	|	|	|	1.20
57.333	0.00	0.37	0.278	O	|	|	|	|	1.20
57.417	0.00	0.37	0.275	O	|	|	|	|	1.19
57.500	0.00	0.37	0.273	O	|	|	|	|	1.19
57.583	0.00	0.37	0.270	O	|	|	|	|	1.19
57.667	0.00	0.37	0.268	O	|	|	|	|	1.18
57.750	0.00	0.37	0.265	O	|	|	|	|	1.18
57.833	0.00	0.37	0.262	O	|	|	|	|	1.17
57.917	0.00	0.37	0.260	O	|	|	|	|	1.17
58.000	0.00	0.37	0.257	O	|	|	|	|	1.16
58.083	0.00	0.37	0.255	O	|	|	|	|	1.16
58.167	0.00	0.37	0.252	O	|	|	|	|	1.15
58.250	0.00	0.37	0.250	O	|	|	|	|	1.15
58.333	0.00	0.36	0.247	O	|	|	|	|	1.15
58.417	0.00	0.36	0.245	O	|	|	|	|	1.14
58.500	0.00	0.36	0.242	O	|	|	|	|	1.14
58.583	0.00	0.36	0.240	O	|	|	|	|	1.13
58.667	0.00	0.36	0.237	O	|	|	|	|	1.13
58.750	0.00	0.36	0.235	O	|	|	|	|	1.12
58.833	0.00	0.36	0.232	O	|	|	|	|	1.12
58.917	0.00	0.36	0.230	O	|	|	|	|	1.12
59.000	0.00	0.36	0.227	O	|	|	|	|	1.11
59.083	0.00	0.36	0.225	O	|	|	|	|	1.11
59.167	0.00	0.36	0.222	O	|	|	|	|	1.10
59.250	0.00	0.36	0.220	O	|	|	|	|	1.10
59.333	0.00	0.36	0.217	O	|	|	|	|	1.09
59.417	0.00	0.36	0.215	O	|	|	|	|	1.09
59.500	0.00	0.36	0.213	O	|	|	|	|	1.09
59.583	0.00	0.35	0.210	O	|	|	|	|	1.08
59.667	0.00	0.35	0.208	O	|	|	|	|	1.08
59.750	0.00	0.35	0.205	O	|	|	|	|	1.07
59.833	0.00	0.35	0.203	O	|	|	|	|	1.07
59.917	0.00	0.35	0.200	O	|	|	|	|	1.06
60.000	0.00	0.35	0.198	O	|	|	|	|	1.06
60.083	0.00	0.35	0.196	O	|	|	|	|	1.06
60.167	0.00	0.35	0.193	O	|	|	|	|	1.05
60.250	0.00	0.35	0.191	O	|	|	|	|	1.05
60.333	0.00	0.35	0.188	O	|	|	|	|	1.04
60.417	0.00	0.35	0.186	O	|	|	|	|	1.04
60.500	0.00	0.35	0.184	O	|	|	|	|	1.04
60.583	0.00	0.35	0.181	O	|	|	|	|	1.03
60.667	0.00	0.35	0.179	O	|	|	|	|	1.03
60.750	0.00	0.35	0.176	O	|	|	|	|	1.02
60.833	0.00	0.34	0.174	O	|	|	|	|	1.02
60.917	0.00	0.34	0.172	O	|	|	|	|	1.01
61.000	0.00	0.34	0.169	O	|	|	|	|	1.01
61.083	0.00	0.34	0.167	O	|	|	|	|	1.01
61.167	0.00	0.34	0.165	O	|	|	|	|	1.00
61.250	0.00	0.34	0.162	O	|	|	|	|	1.00
61.333	0.00	0.34	0.160	O	|	|	|	|	0.98
61.417	0.00	0.33	0.158	O	|	|	|	|	0.97
61.500	0.00	0.33	0.155	O	|	|	|	|	0.96
61.583	0.00	0.32	0.153	O	|	|	|	|	0.94
61.667	0.00	0.32	0.151	O	|	|	|	|	0.93
61.750	0.00	0.31	0.149	O	|	|	|	|	0.92
61.833	0.00	0.31	0.147	O	|	|	|	|	0.91

61.917	0.00	0.30	0.145	O	|	|	|	|	0.90
62.000	0.00	0.30	0.142	O	|	|	|	|	0.88
62.083	0.00	0.29	0.140	O	|	|	|	|	0.87
62.167	0.00	0.29	0.138	O	|	|	|	|	0.86
62.250	0.00	0.29	0.136	O	|	|	|	|	0.85
62.333	0.00	0.28	0.134	O	|	|	|	|	0.84
62.417	0.00	0.28	0.133	O	|	|	|	|	0.83
62.500	0.00	0.27	0.131	O	|	|	|	|	0.82
62.583	0.00	0.27	0.129	O	|	|	|	|	0.81
62.667	0.00	0.27	0.127	O	|	|	|	|	0.80
62.750	0.00	0.26	0.125	O	|	|	|	|	0.79
62.833	0.00	0.26	0.123	O	|	|	|	|	0.78
62.917	0.00	0.25	0.122	O	|	|	|	|	0.77
63.000	0.00	0.25	0.120	O	|	|	|	|	0.76
63.083	0.00	0.25	0.118	O	|	|	|	|	0.75
63.167	0.00	0.24	0.116	O	|	|	|	|	0.74
63.250	0.00	0.24	0.115	O	|	|	|	|	0.73
63.333	0.00	0.24	0.113	O	|	|	|	|	0.72
63.417	0.00	0.23	0.112	O	|	|	|	|	0.71
63.500	0.00	0.23	0.110	O	|	|	|	|	0.70
63.583	0.00	0.23	0.108	O	|	|	|	|	0.69
63.667	0.00	0.22	0.107	O	|	|	|	|	0.68
63.750	0.00	0.22	0.105	O	|	|	|	|	0.68
63.833	0.00	0.22	0.104	O	|	|	|	|	0.67
63.917	0.00	0.21	0.102	O	|	|	|	|	0.66
64.000	0.00	0.21	0.101	O	|	|	|	|	0.65
64.083	0.00	0.21	0.099	O	|	|	|	|	0.64
64.167	0.00	0.20	0.098	O	|	|	|	|	0.63
64.250	0.00	0.20	0.097	O	|	|	|	|	0.63
64.333	0.00	0.20	0.095	O	|	|	|	|	0.62
64.417	0.00	0.19	0.094	O	|	|	|	|	0.61
64.500	0.00	0.19	0.093	O	|	|	|	|	0.60
64.583	0.00	0.19	0.091	O	|	|	|	|	0.60
64.667	0.00	0.19	0.090	O	|	|	|	|	0.59
64.750	0.00	0.18	0.089	O	|	|	|	|	0.58
64.833	0.00	0.18	0.087	O	|	|	|	|	0.58
64.917	0.00	0.18	0.086	O	|	|	|	|	0.57
65.000	0.00	0.18	0.085	O	|	|	|	|	0.56
65.083	0.00	0.17	0.084	O	|	|	|	|	0.55
65.167	0.00	0.17	0.083	O	|	|	|	|	0.55
65.250	0.00	0.17	0.081	O	|	|	|	|	0.54
65.333	0.00	0.17	0.080	O	|	|	|	|	0.53
65.417	0.00	0.16	0.079	O	|	|	|	|	0.53
65.500	0.00	0.16	0.078	O	|	|	|	|	0.52
65.583	0.00	0.16	0.077	O	|	|	|	|	0.52
65.667	0.00	0.16	0.076	O	|	|	|	|	0.51
65.750	0.00	0.15	0.075	O	|	|	|	|	0.50
65.833	0.00	0.15	0.074	O	|	|	|	|	0.50
65.917	0.00	0.15	0.073	O	|	|	|	|	0.49
66.000	0.00	0.15	0.072	O	|	|	|	|	0.49
66.083	0.00	0.15	0.071	O	|	|	|	|	0.48
66.167	0.00	0.14	0.070	O	|	|	|	|	0.48
66.250	0.00	0.14	0.069	O	|	|	|	|	0.47
66.333	0.00	0.14	0.068	O	|	|	|	|	0.46
66.417	0.00	0.14	0.067	O	|	|	|	|	0.46
66.500	0.00	0.13	0.066	O	|	|	|	|	0.45
66.583	0.00	0.13	0.065	O	|	|	|	|	0.45
66.667	0.00	0.13	0.064	O	|	|	|	|	0.44
66.750	0.00	0.13	0.063	O	|	|	|	|	0.44
66.833	0.00	0.13	0.062	O	|	|	|	|	0.43
66.917	0.00	0.13	0.061	O	|	|	|	|	0.43
67.000	0.00	0.12	0.061	O	|	|	|	|	0.42
67.083	0.00	0.12	0.060	O	|	|	|	|	0.42
67.167	0.00	0.12	0.059	O	|	|	|	|	0.41
67.250	0.00	0.12	0.058	O	|	|	|	|	0.41
67.333	0.00	0.12	0.057	O	|	|	|	|	0.40
67.417	0.00	0.11	0.056	O	|	|	|	|	0.40
67.500	0.00	0.11	0.056	O	|	|	|	|	0.40
67.583	0.00	0.11	0.055	O	|	|	|	|	0.39
67.667	0.00	0.11	0.054	O	|	|	|	|	0.39
67.750	0.00	0.11	0.053	O	|	|	|	|	0.38
67.833	0.00	0.11	0.053	O	|	|	|	|	0.38
67.917	0.00	0.11	0.052	O	|	|	|	|	0.37
68.000	0.00	0.10	0.051	O	|	|	|	|	0.37
68.083	0.00	0.10	0.050	O	|	|	|	|	0.37

68.167	0.00	0.10	0.050	O	|	|	|	|	0.36
68.250	0.00	0.10	0.049	O	|	|	|	|	0.36
68.333	0.00	0.10	0.048	O	|	|	|	|	0.36
68.417	0.00	0.10	0.048	O	|	|	|	|	0.35
68.500	0.00	0.09	0.047	O	|	|	|	|	0.35
68.583	0.00	0.09	0.046	O	|	|	|	|	0.34
68.667	0.00	0.09	0.046	O	|	|	|	|	0.34
68.750	0.00	0.09	0.045	O	|	|	|	|	0.34
68.833	0.00	0.09	0.045	O	|	|	|	|	0.33
68.917	0.00	0.09	0.044	O	|	|	|	|	0.33
69.000	0.00	0.09	0.043	O	|	|	|	|	0.33
69.083	0.00	0.09	0.043	O	|	|	|	|	0.32
69.167	0.00	0.08	0.042	O	|	|	|	|	0.32
69.250	0.00	0.08	0.042	O	|	|	|	|	0.32
69.333	0.00	0.08	0.041	O	|	|	|	|	0.31
69.417	0.00	0.08	0.040	O	|	|	|	|	0.31
69.500	0.00	0.08	0.040	O	|	|	|	|	0.31
69.583	0.00	0.08	0.039	O	|	|	|	|	0.30
69.667	0.00	0.08	0.039	O	|	|	|	|	0.30
69.750	0.00	0.08	0.038	O	|	|	|	|	0.30
69.833	0.00	0.08	0.038	O	|	|	|	|	0.30
69.917	0.00	0.07	0.037	O	|	|	|	|	0.29
70.000	0.00	0.07	0.037	O	|	|	|	|	0.29
70.083	0.00	0.07	0.036	O	|	|	|	|	0.29
70.167	0.00	0.07	0.036	O	|	|	|	|	0.28
70.250	0.00	0.07	0.035	O	|	|	|	|	0.28
70.333	0.00	0.07	0.035	O	|	|	|	|	0.28
70.417	0.00	0.07	0.034	O	|	|	|	|	0.28
70.500	0.00	0.07	0.034	O	|	|	|	|	0.27
70.583	0.00	0.07	0.033	O	|	|	|	|	0.27
70.667	0.00	0.06	0.033	O	|	|	|	|	0.27
70.750	0.00	0.06	0.032	O	|	|	|	|	0.27
70.833	0.00	0.06	0.032	O	|	|	|	|	0.26
70.917	0.00	0.06	0.032	O	|	|	|	|	0.26
71.000	0.00	0.06	0.031	O	|	|	|	|	0.26
71.083	0.00	0.06	0.031	O	|	|	|	|	0.26
71.167	0.00	0.06	0.030	O	|	|	|	|	0.25
71.250	0.00	0.06	0.030	O	|	|	|	|	0.25
71.333	0.00	0.06	0.030	O	|	|	|	|	0.25
71.417	0.00	0.06	0.029	O	|	|	|	|	0.25
71.500	0.00	0.06	0.029	O	|	|	|	|	0.25
71.583	0.00	0.06	0.028	O	|	|	|	|	0.24
71.667	0.00	0.05	0.028	O	|	|	|	|	0.24
71.750	0.00	0.05	0.028	O	|	|	|	|	0.24
71.833	0.00	0.05	0.027	O	|	|	|	|	0.24
71.917	0.00	0.05	0.027	O	|	|	|	|	0.23
72.000	0.00	0.05	0.027	O	|	|	|	|	0.23
72.083	0.00	0.05	0.026	O	|	|	|	|	0.23
72.167	0.00	0.05	0.026	O	|	|	|	|	0.23
72.250	0.00	0.05	0.026	O	|	|	|	|	0.23
72.333	0.00	0.05	0.025	O	|	|	|	|	0.22
72.417	0.00	0.05	0.025	O	|	|	|	|	0.22
72.500	0.00	0.05	0.025	O	|	|	|	|	0.22
72.583	0.00	0.05	0.024	O	|	|	|	|	0.22
72.667	0.00	0.05	0.024	O	|	|	|	|	0.22
72.750	0.00	0.04	0.024	O	|	|	|	|	0.22
72.833	0.00	0.04	0.023	O	|	|	|	|	0.21
72.917	0.00	0.04	0.023	O	|	|	|	|	0.21
73.000	0.00	0.04	0.023	O	|	|	|	|	0.21
73.083	0.00	0.04	0.022	O	|	|	|	|	0.21
73.167	0.00	0.04	0.022	O	|	|	|	|	0.21
73.250	0.00	0.04	0.022	O	|	|	|	|	0.21
73.333	0.00	0.04	0.022	O	|	|	|	|	0.20
73.417	0.00	0.04	0.021	O	|	|	|	|	0.20
73.500	0.00	0.04	0.021	O	|	|	|	|	0.20
73.583	0.00	0.04	0.021	O	|	|	|	|	0.20
73.667	0.00	0.04	0.020	O	|	|	|	|	0.20
73.750	0.00	0.04	0.020	O	|	|	|	|	0.20
73.833	0.00	0.04	0.020	O	|	|	|	|	0.20
73.917	0.00	0.04	0.020	O	|	|	|	|	0.19
74.000	0.00	0.04	0.019	O	|	|	|	|	0.19
74.083	0.00	0.04	0.019	O	|	|	|	|	0.19
74.167	0.00	0.03	0.019	O	|	|	|	|	0.19
74.250	0.00	0.03	0.019	O	|	|	|	|	0.19
74.333	0.00	0.03	0.018	O	|	|	|	|	0.19

74.417	0.00	0.03	0.018	O	|	|	|	|	0.19
74.500	0.00	0.03	0.018	O	|	|	|	|	0.18
74.583	0.00	0.03	0.018	O	|	|	|	|	0.18
74.667	0.00	0.03	0.018	O	|	|	|	|	0.18
74.750	0.00	0.03	0.017	O	|	|	|	|	0.18
74.833	0.00	0.03	0.017	O	|	|	|	|	0.18
74.917	0.00	0.03	0.017	O	|	|	|	|	0.18
75.000	0.00	0.03	0.017	O	|	|	|	|	0.18
75.083	0.00	0.03	0.016	O	|	|	|	|	0.18
75.167	0.00	0.03	0.016	O	|	|	|	|	0.17
75.250	0.00	0.03	0.016	O	|	|	|	|	0.17
75.333	0.00	0.03	0.016	O	|	|	|	|	0.17
75.417	0.00	0.03	0.016	O	|	|	|	|	0.17
75.500	0.00	0.03	0.016	O	|	|	|	|	0.17
75.583	0.00	0.03	0.015	O	|	|	|	|	0.17
75.667	0.00	0.03	0.015	O	|	|	|	|	0.17
75.750	0.00	0.03	0.015	O	|	|	|	|	0.17
75.833	0.00	0.03	0.015	O	|	|	|	|	0.17
75.917	0.00	0.03	0.015	O	|	|	|	|	0.17
76.000	0.00	0.03	0.014	O	|	|	|	|	0.16
76.083	0.00	0.02	0.014	O	|	|	|	|	0.16
76.167	0.00	0.02	0.014	O	|	|	|	|	0.16
76.250	0.00	0.02	0.014	O	|	|	|	|	0.16
76.333	0.00	0.02	0.014	O	|	|	|	|	0.16
76.417	0.00	0.02	0.014	O	|	|	|	|	0.16
76.500	0.00	0.02	0.013	O	|	|	|	|	0.16
76.583	0.00	0.02	0.013	O	|	|	|	|	0.16
76.667	0.00	0.02	0.013	O	|	|	|	|	0.16
76.750	0.00	0.02	0.013	O	|	|	|	|	0.16
76.833	0.00	0.02	0.013	O	|	|	|	|	0.16
76.917	0.00	0.02	0.013	O	|	|	|	|	0.15
77.000	0.00	0.02	0.012	O	|	|	|	|	0.15
77.083	0.00	0.02	0.012	O	|	|	|	|	0.15
77.167	0.00	0.02	0.012	O	|	|	|	|	0.15
77.250	0.00	0.02	0.012	O	|	|	|	|	0.15
77.333	0.00	0.02	0.012	O	|	|	|	|	0.15
77.417	0.00	0.02	0.012	O	|	|	|	|	0.15
77.500	0.00	0.02	0.012	O	|	|	|	|	0.15
77.583	0.00	0.02	0.012	O	|	|	|	|	0.15
77.667	0.00	0.02	0.011	O	|	|	|	|	0.15
77.750	0.00	0.02	0.011	O	|	|	|	|	0.15
77.833	0.00	0.02	0.011	O	|	|	|	|	0.15
77.917	0.00	0.02	0.011	O	|	|	|	|	0.15
78.000	0.00	0.02	0.011	O	|	|	|	|	0.14
78.083	0.00	0.02	0.011	O	|	|	|	|	0.14
78.167	0.00	0.02	0.011	O	|	|	|	|	0.14
78.250	0.00	0.02	0.011	O	|	|	|	|	0.14
78.333	0.00	0.02	0.010	O	|	|	|	|	0.14
78.417	0.00	0.02	0.010	O	|	|	|	|	0.14
78.500	0.00	0.02	0.010	O	|	|	|	|	0.14
78.583	0.00	0.02	0.010	O	|	|	|	|	0.14
78.667	0.00	0.02	0.010	O	|	|	|	|	0.14
78.750	0.00	0.02	0.010	O	|	|	|	|	0.14
78.833	0.00	0.02	0.010	O	|	|	|	|	0.14
78.917	0.00	0.02	0.010	O	|	|	|	|	0.14
79.000	0.00	0.01	0.010	O	|	|	|	|	0.14
79.083	0.00	0.01	0.009	O	|	|	|	|	0.14
79.167	0.00	0.01	0.009	O	|	|	|	|	0.14
79.250	0.00	0.01	0.009	O	|	|	|	|	0.14
79.333	0.00	0.01	0.009	O	|	|	|	|	0.13
79.417	0.00	0.01	0.009	O	|	|	|	|	0.13
79.500	0.00	0.01	0.009	O	|	|	|	|	0.13
79.583	0.00	0.01	0.009	O	|	|	|	|	0.13
79.667	0.00	0.01	0.009	O	|	|	|	|	0.13
79.750	0.00	0.01	0.009	O	|	|	|	|	0.13
79.833	0.00	0.01	0.009	O	|	|	|	|	0.13
79.917	0.00	0.01	0.008	O	|	|	|	|	0.13
80.000	0.00	0.01	0.008	O	|	|	|	|	0.13
80.083	0.00	0.01	0.008	O	|	|	|	|	0.13
80.167	0.00	0.01	0.008	O	|	|	|	|	0.13
80.250	0.00	0.01	0.008	O	|	|	|	|	0.13
80.333	0.00	0.01	0.008	O	|	|	|	|	0.13
80.417	0.00	0.01	0.008	O	|	|	|	|	0.13
80.500	0.00	0.01	0.008	O	|	|	|	|	0.13
80.583	0.00	0.01	0.008	O	|	|	|	|	0.13

80.667	0.00	0.01	0.008	O	|	|	|	|	0.13
80.750	0.00	0.01	0.008	O	|	|	|	|	0.13
80.833	0.00	0.01	0.008	O	|	|	|	|	0.13
80.917	0.00	0.01	0.008	O	|	|	|	|	0.13
81.000	0.00	0.01	0.007	O	|	|	|	|	0.13
81.083	0.00	0.01	0.007	O	|	|	|	|	0.12
81.167	0.00	0.01	0.007	O	|	|	|	|	0.12
81.250	0.00	0.01	0.007	O	|	|	|	|	0.12
81.333	0.00	0.01	0.007	O	|	|	|	|	0.12
81.417	0.00	0.01	0.007	O	|	|	|	|	0.12
81.500	0.00	0.01	0.007	O	|	|	|	|	0.12
81.583	0.00	0.01	0.007	O	|	|	|	|	0.12
81.667	0.00	0.01	0.007	O	|	|	|	|	0.12
81.750	0.00	0.01	0.007	O	|	|	|	|	0.12
81.833	0.00	0.01	0.007	O	|	|	|	|	0.12
81.917	0.00	0.01	0.007	O	|	|	|	|	0.12
82.000	0.00	0.01	0.007	O	|	|	|	|	0.12
82.083	0.00	0.01	0.007	O	|	|	|	|	0.12
82.167	0.00	0.01	0.007	O	|	|	|	|	0.12
82.250	0.00	0.01	0.006	O	|	|	|	|	0.12
82.333	0.00	0.01	0.006	O	|	|	|	|	0.12
82.417	0.00	0.01	0.006	O	|	|	|	|	0.12
82.500	0.00	0.01	0.006	O	|	|	|	|	0.12
82.583	0.00	0.01	0.006	O	|	|	|	|	0.12
82.667	0.00	0.01	0.006	O	|	|	|	|	0.12
82.750	0.00	0.01	0.006	O	|	|	|	|	0.12
82.833	0.00	0.01	0.006	O	|	|	|	|	0.12
82.917	0.00	0.01	0.006	O	|	|	|	|	0.12
83.000	0.00	0.01	0.006	O	|	|	|	|	0.12
83.083	0.00	0.01	0.006	O	|	|	|	|	0.12
83.167	0.00	0.01	0.006	O	|	|	|	|	0.12
83.250	0.00	0.01	0.006	O	|	|	|	|	0.12
83.333	0.00	0.01	0.006	O	|	|	|	|	0.12
83.417	0.00	0.01	0.006	O	|	|	|	|	0.12
83.500	0.00	0.01	0.006	O	|	|	|	|	0.12
83.583	0.00	0.01	0.006	O	|	|	|	|	0.11
83.667	0.00	0.01	0.006	O	|	|	|	|	0.11
83.750	0.00	0.01	0.006	O	|	|	|	|	0.11
83.833	0.00	0.01	0.006	O	|	|	|	|	0.11
83.917	0.00	0.01	0.005	O	|	|	|	|	0.11
84.000	0.00	0.01	0.005	O	|	|	|	|	0.11
84.083	0.00	0.01	0.005	O	|	|	|	|	0.11
84.167	0.00	0.01	0.005	O	|	|	|	|	0.11
84.250	0.00	0.01	0.005	O	|	|	|	|	0.11
84.333	0.00	0.01	0.005	O	|	|	|	|	0.11
84.417	0.00	0.01	0.005	O	|	|	|	|	0.11
84.500	0.00	0.01	0.005	O	|	|	|	|	0.11
84.583	0.00	0.01	0.005	O	|	|	|	|	0.11
84.667	0.00	0.01	0.005	O	|	|	|	|	0.11
84.750	0.00	0.01	0.005	O	|	|	|	|	0.11
84.833	0.00	0.01	0.005	O	|	|	|	|	0.11
84.917	0.00	0.01	0.005	O	|	|	|	|	0.11
85.000	0.00	0.01	0.005	O	|	|	|	|	0.11
85.083	0.00	0.01	0.005	O	|	|	|	|	0.11
85.167	0.00	0.01	0.005	O	|	|	|	|	0.11
85.250	0.00	0.00	0.005	O	|	|	|	|	0.11
85.333	0.00	0.00	0.005	O	|	|	|	|	0.11
85.417	0.00	0.00	0.005	O	|	|	|	|	0.11
85.500	0.00	0.00	0.005	O	|	|	|	|	0.11
85.583	0.00	0.00	0.005	O	|	|	|	|	0.11
85.667	0.00	0.00	0.005	O	|	|	|	|	0.11
85.750	0.00	0.00	0.005	O	|	|	|	|	0.11
85.833	0.00	0.00	0.005	O	|	|	|	|	0.11
85.917	0.00	0.00	0.005	O	|	|	|	|	0.11
86.000	0.00	0.00	0.005	O	|	|	|	|	0.11
86.083	0.00	0.00	0.005	O	|	|	|	|	0.11
86.167	0.00	0.00	0.005	O	|	|	|	|	0.11
86.250	0.00	0.00	0.004	O	|	|	|	|	0.11
86.333	0.00	0.00	0.004	O	|	|	|	|	0.11
86.417	0.00	0.00	0.004	O	|	|	|	|	0.11
86.500	0.00	0.00	0.004	O	|	|	|	|	0.11
86.583	0.00	0.00	0.004	O	|	|	|	|	0.11
86.667	0.00	0.00	0.004	O	|	|	|	|	0.11
86.750	0.00	0.00	0.004	O	|	|	|	|	0.11
86.833	0.00	0.00	0.004	O	|	|	|	|	0.11

86.917	0.00	0.00	0.004	O	|	|	|	|	0.11
87.000	0.00	0.00	0.004	O	|	|	|	|	0.11
87.083	0.00	0.00	0.004	O	|	|	|	|	0.11
87.167	0.00	0.00	0.004	O	|	|	|	|	0.11
87.250	0.00	0.00	0.004	O	|	|	|	|	0.11
87.333	0.00	0.00	0.004	O	|	|	|	|	0.11
87.417	0.00	0.00	0.004	O	|	|	|	|	0.11
87.500	0.00	0.00	0.004	O	|	|	|	|	0.11
87.583	0.00	0.00	0.004	O	|	|	|	|	0.11
87.667	0.00	0.00	0.004	O	|	|	|	|	0.11
87.750	0.00	0.00	0.004	O	|	|	|	|	0.11
87.833	0.00	0.00	0.004	O	|	|	|	|	0.11
87.917	0.00	0.00	0.004	O	|	|	|	|	0.11
88.000	0.00	0.00	0.004	O	|	|	|	|	0.11
88.083	0.00	0.00	0.004	O	|	|	|	|	0.11
88.167	0.00	0.00	0.004	O	|	|	|	|	0.11
88.250	0.00	0.00	0.004	O	|	|	|	|	0.11
88.333	0.00	0.00	0.004	O	|	|	|	|	0.10
88.417	0.00	0.00	0.004	O	|	|	|	|	0.10
88.500	0.00	0.00	0.004	O	|	|	|	|	0.10
88.583	0.00	0.00	0.004	O	|	|	|	|	0.10
88.667	0.00	0.00	0.004	O	|	|	|	|	0.10
88.750	0.00	0.00	0.004	O	|	|	|	|	0.10
88.833	0.00	0.00	0.004	O	|	|	|	|	0.10
88.917	0.00	0.00	0.004	O	|	|	|	|	0.10
89.000	0.00	0.00	0.004	O	|	|	|	|	0.10
89.083	0.00	0.00	0.004	O	|	|	|	|	0.10
89.167	0.00	0.00	0.004	O	|	|	|	|	0.10
89.250	0.00	0.00	0.004	O	|	|	|	|	0.10
89.333	0.00	0.00	0.004	O	|	|	|	|	0.10
89.417	0.00	0.00	0.004	O	|	|	|	|	0.10
89.500	0.00	0.00	0.004	O	|	|	|	|	0.10
89.583	0.00	0.00	0.004	O	|	|	|	|	0.10
89.667	0.00	0.00	0.004	O	|	|	|	|	0.10
89.750	0.00	0.00	0.004	O	|	|	|	|	0.10
89.833	0.00	0.00	0.004	O	|	|	|	|	0.10
89.917	0.00	0.00	0.004	O	|	|	|	|	0.10
90.000	0.00	0.00	0.004	O	|	|	|	|	0.10
90.083	0.00	0.00	0.004	O	|	|	|	|	0.10
90.167	0.00	0.00	0.004	O	|	|	|	|	0.10
90.250	0.00	0.00	0.003	O	|	|	|	|	0.10
90.333	0.00	0.00	0.003	O	|	|	|	|	0.10
90.417	0.00	0.00	0.003	O	|	|	|	|	0.10
90.500	0.00	0.00	0.003	O	|	|	|	|	0.10
90.583	0.00	0.00	0.003	O	|	|	|	|	0.10
90.667	0.00	0.00	0.003	O	|	|	|	|	0.10
90.750	0.00	0.00	0.003	O	|	|	|	|	0.10
90.833	0.00	0.00	0.003	O	|	|	|	|	0.10
90.917	0.00	0.00	0.003	O	|	|	|	|	0.10
91.000	0.00	0.00	0.003	O	|	|	|	|	0.10
91.083	0.00	0.00	0.003	O	|	|	|	|	0.10
91.167	0.00	0.00	0.003	O	|	|	|	|	0.10
91.250	0.00	0.00	0.003	O	|	|	|	|	0.10
91.333	0.00	0.00	0.003	O	|	|	|	|	0.10
91.417	0.00	0.00	0.003	O	|	|	|	|	0.10
91.500	0.00	0.00	0.003	O	|	|	|	|	0.10
91.583	0.00	0.00	0.003	O	|	|	|	|	0.10
91.667	0.00	0.00	0.003	O	|	|	|	|	0.10
91.750	0.00	0.00	0.003	O	|	|	|	|	0.10
91.833	0.00	0.00	0.003	O	|	|	|	|	0.10
91.917	0.00	0.00	0.003	O	|	|	|	|	0.10
92.000	0.00	0.00	0.003	O	|	|	|	|	0.10
92.083	0.00	0.00	0.003	O	|	|	|	|	0.10
92.167	0.00	0.00	0.003	O	|	|	|	|	0.10
92.250	0.00	0.00	0.003	O	|	|	|	|	0.10
92.333	0.00	0.00	0.003	O	|	|	|	|	0.10
92.417	0.00	0.00	0.003	O	|	|	|	|	0.10
92.500	0.00	0.00	0.003	O	|	|	|	|	0.10
92.583	0.00	0.00	0.003	O	|	|	|	|	0.10
92.667	0.00	0.00	0.003	O	|	|	|	|	0.10
92.750	0.00	0.00	0.003	O	|	|	|	|	0.10
92.833	0.00	0.00	0.003	O	|	|	|	|	0.10
92.917	0.00	0.00	0.003	O	|	|	|	|	0.10
93.000	0.00	0.00	0.003	O	|	|	|	|	0.10
93.083	0.00	0.00	0.003	O	|	|	|	|	0.10

93.167	0.00	0.00	0.003	O	|	|	|	0.10
93.250	0.00	0.00	0.003	O	|	|	|	0.10
93.333	0.00	0.00	0.003	O	|	|	|	0.10
93.417	0.00	0.00	0.003	O	|	|	|	0.10
93.500	0.00	0.00	0.003	O	|	|	|	0.10
93.583	0.00	0.00	0.003	O	|	|	|	0.10
93.667	0.00	0.00	0.003	O	|	|	|	0.10
93.750	0.00	0.00	0.003	O	|	|	|	0.10
93.833	0.00	0.00	0.003	O	|	|	|	0.10
93.917	0.00	0.00	0.003	O	|	|	|	0.10
94.000	0.00	0.00	0.003	O	|	|	|	0.10
94.083	0.00	0.00	0.003	O	|	|	|	0.10
94.167	0.00	0.00	0.003	O	|	|	|	0.10
94.250	0.00	0.00	0.003	O	|	|	|	0.10
94.333	0.00	0.00	0.003	O	|	|	|	0.10
94.417	0.00	0.00	0.003	O	|	|	|	0.10

Remaining water in basin = 0.00 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1133
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 33.476 (CFS)
Total volume = 7.012 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

BASIN ROUTING
DMA A
PROPOSED CONDITIONS
100-YEAR 6-HOUR

FLOOD HYDROGRAPH ROUTING PROGRAM
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Study date: 10/22/14

14-0213 SHOPOFF
BASIN ROUTING
DMA A
100-YEAR 6-HOUR

Program License Serial Number 4010

******************** HYDROGRAPH INFORMATION **********************

From study/file name: APROP6100.rte
****************************HYDROGRAPH DATA****************************
Number of intervals = 78
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 74.875 (CFS)
Total volume = 9.722 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 78
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.100	0.003	0.001	0.003	0.003
1.000	0.163	0.342	0.162	0.164
2.000	0.741	0.497	0.739	0.743
3.000	1.753	0.614	1.751	1.755
3.400	2.222	0.656	2.220	2.224
4.000	2.978	2.841	2.968	2.988
4.400	3.517	3.817	3.504	3.530
5.000	4.378	12.529	4.335	4.421
5.200	4.679	15.300	4.626	4.732
5.500	5.144	23.007	5.065	5.223
6.000	5.955	42.225	5.810	6.100
6.500	6.811	66.515	6.582	7.040
7.000	7.713	94.837	7.386	8.040
7.500	8.662	126.640	8.226	9.098
8.000	9.656	161.558	9.100	10.212
8.500	10.697	199.324	10.011	11.383
9.000	11.786	239.733	10.960	12.612
9.500	12.922	282.618	11.949	13.895

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 18.7 37.44 56.16 74.87	Depth (Ft.)
0.083	0.83	0.00	0.003	O	0.10
0.167	3.75	0.03	0.019	OI	0.19
0.250	5.48	0.10	0.050	O I	0.36
0.333	6.06	0.18	0.089	O I	0.58
0.417	6.24	0.27	0.129	O I	0.81
0.500	6.60	0.34	0.172	O I	1.01
0.583	7.57	0.36	0.218	O I	1.10
0.667	7.86	0.37	0.269	O I	1.18
0.750	7.97	0.38	0.320	O I	1.27
0.833	8.00	0.40	0.373	O I	1.36
0.917	8.01	0.41	0.425	O I	1.45
1.000	8.31	0.43	0.478	O I	1.55
1.083	9.26	0.44	0.536	O I	1.65
1.167	9.54	0.46	0.598	O I	1.75
1.250	9.64	0.48	0.660	O I	1.86
1.333	9.67	0.49	0.724	O I	1.97
1.417	9.69	0.50	0.787	O I	2.05
1.500	9.69	0.51	0.850	O I	2.11
1.583	9.69	0.52	0.913	O I	2.17
1.667	9.69	0.52	0.976	O I	2.23
1.750	9.69	0.53	1.040	O I	2.29
1.833	9.69	0.54	1.103	O I	2.36
1.917	9.69	0.55	1.166	O I	2.42
2.000	9.99	0.55	1.230	O I	2.48
2.083	10.63	0.56	1.297	O I	2.55
2.167	10.27	0.57	1.365	O I	2.62
2.250	11.04	0.58	1.434	O I	2.69
2.333	11.24	0.59	1.507	O I	2.76
2.417	11.33	0.59	1.581	O I	2.83
2.500	11.35	0.60	1.655	O I	2.90
2.583	11.36	0.61	1.729	O I	2.98
2.667	11.37	0.62	1.803	O I	3.04
2.750	11.67	0.63	1.878	O I	3.11
2.833	12.61	0.63	1.957	O I	3.17
2.917	12.89	0.64	2.040	O I	3.25
3.000	13.00	0.65	2.125	O I	3.32
3.083	13.03	0.65	2.210	O I	3.39
3.167	13.34	0.87	2.296	O I	3.46
3.250	14.28	1.12	2.384	O I	3.53
3.333	14.57	1.39	2.475	O I	3.60
3.417	14.97	1.65	2.566	O I	3.67
3.500	16.24	1.93	2.661	O I	3.75
3.583	17.78	2.22	2.764	O I	3.83
3.667	19.12	2.54	2.875	|O I	3.92
3.750	19.83	2.86	2.990	|O I	4.01
3.833	20.92	3.08	3.110	|O I	4.10
3.917	21.55	3.31	3.234	|O |I	4.19
4.000	22.61	3.54	3.363	|O |I	4.29
4.083	23.23	3.78	3.496	|O |I	4.38
4.167	24.59	4.96	3.630	| O | I	4.48
4.250	26.15	6.34	3.766	| O | I	4.57
4.333	27.79	7.73	3.903	| O | I	4.67
4.417	29.45	9.13	4.042	| O | I	4.77
4.500	30.83	10.55	4.182	| O | I	4.86
4.583	31.56	11.94	4.320	| O | I	4.96
4.667	32.95	13.24	4.455	| O | I	5.05
4.750	34.52	14.50	4.592	| O | I	5.14
4.833	35.87	16.13	4.729	| O | I	5.23
4.917	36.59	18.30	4.860	| O | I	5.32
5.000	37.98	20.35	4.984	| O I	5.40
5.083	40.75	22.40	5.108	| O |I	5.48
5.167	47.37	25.43	5.246	| O | I |	5.56
5.250	54.53	29.28	5.409	| O | I |	5.66
5.333	60.24	33.52	5.588	| O | I |	5.77
5.417	66.09	37.99	5.776	| O | I |	5.89
5.500	74.87	43.02	5.983	| O | I	6.02
5.583	74.17	48.63	6.181	| O | I	6.13

5.667	39.55	50.09	6.232	|	|	I O	|	6.16
5.750	19.90	46.47	6.104	|	I	| O	|	6.09
5.833	10.39	41.09	5.907	| I	|	|O	|	5.97
5.917	6.05	36.13	5.698	| I	|	O|	|	5.84
6.000	3.12	31.37	5.497	|I	| O	|	|	5.72
6.083	2.35	27.05	5.315	|I	| O	|	|	5.61
6.167	0.71	23.20	5.152	I	|O	|	|	5.51
6.250	0.25	20.69	5.004	I	O	|	|	5.41
6.333	0.07	18.48	4.871	I	O|	|	|	5.32
6.417	0.03	16.49	4.751	I	O|	|	|	5.25
6.500	0.01	14.96	4.642	I	O |	|	|	5.18
6.583	0.00	14.04	4.543	I	O |	|	|	5.11
6.667	0.00	13.18	4.449	I	O |	|	|	5.05
6.750	0.00	12.36	4.361	I	O |	|	|	4.99
6.833	0.00	11.52	4.279	I	O |	|	|	4.93
6.917	0.00	10.75	4.202	I	O |	|	|	4.88
7.000	0.00	10.02	4.130	I	O |	|	|	4.83
7.083	0.00	9.35	4.064	I	O |	|	|	4.78
7.167	0.00	8.72	4.001	I	O |	|	|	4.74
7.250	0.00	8.13	3.943	I	O |	|	|	4.70
7.333	0.00	7.58	3.889	I	O |	|	|	4.66
7.417	0.00	7.07	3.839	I	O |	|	|	4.62
7.500	0.00	6.60	3.792	I	O |	|	|	4.59
7.583	0.00	6.15	3.748	I	O |	|	|	4.56
7.667	0.00	5.74	3.707	I	O |	|	|	4.53
7.750	0.00	5.35	3.669	I	O |	|	|	4.51
7.833	0.00	4.99	3.633	I	O |	|	|	4.48
7.917	0.00	4.66	3.600	IO	|	|	|	4.46
8.000	0.00	4.34	3.569	IO	|	|	|	4.44
8.083	0.00	4.05	3.540	IO	|	|	|	4.42
8.167	0.00	3.81	3.513	IO	|	|	|	4.40
8.250	0.00	3.76	3.487	IO	|	|	|	4.38
8.333	0.00	3.72	3.461	IO	|	|	|	4.36
8.417	0.00	3.67	3.436	IO	|	|	|	4.34
8.500	0.00	3.62	3.411	IO	|	|	|	4.32
8.583	0.00	3.58	3.386	IO	|	|	|	4.30
8.667	0.00	3.53	3.361	IO	|	|	|	4.28
8.750	0.00	3.49	3.337	IO	|	|	|	4.27
8.833	0.00	3.45	3.313	IO	|	|	|	4.25
8.917	0.00	3.41	3.290	IO	|	|	|	4.23
9.000	0.00	3.36	3.266	IO	|	|	|	4.21
9.083	0.00	3.32	3.243	IO	|	|	|	4.20
9.167	0.00	3.28	3.221	IO	|	|	|	4.18
9.250	0.00	3.24	3.198	IO	|	|	|	4.16
9.333	0.00	3.20	3.176	IO	|	|	|	4.15
9.417	0.00	3.16	3.154	IO	|	|	|	4.13
9.500	0.00	3.12	3.132	IO	|	|	|	4.11
9.583	0.00	3.08	3.111	IO	|	|	|	4.10
9.667	0.00	3.04	3.090	IO	|	|	|	4.08
9.750	0.00	3.01	3.069	IO	|	|	|	4.07
9.833	0.00	2.97	3.049	IO	|	|	|	4.05
9.917	0.00	2.93	3.028	IO	|	|	|	4.04
10.000	0.00	2.90	3.008	IO	|	|	|	4.02
10.083	0.00	2.86	2.988	IO	|	|	|	4.01
10.167	0.00	2.81	2.969	IO	|	|	|	3.99
10.250	0.00	2.76	2.950	IO	|	|	|	3.98
10.333	0.00	2.70	2.931	IO	|	|	|	3.96
10.417	0.00	2.65	2.912	IO	|	|	|	3.95
10.500	0.00	2.60	2.894	IO	|	|	|	3.93
10.583	0.00	2.55	2.877	IO	|	|	|	3.92
10.667	0.00	2.50	2.859	IO	|	|	|	3.91
10.750	0.00	2.45	2.842	IO	|	|	|	3.89
10.833	0.00	2.40	2.825	IO	|	|	|	3.88
10.917	0.00	2.35	2.809	IO	|	|	|	3.87
11.000	0.00	2.31	2.793	O	|	|	|	3.85
11.083	0.00	2.26	2.777	O	|	|	|	3.84
11.167	0.00	2.22	2.762	O	|	|	|	3.83
11.250	0.00	2.17	2.747	O	|	|	|	3.82
11.333	0.00	2.13	2.732	O	|	|	|	3.80
11.417	0.00	2.09	2.717	O	|	|	|	3.79
11.500	0.00	2.05	2.703	O	|	|	|	3.78
11.583	0.00	2.01	2.689	O	|	|	|	3.77
11.667	0.00	1.97	2.676	O	|	|	|	3.76
11.750	0.00	1.93	2.662	O	|	|	|	3.75
11.833	0.00	1.89	2.649	O	|	|	|	3.74

11.917	0.00	1.85	2.636	O	|	|	|	|	3.73
12.000	0.00	1.82	2.623	O	|	|	|	|	3.72
12.083	0.00	1.78	2.611	O	|	|	|	|	3.71
12.167	0.00	1.75	2.599	O	|	|	|	|	3.70
12.250	0.00	1.71	2.587	O	|	|	|	|	3.69
12.333	0.00	1.68	2.575	O	|	|	|	|	3.68
12.417	0.00	1.64	2.564	O	|	|	|	|	3.67
12.500	0.00	1.61	2.553	O	|	|	|	|	3.66
12.583	0.00	1.58	2.542	O	|	|	|	|	3.65
12.667	0.00	1.55	2.531	O	|	|	|	|	3.65
12.750	0.00	1.52	2.520	O	|	|	|	|	3.64
12.833	0.00	1.49	2.510	O	|	|	|	|	3.63
12.917	0.00	1.46	2.500	O	|	|	|	|	3.62
13.000	0.00	1.43	2.490	O	|	|	|	|	3.61
13.083	0.00	1.40	2.480	O	|	|	|	|	3.60
13.167	0.00	1.37	2.471	O	|	|	|	|	3.60
13.250	0.00	1.35	2.461	O	|	|	|	|	3.59
13.333	0.00	1.32	2.452	O	|	|	|	|	3.58
13.417	0.00	1.29	2.443	O	|	|	|	|	3.58
13.500	0.00	1.27	2.434	O	|	|	|	|	3.57
13.583	0.00	1.24	2.426	O	|	|	|	|	3.56
13.667	0.00	1.22	2.417	O	|	|	|	|	3.55
13.750	0.00	1.20	2.409	O	|	|	|	|	3.55
13.833	0.00	1.17	2.401	O	|	|	|	|	3.54
13.917	0.00	1.15	2.393	O	|	|	|	|	3.54
14.000	0.00	1.13	2.385	O	|	|	|	|	3.53
14.083	0.00	1.10	2.377	O	|	|	|	|	3.52
14.167	0.00	1.08	2.370	O	|	|	|	|	3.52
14.250	0.00	1.06	2.362	O	|	|	|	|	3.51
14.333	0.00	1.04	2.355	O	|	|	|	|	3.51
14.417	0.00	1.02	2.348	O	|	|	|	|	3.50
14.500	0.00	1.00	2.341	O	|	|	|	|	3.49
14.583	0.00	0.98	2.334	O	|	|	|	|	3.49
14.667	0.00	0.96	2.327	O	|	|	|	|	3.48
14.750	0.00	0.94	2.321	O	|	|	|	|	3.48
14.833	0.00	0.92	2.314	O	|	|	|	|	3.47
14.917	0.00	0.90	2.308	O	|	|	|	|	3.47
15.000	0.00	0.89	2.302	O	|	|	|	|	3.46
15.083	0.00	0.87	2.296	O	|	|	|	|	3.46
15.167	0.00	0.85	2.290	O	|	|	|	|	3.45
15.250	0.00	0.84	2.284	O	|	|	|	|	3.45
15.333	0.00	0.82	2.278	O	|	|	|	|	3.44
15.417	0.00	0.80	2.273	O	|	|	|	|	3.44
15.500	0.00	0.79	2.267	O	|	|	|	|	3.44
15.583	0.00	0.77	2.262	O	|	|	|	|	3.43
15.667	0.00	0.76	2.257	O	|	|	|	|	3.43
15.750	0.00	0.74	2.252	O	|	|	|	|	3.42
15.833	0.00	0.73	2.247	O	|	|	|	|	3.42
15.917	0.00	0.71	2.242	O	|	|	|	|	3.42
16.000	0.00	0.70	2.237	O	|	|	|	|	3.41
16.083	0.00	0.68	2.232	O	|	|	|	|	3.41
16.167	0.00	0.67	2.227	O	|	|	|	|	3.40
16.250	0.00	0.66	2.223	O	|	|	|	|	3.40
16.333	0.00	0.66	2.218	O	|	|	|	|	3.40
16.417	0.00	0.66	2.214	O	|	|	|	|	3.39
16.500	0.00	0.65	2.209	O	|	|	|	|	3.39
16.583	0.00	0.65	2.205	O	|	|	|	|	3.39
16.667	0.00	0.65	2.200	O	|	|	|	|	3.38
16.750	0.00	0.65	2.196	O	|	|	|	|	3.38
16.833	0.00	0.65	2.191	O	|	|	|	|	3.37
16.917	0.00	0.65	2.187	O	|	|	|	|	3.37
17.000	0.00	0.65	2.182	O	|	|	|	|	3.37
17.083	0.00	0.65	2.178	O	|	|	|	|	3.36
17.167	0.00	0.65	2.173	O	|	|	|	|	3.36
17.250	0.00	0.65	2.169	O	|	|	|	|	3.35
17.333	0.00	0.65	2.164	O	|	|	|	|	3.35
17.417	0.00	0.65	2.160	O	|	|	|	|	3.35
17.500	0.00	0.65	2.155	O	|	|	|	|	3.34
17.583	0.00	0.65	2.151	O	|	|	|	|	3.34
17.667	0.00	0.65	2.146	O	|	|	|	|	3.34
17.750	0.00	0.65	2.142	O	|	|	|	|	3.33
17.833	0.00	0.65	2.137	O	|	|	|	|	3.33
17.917	0.00	0.65	2.133	O	|	|	|	|	3.32
18.000	0.00	0.65	2.128	O	|	|	|	|	3.32
18.083	0.00	0.65	2.124	O	|	|	|	|	3.32

18.167	0.00	0.65	2.120	O	|	|	|	|	3.31
18.250	0.00	0.65	2.115	O	|	|	|	|	3.31
18.333	0.00	0.65	2.111	O	|	|	|	|	3.31
18.417	0.00	0.65	2.106	O	|	|	|	|	3.30
18.500	0.00	0.65	2.102	O	|	|	|	|	3.30
18.583	0.00	0.64	2.097	O	|	|	|	|	3.29
18.667	0.00	0.64	2.093	O	|	|	|	|	3.29
18.750	0.00	0.64	2.088	O	|	|	|	|	3.29
18.833	0.00	0.64	2.084	O	|	|	|	|	3.28
18.917	0.00	0.64	2.080	O	|	|	|	|	3.28
19.000	0.00	0.64	2.075	O	|	|	|	|	3.27
19.083	0.00	0.64	2.071	O	|	|	|	|	3.27
19.167	0.00	0.64	2.066	O	|	|	|	|	3.27
19.250	0.00	0.64	2.062	O	|	|	|	|	3.26
19.333	0.00	0.64	2.057	O	|	|	|	|	3.26
19.417	0.00	0.64	2.053	O	|	|	|	|	3.26
19.500	0.00	0.64	2.049	O	|	|	|	|	3.25
19.583	0.00	0.64	2.044	O	|	|	|	|	3.25
19.667	0.00	0.64	2.040	O	|	|	|	|	3.24
19.750	0.00	0.64	2.035	O	|	|	|	|	3.24
19.833	0.00	0.64	2.031	O	|	|	|	|	3.24
19.917	0.00	0.64	2.027	O	|	|	|	|	3.23
20.000	0.00	0.64	2.022	O	|	|	|	|	3.23
20.083	0.00	0.64	2.018	O	|	|	|	|	3.23
20.167	0.00	0.64	2.013	O	|	|	|	|	3.22
20.250	0.00	0.64	2.009	O	|	|	|	|	3.22
20.333	0.00	0.64	2.005	O	|	|	|	|	3.21
20.417	0.00	0.64	2.000	O	|	|	|	|	3.21
20.500	0.00	0.64	1.996	O	|	|	|	|	3.21
20.583	0.00	0.64	1.991	O	|	|	|	|	3.20
20.667	0.00	0.63	1.987	O	|	|	|	|	3.20
20.750	0.00	0.63	1.983	O	|	|	|	|	3.20
20.833	0.00	0.63	1.978	O	|	|	|	|	3.19
20.917	0.00	0.63	1.974	O	|	|	|	|	3.19
21.000	0.00	0.63	1.970	O	|	|	|	|	3.18
21.083	0.00	0.63	1.965	O	|	|	|	|	3.18
21.167	0.00	0.63	1.961	O	|	|	|	|	3.18
21.250	0.00	0.63	1.957	O	|	|	|	|	3.17
21.333	0.00	0.63	1.952	O	|	|	|	|	3.17
21.417	0.00	0.63	1.948	O	|	|	|	|	3.17
21.500	0.00	0.63	1.944	O	|	|	|	|	3.16
21.583	0.00	0.63	1.939	O	|	|	|	|	3.16
21.667	0.00	0.63	1.935	O	|	|	|	|	3.16
21.750	0.00	0.63	1.930	O	|	|	|	|	3.15
21.833	0.00	0.63	1.926	O	|	|	|	|	3.15
21.917	0.00	0.63	1.922	O	|	|	|	|	3.14
22.000	0.00	0.63	1.917	O	|	|	|	|	3.14
22.083	0.00	0.63	1.913	O	|	|	|	|	3.14
22.167	0.00	0.63	1.909	O	|	|	|	|	3.13
22.250	0.00	0.63	1.905	O	|	|	|	|	3.13
22.333	0.00	0.63	1.900	O	|	|	|	|	3.13
22.417	0.00	0.63	1.896	O	|	|	|	|	3.12
22.500	0.00	0.63	1.892	O	|	|	|	|	3.12
22.583	0.00	0.63	1.887	O	|	|	|	|	3.11
22.667	0.00	0.63	1.883	O	|	|	|	|	3.11
22.750	0.00	0.63	1.879	O	|	|	|	|	3.11
22.833	0.00	0.62	1.874	O	|	|	|	|	3.10
22.917	0.00	0.62	1.870	O	|	|	|	|	3.10
23.000	0.00	0.62	1.866	O	|	|	|	|	3.10
23.083	0.00	0.62	1.861	O	|	|	|	|	3.09
23.167	0.00	0.62	1.857	O	|	|	|	|	3.09
23.250	0.00	0.62	1.853	O	|	|	|	|	3.09
23.333	0.00	0.62	1.849	O	|	|	|	|	3.08
23.417	0.00	0.62	1.844	O	|	|	|	|	3.08
23.500	0.00	0.62	1.840	O	|	|	|	|	3.07
23.583	0.00	0.62	1.836	O	|	|	|	|	3.07
23.667	0.00	0.62	1.831	O	|	|	|	|	3.07
23.750	0.00	0.62	1.827	O	|	|	|	|	3.06
23.833	0.00	0.62	1.823	O	|	|	|	|	3.06
23.917	0.00	0.62	1.819	O	|	|	|	|	3.06
24.000	0.00	0.62	1.814	O	|	|	|	|	3.05
24.083	0.00	0.62	1.810	O	|	|	|	|	3.05
24.167	0.00	0.62	1.806	O	|	|	|	|	3.05
24.250	0.00	0.62	1.802	O	|	|	|	|	3.04
24.333	0.00	0.62	1.797	O	|	|	|	|	3.04

24.417	0.00	0.62	1.793	O	|	|	|	|	3.03
24.500	0.00	0.62	1.789	O	|	|	|	|	3.03
24.583	0.00	0.62	1.785	O	|	|	|	|	3.03
24.667	0.00	0.62	1.780	O	|	|	|	|	3.02
24.750	0.00	0.62	1.776	O	|	|	|	|	3.02
24.833	0.00	0.62	1.772	O	|	|	|	|	3.02
24.917	0.00	0.62	1.768	O	|	|	|	|	3.01
25.000	0.00	0.61	1.763	O	|	|	|	|	3.01
25.083	0.00	0.61	1.759	O	|	|	|	|	3.01
25.167	0.00	0.61	1.755	O	|	|	|	|	3.00
25.250	0.00	0.61	1.751	O	|	|	|	|	3.00
25.333	0.00	0.61	1.746	O	|	|	|	|	2.99
25.417	0.00	0.61	1.742	O	|	|	|	|	2.99
25.500	0.00	0.61	1.738	O	|	|	|	|	2.99
25.583	0.00	0.61	1.734	O	|	|	|	|	2.98
25.667	0.00	0.61	1.730	O	|	|	|	|	2.98
25.750	0.00	0.61	1.725	O	|	|	|	|	2.97
25.833	0.00	0.61	1.721	O	|	|	|	|	2.97
25.917	0.00	0.61	1.717	O	|	|	|	|	2.96
26.000	0.00	0.61	1.713	O	|	|	|	|	2.96
26.083	0.00	0.61	1.709	O	|	|	|	|	2.96
26.167	0.00	0.61	1.704	O	|	|	|	|	2.95
26.250	0.00	0.61	1.700	O	|	|	|	|	2.95
26.333	0.00	0.61	1.696	O	|	|	|	|	2.94
26.417	0.00	0.61	1.692	O	|	|	|	|	2.94
26.500	0.00	0.61	1.688	O	|	|	|	|	2.94
26.583	0.00	0.61	1.683	O	|	|	|	|	2.93
26.667	0.00	0.61	1.679	O	|	|	|	|	2.93
26.750	0.00	0.60	1.675	O	|	|	|	|	2.92
26.833	0.00	0.60	1.671	O	|	|	|	|	2.92
26.917	0.00	0.60	1.667	O	|	|	|	|	2.91
27.000	0.00	0.60	1.663	O	|	|	|	|	2.91
27.083	0.00	0.60	1.658	O	|	|	|	|	2.91
27.167	0.00	0.60	1.654	O	|	|	|	|	2.90
27.250	0.00	0.60	1.650	O	|	|	|	|	2.90
27.333	0.00	0.60	1.646	O	|	|	|	|	2.89
27.417	0.00	0.60	1.642	O	|	|	|	|	2.89
27.500	0.00	0.60	1.638	O	|	|	|	|	2.89
27.583	0.00	0.60	1.634	O	|	|	|	|	2.88
27.667	0.00	0.60	1.629	O	|	|	|	|	2.88
27.750	0.00	0.60	1.625	O	|	|	|	|	2.87
27.833	0.00	0.60	1.621	O	|	|	|	|	2.87
27.917	0.00	0.60	1.617	O	|	|	|	|	2.87
28.000	0.00	0.60	1.613	O	|	|	|	|	2.86
28.083	0.00	0.60	1.609	O	|	|	|	|	2.86
28.167	0.00	0.60	1.605	O	|	|	|	|	2.85
28.250	0.00	0.60	1.601	O	|	|	|	|	2.85
28.333	0.00	0.60	1.597	O	|	|	|	|	2.85
28.417	0.00	0.60	1.592	O	|	|	|	|	2.84
28.500	0.00	0.59	1.588	O	|	|	|	|	2.84
28.583	0.00	0.59	1.584	O	|	|	|	|	2.83
28.667	0.00	0.59	1.580	O	|	|	|	|	2.83
28.750	0.00	0.59	1.576	O	|	|	|	|	2.83
28.833	0.00	0.59	1.572	O	|	|	|	|	2.82
28.917	0.00	0.59	1.568	O	|	|	|	|	2.82
29.000	0.00	0.59	1.564	O	|	|	|	|	2.81
29.083	0.00	0.59	1.560	O	|	|	|	|	2.81
29.167	0.00	0.59	1.556	O	|	|	|	|	2.80
29.250	0.00	0.59	1.552	O	|	|	|	|	2.80
29.333	0.00	0.59	1.548	O	|	|	|	|	2.80
29.417	0.00	0.59	1.543	O	|	|	|	|	2.79
29.500	0.00	0.59	1.539	O	|	|	|	|	2.79
29.583	0.00	0.59	1.535	O	|	|	|	|	2.78
29.667	0.00	0.59	1.531	O	|	|	|	|	2.78
29.750	0.00	0.59	1.527	O	|	|	|	|	2.78
29.833	0.00	0.59	1.523	O	|	|	|	|	2.77
29.917	0.00	0.59	1.519	O	|	|	|	|	2.77
30.000	0.00	0.59	1.515	O	|	|	|	|	2.76
30.083	0.00	0.59	1.511	O	|	|	|	|	2.76
30.167	0.00	0.59	1.507	O	|	|	|	|	2.76
30.250	0.00	0.59	1.503	O	|	|	|	|	2.75
30.333	0.00	0.58	1.499	O	|	|	|	|	2.75
30.417	0.00	0.58	1.495	O	|	|	|	|	2.74
30.500	0.00	0.58	1.491	O	|	|	|	|	2.74
30.583	0.00	0.58	1.487	O	|	|	|	|	2.74

30.667	0.00	0.58	1.483	O	|	|	|	|	2.73
30.750	0.00	0.58	1.479	O	|	|	|	|	2.73
30.833	0.00	0.58	1.475	O	|	|	|	|	2.73
30.917	0.00	0.58	1.471	O	|	|	|	|	2.72
31.000	0.00	0.58	1.467	O	|	|	|	|	2.72
31.083	0.00	0.58	1.463	O	|	|	|	|	2.71
31.167	0.00	0.58	1.459	O	|	|	|	|	2.71
31.250	0.00	0.58	1.455	O	|	|	|	|	2.71
31.333	0.00	0.58	1.451	O	|	|	|	|	2.70
31.417	0.00	0.58	1.447	O	|	|	|	|	2.70
31.500	0.00	0.58	1.443	O	|	|	|	|	2.69
31.583	0.00	0.58	1.439	O	|	|	|	|	2.69
31.667	0.00	0.58	1.435	O	|	|	|	|	2.69
31.750	0.00	0.58	1.431	O	|	|	|	|	2.68
31.833	0.00	0.58	1.427	O	|	|	|	|	2.68
31.917	0.00	0.58	1.423	O	|	|	|	|	2.67
32.000	0.00	0.58	1.419	O	|	|	|	|	2.67
32.083	0.00	0.57	1.415	O	|	|	|	|	2.67
32.167	0.00	0.57	1.411	O	|	|	|	|	2.66
32.250	0.00	0.57	1.407	O	|	|	|	|	2.66
32.333	0.00	0.57	1.403	O	|	|	|	|	2.65
32.417	0.00	0.57	1.399	O	|	|	|	|	2.65
32.500	0.00	0.57	1.395	O	|	|	|	|	2.65
32.583	0.00	0.57	1.391	O	|	|	|	|	2.64
32.667	0.00	0.57	1.387	O	|	|	|	|	2.64
32.750	0.00	0.57	1.384	O	|	|	|	|	2.63
32.833	0.00	0.57	1.380	O	|	|	|	|	2.63
32.917	0.00	0.57	1.376	O	|	|	|	|	2.63
33.000	0.00	0.57	1.372	O	|	|	|	|	2.62
33.083	0.00	0.57	1.368	O	|	|	|	|	2.62
33.167	0.00	0.57	1.364	O	|	|	|	|	2.62
33.250	0.00	0.57	1.360	O	|	|	|	|	2.61
33.333	0.00	0.57	1.356	O	|	|	|	|	2.61
33.417	0.00	0.57	1.352	O	|	|	|	|	2.60
33.500	0.00	0.57	1.348	O	|	|	|	|	2.60
33.583	0.00	0.57	1.344	O	|	|	|	|	2.60
33.667	0.00	0.57	1.340	O	|	|	|	|	2.59
33.750	0.00	0.57	1.337	O	|	|	|	|	2.59
33.833	0.00	0.57	1.333	O	|	|	|	|	2.58
33.917	0.00	0.56	1.329	O	|	|	|	|	2.58
34.000	0.00	0.56	1.325	O	|	|	|	|	2.58
34.083	0.00	0.56	1.321	O	|	|	|	|	2.57
34.167	0.00	0.56	1.317	O	|	|	|	|	2.57
34.250	0.00	0.56	1.313	O	|	|	|	|	2.57
34.333	0.00	0.56	1.309	O	|	|	|	|	2.56
34.417	0.00	0.56	1.305	O	|	|	|	|	2.56
34.500	0.00	0.56	1.302	O	|	|	|	|	2.55
34.583	0.00	0.56	1.298	O	|	|	|	|	2.55
34.667	0.00	0.56	1.294	O	|	|	|	|	2.55
34.750	0.00	0.56	1.290	O	|	|	|	|	2.54
34.833	0.00	0.56	1.286	O	|	|	|	|	2.54
34.917	0.00	0.56	1.282	O	|	|	|	|	2.53
35.000	0.00	0.56	1.278	O	|	|	|	|	2.53
35.083	0.00	0.56	1.275	O	|	|	|	|	2.53
35.167	0.00	0.56	1.271	O	|	|	|	|	2.52
35.250	0.00	0.56	1.267	O	|	|	|	|	2.52
35.333	0.00	0.56	1.263	O	|	|	|	|	2.52
35.417	0.00	0.56	1.259	O	|	|	|	|	2.51
35.500	0.00	0.56	1.255	O	|	|	|	|	2.51
35.583	0.00	0.56	1.252	O	|	|	|	|	2.50
35.667	0.00	0.56	1.248	O	|	|	|	|	2.50
35.750	0.00	0.56	1.244	O	|	|	|	|	2.50
35.833	0.00	0.55	1.240	O	|	|	|	|	2.49
35.917	0.00	0.55	1.236	O	|	|	|	|	2.49
36.000	0.00	0.55	1.232	O	|	|	|	|	2.49
36.083	0.00	0.55	1.229	O	|	|	|	|	2.48
36.167	0.00	0.55	1.225	O	|	|	|	|	2.48
36.250	0.00	0.55	1.221	O	|	|	|	|	2.47
36.333	0.00	0.55	1.217	O	|	|	|	|	2.47
36.417	0.00	0.55	1.213	O	|	|	|	|	2.47
36.500	0.00	0.55	1.210	O	|	|	|	|	2.46
36.583	0.00	0.55	1.206	O	|	|	|	|	2.46
36.667	0.00	0.55	1.202	O	|	|	|	|	2.46
36.750	0.00	0.55	1.198	O	|	|	|	|	2.45
36.833	0.00	0.55	1.194	O	|	|	|	|	2.45

36.917	0.00	0.55	1.191	O					2.44
37.000	0.00	0.55	1.187	O					2.44
37.083	0.00	0.55	1.183	O					2.44
37.167	0.00	0.55	1.179	O					2.43
37.250	0.00	0.55	1.176	O					2.43
37.333	0.00	0.55	1.172	O					2.43
37.417	0.00	0.55	1.168	O					2.42
37.500	0.00	0.55	1.164	O					2.42
37.583	0.00	0.55	1.161	O					2.41
37.667	0.00	0.55	1.157	O					2.41
37.750	0.00	0.54	1.153	O					2.41
37.833	0.00	0.54	1.149	O					2.40
37.917	0.00	0.54	1.146	O					2.40
38.000	0.00	0.54	1.142	O					2.40
38.083	0.00	0.54	1.138	O					2.39
38.167	0.00	0.54	1.134	O					2.39
38.250	0.00	0.54	1.131	O					2.38
38.333	0.00	0.54	1.127	O					2.38
38.417	0.00	0.54	1.123	O					2.38
38.500	0.00	0.54	1.119	O					2.37
38.583	0.00	0.54	1.116	O					2.37
38.667	0.00	0.54	1.112	O					2.37
38.750	0.00	0.54	1.108	O					2.36
38.833	0.00	0.54	1.105	O					2.36
38.917	0.00	0.54	1.101	O					2.36
39.000	0.00	0.54	1.097	O					2.35
39.083	0.00	0.54	1.093	O					2.35
39.167	0.00	0.54	1.090	O					2.34
39.250	0.00	0.54	1.086	O					2.34
39.333	0.00	0.54	1.082	O					2.34
39.417	0.00	0.54	1.079	O					2.33
39.500	0.00	0.54	1.075	O					2.33
39.583	0.00	0.54	1.071	O					2.33
39.667	0.00	0.53	1.068	O					2.32
39.750	0.00	0.53	1.064	O					2.32
39.833	0.00	0.53	1.060	O					2.32
39.917	0.00	0.53	1.056	O					2.31
40.000	0.00	0.53	1.053	O					2.31
40.083	0.00	0.53	1.049	O					2.30
40.167	0.00	0.53	1.045	O					2.30
40.250	0.00	0.53	1.042	O					2.30
40.333	0.00	0.53	1.038	O					2.29
40.417	0.00	0.53	1.035	O					2.29
40.500	0.00	0.53	1.031	O					2.29
40.583	0.00	0.53	1.027	O					2.28
40.667	0.00	0.53	1.024	O					2.28
40.750	0.00	0.53	1.020	O					2.28
40.833	0.00	0.53	1.016	O					2.27
40.917	0.00	0.53	1.013	O					2.27
41.000	0.00	0.53	1.009	O					2.26
41.083	0.00	0.53	1.005	O					2.26
41.167	0.00	0.53	1.002	O					2.26
41.250	0.00	0.53	0.998	O					2.25
41.333	0.00	0.53	0.994	O					2.25
41.417	0.00	0.53	0.991	O					2.25
41.500	0.00	0.53	0.987	O					2.24
41.583	0.00	0.53	0.984	O					2.24
41.667	0.00	0.52	0.980	O					2.24
41.750	0.00	0.52	0.976	O					2.23
41.833	0.00	0.52	0.973	O					2.23
41.917	0.00	0.52	0.969	O					2.23
42.000	0.00	0.52	0.966	O					2.22
42.083	0.00	0.52	0.962	O					2.22
42.167	0.00	0.52	0.958	O					2.21
42.250	0.00	0.52	0.955	O					2.21
42.333	0.00	0.52	0.951	O					2.21
42.417	0.00	0.52	0.948	O					2.20
42.500	0.00	0.52	0.944	O					2.20
42.583	0.00	0.52	0.940	O					2.20
42.667	0.00	0.52	0.937	O					2.19
42.750	0.00	0.52	0.933	O					2.19
42.833	0.00	0.52	0.930	O					2.19
42.917	0.00	0.52	0.926	O					2.18
43.000	0.00	0.52	0.923	O					2.18
43.083	0.00	0.52	0.919	O					2.18

43.167	0.00	0.52	0.915	O					2.17
43.250	0.00	0.52	0.912	O					2.17
43.333	0.00	0.52	0.908	O					2.17
43.417	0.00	0.52	0.905	O					2.16
43.500	0.00	0.52	0.901	O					2.16
43.583	0.00	0.52	0.898	O					2.15
43.667	0.00	0.51	0.894	O					2.15
43.750	0.00	0.51	0.891	O					2.15
43.833	0.00	0.51	0.887	O					2.14
43.917	0.00	0.51	0.883	O					2.14
44.000	0.00	0.51	0.880	O					2.14
44.083	0.00	0.51	0.876	O					2.13
44.167	0.00	0.51	0.873	O					2.13
44.250	0.00	0.51	0.869	O					2.13
44.333	0.00	0.51	0.866	O					2.12
44.417	0.00	0.51	0.862	O					2.12
44.500	0.00	0.51	0.859	O					2.12
44.583	0.00	0.51	0.855	O					2.11
44.667	0.00	0.51	0.852	O					2.11
44.750	0.00	0.51	0.848	O					2.11
44.833	0.00	0.51	0.845	O					2.10
44.917	0.00	0.51	0.841	O					2.10
45.000	0.00	0.51	0.838	O					2.10
45.083	0.00	0.51	0.834	O					2.09
45.167	0.00	0.51	0.831	O					2.09
45.250	0.00	0.51	0.827	O					2.09
45.333	0.00	0.51	0.824	O					2.08
45.417	0.00	0.51	0.820	O					2.08
45.500	0.00	0.51	0.817	O					2.07
45.583	0.00	0.51	0.813	O					2.07
45.667	0.00	0.50	0.810	O					2.07
45.750	0.00	0.50	0.806	O					2.06
45.833	0.00	0.50	0.803	O					2.06
45.917	0.00	0.50	0.799	O					2.06
46.000	0.00	0.50	0.796	O					2.05
46.083	0.00	0.50	0.792	O					2.05
46.167	0.00	0.50	0.789	O					2.05
46.250	0.00	0.50	0.786	O					2.04
46.333	0.00	0.50	0.782	O					2.04
46.417	0.00	0.50	0.779	O					2.04
46.500	0.00	0.50	0.775	O					2.03
46.583	0.00	0.50	0.772	O					2.03
46.667	0.00	0.50	0.768	O					2.03
46.750	0.00	0.50	0.765	O					2.02
46.833	0.00	0.50	0.761	O					2.02
46.917	0.00	0.50	0.758	O					2.02
47.000	0.00	0.50	0.755	O					2.01
47.083	0.00	0.50	0.751	O					2.01
47.167	0.00	0.50	0.748	O					2.01
47.250	0.00	0.50	0.744	O					2.00
47.333	0.00	0.50	0.741	O					2.00
47.417	0.00	0.50	0.737	O					1.99
47.500	0.00	0.50	0.734	O					1.99
47.583	0.00	0.49	0.731	O					1.98
47.667	0.00	0.49	0.727	O					1.98
47.750	0.00	0.49	0.724	O					1.97
47.833	0.00	0.49	0.720	O					1.96
47.917	0.00	0.49	0.717	O					1.96
48.000	0.00	0.49	0.714	O					1.95
48.083	0.00	0.49	0.710	O					1.95
48.167	0.00	0.49	0.707	O					1.94
48.250	0.00	0.49	0.704	O					1.94
48.333	0.00	0.49	0.700	O					1.93
48.417	0.00	0.49	0.697	O					1.92
48.500	0.00	0.48	0.694	O					1.92
48.583	0.00	0.48	0.690	O					1.91
48.667	0.00	0.48	0.687	O					1.91
48.750	0.00	0.48	0.684	O					1.90
48.833	0.00	0.48	0.680	O					1.89
48.917	0.00	0.48	0.677	O					1.89
49.000	0.00	0.48	0.674	O					1.88
49.083	0.00	0.48	0.670	O					1.88
49.167	0.00	0.48	0.667	O					1.87
49.250	0.00	0.48	0.664	O					1.87
49.333	0.00	0.48	0.660	O					1.86

49.417	0.00	0.47	0.657	O	|	|	|	|	1.86
49.500	0.00	0.47	0.654	O	|	|	|	|	1.85
49.583	0.00	0.47	0.651	O	|	|	|	|	1.84
49.667	0.00	0.47	0.647	O	|	|	|	|	1.84
49.750	0.00	0.47	0.644	O	|	|	|	|	1.83
49.833	0.00	0.47	0.641	O	|	|	|	|	1.83
49.917	0.00	0.47	0.638	O	|	|	|	|	1.82
50.000	0.00	0.47	0.634	O	|	|	|	|	1.82
50.083	0.00	0.47	0.631	O	|	|	|	|	1.81
50.167	0.00	0.47	0.628	O	|	|	|	|	1.80
50.250	0.00	0.47	0.625	O	|	|	|	|	1.80
50.333	0.00	0.46	0.622	O	|	|	|	|	1.79
50.417	0.00	0.46	0.618	O	|	|	|	|	1.79
50.500	0.00	0.46	0.615	O	|	|	|	|	1.78
50.583	0.00	0.46	0.612	O	|	|	|	|	1.78
50.667	0.00	0.46	0.609	O	|	|	|	|	1.77
50.750	0.00	0.46	0.606	O	|	|	|	|	1.77
50.833	0.00	0.46	0.603	O	|	|	|	|	1.76
50.917	0.00	0.46	0.599	O	|	|	|	|	1.75
51.000	0.00	0.46	0.596	O	|	|	|	|	1.75
51.083	0.00	0.46	0.593	O	|	|	|	|	1.74
51.167	0.00	0.46	0.590	O	|	|	|	|	1.74
51.250	0.00	0.46	0.587	O	|	|	|	|	1.73
51.333	0.00	0.45	0.584	O	|	|	|	|	1.73
51.417	0.00	0.45	0.580	O	|	|	|	|	1.72
51.500	0.00	0.45	0.577	O	|	|	|	|	1.72
51.583	0.00	0.45	0.574	O	|	|	|	|	1.71
51.667	0.00	0.45	0.571	O	|	|	|	|	1.71
51.750	0.00	0.45	0.568	O	|	|	|	|	1.70
51.833	0.00	0.45	0.565	O	|	|	|	|	1.70
51.917	0.00	0.45	0.562	O	|	|	|	|	1.69
52.000	0.00	0.45	0.559	O	|	|	|	|	1.68
52.083	0.00	0.45	0.556	O	|	|	|	|	1.68
52.167	0.00	0.45	0.553	O	|	|	|	|	1.67
52.250	0.00	0.45	0.550	O	|	|	|	|	1.67
52.333	0.00	0.44	0.546	O	|	|	|	|	1.66
52.417	0.00	0.44	0.543	O	|	|	|	|	1.66
52.500	0.00	0.44	0.540	O	|	|	|	|	1.65
52.583	0.00	0.44	0.537	O	|	|	|	|	1.65
52.667	0.00	0.44	0.534	O	|	|	|	|	1.64
52.750	0.00	0.44	0.531	O	|	|	|	|	1.64
52.833	0.00	0.44	0.528	O	|	|	|	|	1.63
52.917	0.00	0.44	0.525	O	|	|	|	|	1.63
53.000	0.00	0.44	0.522	O	|	|	|	|	1.62
53.083	0.00	0.44	0.519	O	|	|	|	|	1.62
53.167	0.00	0.44	0.516	O	|	|	|	|	1.61
53.250	0.00	0.44	0.513	O	|	|	|	|	1.61
53.333	0.00	0.44	0.510	O	|	|	|	|	1.60
53.417	0.00	0.43	0.507	O	|	|	|	|	1.60
53.500	0.00	0.43	0.504	O	|	|	|	|	1.59
53.583	0.00	0.43	0.501	O	|	|	|	|	1.58
53.667	0.00	0.43	0.498	O	|	|	|	|	1.58
53.750	0.00	0.43	0.495	O	|	|	|	|	1.57
53.833	0.00	0.43	0.492	O	|	|	|	|	1.57
53.917	0.00	0.43	0.489	O	|	|	|	|	1.56
54.000	0.00	0.43	0.486	O	|	|	|	|	1.56
54.083	0.00	0.43	0.483	O	|	|	|	|	1.55
54.167	0.00	0.43	0.480	O	|	|	|	|	1.55
54.250	0.00	0.43	0.477	O	|	|	|	|	1.54
54.333	0.00	0.43	0.475	O	|	|	|	|	1.54
54.417	0.00	0.42	0.472	O	|	|	|	|	1.53
54.500	0.00	0.42	0.469	O	|	|	|	|	1.53
54.583	0.00	0.42	0.466	O	|	|	|	|	1.52
54.667	0.00	0.42	0.463	O	|	|	|	|	1.52
54.750	0.00	0.42	0.460	O	|	|	|	|	1.51
54.833	0.00	0.42	0.457	O	|	|	|	|	1.51
54.917	0.00	0.42	0.454	O	|	|	|	|	1.50
55.000	0.00	0.42	0.451	O	|	|	|	|	1.50
55.083	0.00	0.42	0.448	O	|	|	|	|	1.49
55.167	0.00	0.42	0.445	O	|	|	|	|	1.49
55.250	0.00	0.42	0.443	O	|	|	|	|	1.48
55.333	0.00	0.42	0.440	O	|	|	|	|	1.48
55.417	0.00	0.42	0.437	O	|	|	|	|	1.47
55.500	0.00	0.41	0.434	O	|	|	|	|	1.47
55.583	0.00	0.41	0.431	O	|	|	|	|	1.46

55.667	0.00	0.41	0.428	O	|	|	|	1.46
55.750	0.00	0.41	0.425	O	|	|	|	1.45
55.833	0.00	0.41	0.423	O	|	|	|	1.45
55.917	0.00	0.41	0.420	O	|	|	|	1.44
56.000	0.00	0.41	0.417	O	|	|	|	1.44
56.083	0.00	0.41	0.414	O	|	|	|	1.43
56.167	0.00	0.41	0.411	O	|	|	|	1.43
56.250	0.00	0.41	0.409	O	|	|	|	1.42
56.333	0.00	0.41	0.406	O	|	|	|	1.42
56.417	0.00	0.41	0.403	O	|	|	|	1.42
56.500	0.00	0.41	0.400	O	|	|	|	1.41
56.583	0.00	0.40	0.397	O	|	|	|	1.41
56.667	0.00	0.40	0.395	O	|	|	|	1.40
56.750	0.00	0.40	0.392	O	|	|	|	1.40
56.833	0.00	0.40	0.389	O	|	|	|	1.39
56.917	0.00	0.40	0.386	O	|	|	|	1.39
57.000	0.00	0.40	0.383	O	|	|	|	1.38
57.083	0.00	0.40	0.381	O	|	|	|	1.38
57.167	0.00	0.40	0.378	O	|	|	|	1.37
57.250	0.00	0.40	0.375	O	|	|	|	1.37
57.333	0.00	0.40	0.372	O	|	|	|	1.36
57.417	0.00	0.40	0.370	O	|	|	|	1.36
57.500	0.00	0.40	0.367	O	|	|	|	1.35
57.583	0.00	0.40	0.364	O	|	|	|	1.35
57.667	0.00	0.40	0.362	O	|	|	|	1.34
57.750	0.00	0.39	0.359	O	|	|	|	1.34
57.833	0.00	0.39	0.356	O	|	|	|	1.33
57.917	0.00	0.39	0.353	O	|	|	|	1.33
58.000	0.00	0.39	0.351	O	|	|	|	1.32
58.083	0.00	0.39	0.348	O	|	|	|	1.32
58.167	0.00	0.39	0.345	O	|	|	|	1.32
58.250	0.00	0.39	0.343	O	|	|	|	1.31
58.333	0.00	0.39	0.340	O	|	|	|	1.31
58.417	0.00	0.39	0.337	O	|	|	|	1.30
58.500	0.00	0.39	0.335	O	|	|	|	1.30
58.583	0.00	0.39	0.332	O	|	|	|	1.29
58.667	0.00	0.39	0.329	O	|	|	|	1.29
58.750	0.00	0.39	0.327	O	|	|	|	1.28
58.833	0.00	0.39	0.324	O	|	|	|	1.28
58.917	0.00	0.38	0.321	O	|	|	|	1.27
59.000	0.00	0.38	0.319	O	|	|	|	1.27
59.083	0.00	0.38	0.316	O	|	|	|	1.26
59.167	0.00	0.38	0.313	O	|	|	|	1.26
59.250	0.00	0.38	0.311	O	|	|	|	1.26
59.333	0.00	0.38	0.308	O	|	|	|	1.25
59.417	0.00	0.38	0.305	O	|	|	|	1.25
59.500	0.00	0.38	0.303	O	|	|	|	1.24
59.583	0.00	0.38	0.300	O	|	|	|	1.24
59.667	0.00	0.38	0.298	O	|	|	|	1.23
59.750	0.00	0.38	0.295	O	|	|	|	1.23
59.833	0.00	0.38	0.292	O	|	|	|	1.22
59.917	0.00	0.38	0.290	O	|	|	|	1.22
60.000	0.00	0.38	0.287	O	|	|	|	1.21
60.083	0.00	0.37	0.285	O	|	|	|	1.21
60.167	0.00	0.37	0.282	O	|	|	|	1.21
60.250	0.00	0.37	0.280	O	|	|	|	1.20
60.333	0.00	0.37	0.277	O	|	|	|	1.20
60.417	0.00	0.37	0.274	O	|	|	|	1.19
60.500	0.00	0.37	0.272	O	|	|	|	1.19
60.583	0.00	0.37	0.269	O	|	|	|	1.18
60.667	0.00	0.37	0.267	O	|	|	|	1.18
60.750	0.00	0.37	0.264	O	|	|	|	1.18
60.833	0.00	0.37	0.262	O	|	|	|	1.17
60.917	0.00	0.37	0.259	O	|	|	|	1.17
61.000	0.00	0.37	0.257	O	|	|	|	1.16
61.083	0.00	0.37	0.254	O	|	|	|	1.16
61.167	0.00	0.37	0.252	O	|	|	|	1.15
61.250	0.00	0.37	0.249	O	|	|	|	1.15
61.333	0.00	0.36	0.246	O	|	|	|	1.14
61.417	0.00	0.36	0.244	O	|	|	|	1.14
61.500	0.00	0.36	0.241	O	|	|	|	1.14
61.583	0.00	0.36	0.239	O	|	|	|	1.13
61.667	0.00	0.36	0.236	O	|	|	|	1.13
61.750	0.00	0.36	0.234	O	|	|	|	1.12
61.833	0.00	0.36	0.232	O	|	|	|	1.12

61.917	0.00	0.36	0.229	O				1.11
62.000	0.00	0.36	0.227	O				1.11
62.083	0.00	0.36	0.224	O				1.11
62.167	0.00	0.36	0.222	O				1.10
62.250	0.00	0.36	0.219	O				1.10
62.333	0.00	0.36	0.217	O				1.09
62.417	0.00	0.36	0.214	O				1.09
62.500	0.00	0.36	0.212	O				1.08
62.583	0.00	0.35	0.209	O				1.08
62.667	0.00	0.35	0.207	O				1.08
62.750	0.00	0.35	0.204	O				1.07
62.833	0.00	0.35	0.202	O				1.07
62.917	0.00	0.35	0.200	O				1.06
63.000	0.00	0.35	0.197	O				1.06
63.083	0.00	0.35	0.195	O				1.06
63.167	0.00	0.35	0.192	O				1.05
63.250	0.00	0.35	0.190	O				1.05
63.333	0.00	0.35	0.188	O				1.04
63.417	0.00	0.35	0.185	O				1.04
63.500	0.00	0.35	0.183	O				1.03
63.583	0.00	0.35	0.180	O				1.03
63.667	0.00	0.35	0.178	O				1.03
63.750	0.00	0.35	0.176	O				1.02
63.833	0.00	0.34	0.173	O				1.02
63.917	0.00	0.34	0.171	O				1.01
64.000	0.00	0.34	0.169	O				1.01
64.083	0.00	0.34	0.166	O				1.01
64.167	0.00	0.34	0.164	O				1.00
64.250	0.00	0.34	0.161	O				0.99
64.333	0.00	0.33	0.159	O				0.98
64.417	0.00	0.33	0.157	O				0.97
64.500	0.00	0.32	0.155	O				0.95
64.583	0.00	0.32	0.152	O				0.94
64.667	0.00	0.31	0.150	O				0.93
64.750	0.00	0.31	0.148	O				0.92
64.833	0.00	0.31	0.146	O				0.90
64.917	0.00	0.30	0.144	O				0.89
65.000	0.00	0.30	0.142	O				0.88
65.083	0.00	0.29	0.140	O				0.87
65.167	0.00	0.29	0.138	O				0.86
65.250	0.00	0.28	0.136	O				0.85
65.333	0.00	0.28	0.134	O				0.84
65.417	0.00	0.28	0.132	O				0.83
65.500	0.00	0.27	0.130	O				0.81
65.583	0.00	0.27	0.128	O				0.80
65.667	0.00	0.26	0.126	O				0.79
65.750	0.00	0.26	0.125	O				0.78
65.833	0.00	0.26	0.123	O				0.77
65.917	0.00	0.25	0.121	O				0.76
66.000	0.00	0.25	0.119	O				0.75
66.083	0.00	0.25	0.118	O				0.74
66.167	0.00	0.24	0.116	O				0.74
66.250	0.00	0.24	0.114	O				0.73
66.333	0.00	0.23	0.113	O				0.72
66.417	0.00	0.23	0.111	O				0.71
66.500	0.00	0.23	0.109	O				0.70
66.583	0.00	0.22	0.108	O				0.69
66.667	0.00	0.22	0.106	O				0.68
66.750	0.00	0.22	0.105	O				0.67
66.833	0.00	0.21	0.103	O				0.66
66.917	0.00	0.21	0.102	O				0.66
67.000	0.00	0.21	0.100	O				0.65
67.083	0.00	0.21	0.099	O				0.64
67.167	0.00	0.20	0.098	O				0.63
67.250	0.00	0.20	0.096	O				0.62
67.333	0.00	0.20	0.095	O				0.62
67.417	0.00	0.19	0.094	O				0.61
67.500	0.00	0.19	0.092	O				0.60
67.583	0.00	0.19	0.091	O				0.59
67.667	0.00	0.19	0.090	O				0.59
67.750	0.00	0.18	0.088	O				0.58
67.833	0.00	0.18	0.087	O				0.57
67.917	0.00	0.18	0.086	O				0.57
68.000	0.00	0.17	0.085	O				0.56
68.083	0.00	0.17	0.083	O				0.55

68.167	0.00	0.17	0.082	O	|	|	|	|	0.55
68.250	0.00	0.17	0.081	O	|	|	|	|	0.54
68.333	0.00	0.16	0.080	O	|	|	|	|	0.53
68.417	0.00	0.16	0.079	O	|	|	|	|	0.53
68.500	0.00	0.16	0.078	O	|	|	|	|	0.52
68.583	0.00	0.16	0.077	O	|	|	|	|	0.51
68.667	0.00	0.16	0.076	O	|	|	|	|	0.51
68.750	0.00	0.15	0.074	O	|	|	|	|	0.50
68.833	0.00	0.15	0.073	O	|	|	|	|	0.50
68.917	0.00	0.15	0.072	O	|	|	|	|	0.49
69.000	0.00	0.15	0.071	O	|	|	|	|	0.48
69.083	0.00	0.14	0.070	O	|	|	|	|	0.48
69.167	0.00	0.14	0.069	O	|	|	|	|	0.47
69.250	0.00	0.14	0.068	O	|	|	|	|	0.47
69.333	0.00	0.14	0.067	O	|	|	|	|	0.46
69.417	0.00	0.14	0.066	O	|	|	|	|	0.46
69.500	0.00	0.13	0.066	O	|	|	|	|	0.45
69.583	0.00	0.13	0.065	O	|	|	|	|	0.45
69.667	0.00	0.13	0.064	O	|	|	|	|	0.44
69.750	0.00	0.13	0.063	O	|	|	|	|	0.44
69.833	0.00	0.13	0.062	O	|	|	|	|	0.43
69.917	0.00	0.12	0.061	O	|	|	|	|	0.43
70.000	0.00	0.12	0.060	O	|	|	|	|	0.42
70.083	0.00	0.12	0.059	O	|	|	|	|	0.42
70.167	0.00	0.12	0.059	O	|	|	|	|	0.41
70.250	0.00	0.12	0.058	O	|	|	|	|	0.41
70.333	0.00	0.12	0.057	O	|	|	|	|	0.40
70.417	0.00	0.11	0.056	O	|	|	|	|	0.40
70.500	0.00	0.11	0.055	O	|	|	|	|	0.39
70.583	0.00	0.11	0.055	O	|	|	|	|	0.39
70.667	0.00	0.11	0.054	O	|	|	|	|	0.39
70.750	0.00	0.11	0.053	O	|	|	|	|	0.38
70.833	0.00	0.11	0.052	O	|	|	|	|	0.38
70.917	0.00	0.10	0.052	O	|	|	|	|	0.37
71.000	0.00	0.10	0.051	O	|	|	|	|	0.37
71.083	0.00	0.10	0.050	O	|	|	|	|	0.37
71.167	0.00	0.10	0.050	O	|	|	|	|	0.36
71.250	0.00	0.10	0.049	O	|	|	|	|	0.36
71.333	0.00	0.10	0.048	O	|	|	|	|	0.35
71.417	0.00	0.10	0.048	O	|	|	|	|	0.35
71.500	0.00	0.09	0.047	O	|	|	|	|	0.35
71.583	0.00	0.09	0.046	O	|	|	|	|	0.34
71.667	0.00	0.09	0.046	O	|	|	|	|	0.34
71.750	0.00	0.09	0.045	O	|	|	|	|	0.34
71.833	0.00	0.09	0.044	O	|	|	|	|	0.33
71.917	0.00	0.09	0.044	O	|	|	|	|	0.33
72.000	0.00	0.09	0.043	O	|	|	|	|	0.33
72.083	0.00	0.09	0.043	O	|	|	|	|	0.32
72.167	0.00	0.08	0.042	O	|	|	|	|	0.32
72.250	0.00	0.08	0.041	O	|	|	|	|	0.32
72.333	0.00	0.08	0.041	O	|	|	|	|	0.31
72.417	0.00	0.08	0.040	O	|	|	|	|	0.31
72.500	0.00	0.08	0.040	O	|	|	|	|	0.31
72.583	0.00	0.08	0.039	O	|	|	|	|	0.30
72.667	0.00	0.08	0.039	O	|	|	|	|	0.30
72.750	0.00	0.08	0.038	O	|	|	|	|	0.30
72.833	0.00	0.07	0.038	O	|	|	|	|	0.29
72.917	0.00	0.07	0.037	O	|	|	|	|	0.29
73.000	0.00	0.07	0.037	O	|	|	|	|	0.29
73.083	0.00	0.07	0.036	O	|	|	|	|	0.29
73.167	0.00	0.07	0.036	O	|	|	|	|	0.28
73.250	0.00	0.07	0.035	O	|	|	|	|	0.28
73.333	0.00	0.07	0.035	O	|	|	|	|	0.28
73.417	0.00	0.07	0.034	O	|	|	|	|	0.28
73.500	0.00	0.07	0.034	O	|	|	|	|	0.27
73.583	0.00	0.07	0.033	O	|	|	|	|	0.27
73.667	0.00	0.06	0.033	O	|	|	|	|	0.27
73.750	0.00	0.06	0.032	O	|	|	|	|	0.27
73.833	0.00	0.06	0.032	O	|	|	|	|	0.26
73.917	0.00	0.06	0.031	O	|	|	|	|	0.26
74.000	0.00	0.06	0.031	O	|	|	|	|	0.26
74.083	0.00	0.06	0.031	O	|	|	|	|	0.26
74.167	0.00	0.06	0.030	O	|	|	|	|	0.25
74.250	0.00	0.06	0.030	O	|	|	|	|	0.25
74.333	0.00	0.06	0.029	O	|	|	|	|	0.25

74.417	0.00	0.06	0.029	O	|	|	|	|	0.25
74.500	0.00	0.06	0.029	O	|	|	|	|	0.24
74.583	0.00	0.05	0.028	O	|	|	|	|	0.24
74.667	0.00	0.05	0.028	O	|	|	|	|	0.24
74.750	0.00	0.05	0.028	O	|	|	|	|	0.24
74.833	0.00	0.05	0.027	O	|	|	|	|	0.24
74.917	0.00	0.05	0.027	O	|	|	|	|	0.23
75.000	0.00	0.05	0.026	O	|	|	|	|	0.23
75.083	0.00	0.05	0.026	O	|	|	|	|	0.23
75.167	0.00	0.05	0.026	O	|	|	|	|	0.23
75.250	0.00	0.05	0.025	O	|	|	|	|	0.23
75.333	0.00	0.05	0.025	O	|	|	|	|	0.22
75.417	0.00	0.05	0.025	O	|	|	|	|	0.22
75.500	0.00	0.05	0.024	O	|	|	|	|	0.22
75.583	0.00	0.05	0.024	O	|	|	|	|	0.22
75.667	0.00	0.05	0.024	O	|	|	|	|	0.22
75.750	0.00	0.04	0.023	O	|	|	|	|	0.22
75.833	0.00	0.04	0.023	O	|	|	|	|	0.21
75.917	0.00	0.04	0.023	O	|	|	|	|	0.21
76.000	0.00	0.04	0.023	O	|	|	|	|	0.21
76.083	0.00	0.04	0.022	O	|	|	|	|	0.21
76.167	0.00	0.04	0.022	O	|	|	|	|	0.21
76.250	0.00	0.04	0.022	O	|	|	|	|	0.21
76.333	0.00	0.04	0.021	O	|	|	|	|	0.20
76.417	0.00	0.04	0.021	O	|	|	|	|	0.20
76.500	0.00	0.04	0.021	O	|	|	|	|	0.20
76.583	0.00	0.04	0.021	O	|	|	|	|	0.20
76.667	0.00	0.04	0.020	O	|	|	|	|	0.20
76.750	0.00	0.04	0.020	O	|	|	|	|	0.20
76.833	0.00	0.04	0.020	O	|	|	|	|	0.19
76.917	0.00	0.04	0.020	O	|	|	|	|	0.19
77.000	0.00	0.04	0.019	O	|	|	|	|	0.19
77.083	0.00	0.04	0.019	O	|	|	|	|	0.19
77.167	0.00	0.03	0.019	O	|	|	|	|	0.19
77.250	0.00	0.03	0.019	O	|	|	|	|	0.19
77.333	0.00	0.03	0.018	O	|	|	|	|	0.19
77.417	0.00	0.03	0.018	O	|	|	|	|	0.19
77.500	0.00	0.03	0.018	O	|	|	|	|	0.18
77.583	0.00	0.03	0.018	O	|	|	|	|	0.18
77.667	0.00	0.03	0.017	O	|	|	|	|	0.18
77.750	0.00	0.03	0.017	O	|	|	|	|	0.18
77.833	0.00	0.03	0.017	O	|	|	|	|	0.18
77.917	0.00	0.03	0.017	O	|	|	|	|	0.18
78.000	0.00	0.03	0.017	O	|	|	|	|	0.18
78.083	0.00	0.03	0.016	O	|	|	|	|	0.18
78.167	0.00	0.03	0.016	O	|	|	|	|	0.17
78.250	0.00	0.03	0.016	O	|	|	|	|	0.17
78.333	0.00	0.03	0.016	O	|	|	|	|	0.17
78.417	0.00	0.03	0.016	O	|	|	|	|	0.17
78.500	0.00	0.03	0.015	O	|	|	|	|	0.17
78.583	0.00	0.03	0.015	O	|	|	|	|	0.17
78.667	0.00	0.03	0.015	O	|	|	|	|	0.17
78.750	0.00	0.03	0.015	O	|	|	|	|	0.17
78.833	0.00	0.03	0.015	O	|	|	|	|	0.17
78.917	0.00	0.03	0.015	O	|	|	|	|	0.16
79.000	0.00	0.03	0.014	O	|	|	|	|	0.16
79.083	0.00	0.02	0.014	O	|	|	|	|	0.16
79.167	0.00	0.02	0.014	O	|	|	|	|	0.16
79.250	0.00	0.02	0.014	O	|	|	|	|	0.16
79.333	0.00	0.02	0.014	O	|	|	|	|	0.16
79.417	0.00	0.02	0.014	O	|	|	|	|	0.16
79.500	0.00	0.02	0.013	O	|	|	|	|	0.16
79.583	0.00	0.02	0.013	O	|	|	|	|	0.16
79.667	0.00	0.02	0.013	O	|	|	|	|	0.16
79.750	0.00	0.02	0.013	O	|	|	|	|	0.16
79.833	0.00	0.02	0.013	O	|	|	|	|	0.15
79.917	0.00	0.02	0.013	O	|	|	|	|	0.15
80.000	0.00	0.02	0.012	O	|	|	|	|	0.15
80.083	0.00	0.02	0.012	O	|	|	|	|	0.15
80.167	0.00	0.02	0.012	O	|	|	|	|	0.15
80.250	0.00	0.02	0.012	O	|	|	|	|	0.15
80.333	0.00	0.02	0.012	O	|	|	|	|	0.15
80.417	0.00	0.02	0.012	O	|	|	|	|	0.15
80.500	0.00	0.02	0.012	O	|	|	|	|	0.15
80.583	0.00	0.02	0.011	O	|	|	|	|	0.15

80.667	0.00	0.02	0.011	O	|	|	|	|	0.15
80.750	0.00	0.02	0.011	O	|	|	|	|	0.15
80.833	0.00	0.02	0.011	O	|	|	|	|	0.15
80.917	0.00	0.02	0.011	O	|	|	|	|	0.14
81.000	0.00	0.02	0.011	O	|	|	|	|	0.14
81.083	0.00	0.02	0.011	O	|	|	|	|	0.14
81.167	0.00	0.02	0.011	O	|	|	|	|	0.14
81.250	0.00	0.02	0.010	O	|	|	|	|	0.14
81.333	0.00	0.02	0.010	O	|	|	|	|	0.14
81.417	0.00	0.02	0.010	O	|	|	|	|	0.14
81.500	0.00	0.02	0.010	O	|	|	|	|	0.14
81.583	0.00	0.02	0.010	O	|	|	|	|	0.14
81.667	0.00	0.02	0.010	O	|	|	|	|	0.14
81.750	0.00	0.02	0.010	O	|	|	|	|	0.14
81.833	0.00	0.02	0.010	O	|	|	|	|	0.14
81.917	0.00	0.02	0.010	O	|	|	|	|	0.14
82.000	0.00	0.01	0.010	O	|	|	|	|	0.14
82.083	0.00	0.01	0.009	O	|	|	|	|	0.14
82.167	0.00	0.01	0.009	O	|	|	|	|	0.14
82.250	0.00	0.01	0.009	O	|	|	|	|	0.13
82.333	0.00	0.01	0.009	O	|	|	|	|	0.13
82.417	0.00	0.01	0.009	O	|	|	|	|	0.13
82.500	0.00	0.01	0.009	O	|	|	|	|	0.13
82.583	0.00	0.01	0.009	O	|	|	|	|	0.13
82.667	0.00	0.01	0.009	O	|	|	|	|	0.13
82.750	0.00	0.01	0.009	O	|	|	|	|	0.13
82.833	0.00	0.01	0.009	O	|	|	|	|	0.13
82.917	0.00	0.01	0.008	O	|	|	|	|	0.13
83.000	0.00	0.01	0.008	O	|	|	|	|	0.13
83.083	0.00	0.01	0.008	O	|	|	|	|	0.13
83.167	0.00	0.01	0.008	O	|	|	|	|	0.13
83.250	0.00	0.01	0.008	O	|	|	|	|	0.13
83.333	0.00	0.01	0.008	O	|	|	|	|	0.13
83.417	0.00	0.01	0.008	O	|	|	|	|	0.13
83.500	0.00	0.01	0.008	O	|	|	|	|	0.13
83.583	0.00	0.01	0.008	O	|	|	|	|	0.13
83.667	0.00	0.01	0.008	O	|	|	|	|	0.13
83.750	0.00	0.01	0.008	O	|	|	|	|	0.13
83.833	0.00	0.01	0.008	O	|	|	|	|	0.13
83.917	0.00	0.01	0.008	O	|	|	|	|	0.13
84.000	0.00	0.01	0.007	O	|	|	|	|	0.12
84.083	0.00	0.01	0.007	O	|	|	|	|	0.12
84.167	0.00	0.01	0.007	O	|	|	|	|	0.12
84.250	0.00	0.01	0.007	O	|	|	|	|	0.12
84.333	0.00	0.01	0.007	O	|	|	|	|	0.12
84.417	0.00	0.01	0.007	O	|	|	|	|	0.12
84.500	0.00	0.01	0.007	O	|	|	|	|	0.12
84.583	0.00	0.01	0.007	O	|	|	|	|	0.12
84.667	0.00	0.01	0.007	O	|	|	|	|	0.12
84.750	0.00	0.01	0.007	O	|	|	|	|	0.12
84.833	0.00	0.01	0.007	O	|	|	|	|	0.12
84.917	0.00	0.01	0.007	O	|	|	|	|	0.12
85.000	0.00	0.01	0.007	O	|	|	|	|	0.12
85.083	0.00	0.01	0.007	O	|	|	|	|	0.12
85.167	0.00	0.01	0.007	O	|	|	|	|	0.12
85.250	0.00	0.01	0.006	O	|	|	|	|	0.12
85.333	0.00	0.01	0.006	O	|	|	|	|	0.12
85.417	0.00	0.01	0.006	O	|	|	|	|	0.12
85.500	0.00	0.01	0.006	O	|	|	|	|	0.12
85.583	0.00	0.01	0.006	O	|	|	|	|	0.12
85.667	0.00	0.01	0.006	O	|	|	|	|	0.12
85.750	0.00	0.01	0.006	O	|	|	|	|	0.12
85.833	0.00	0.01	0.006	O	|	|	|	|	0.12
85.917	0.00	0.01	0.006	O	|	|	|	|	0.12
86.000	0.00	0.01	0.006	O	|	|	|	|	0.12
86.083	0.00	0.01	0.006	O	|	|	|	|	0.12
86.167	0.00	0.01	0.006	O	|	|	|	|	0.12
86.250	0.00	0.01	0.006	O	|	|	|	|	0.12
86.333	0.00	0.01	0.006	O	|	|	|	|	0.12
86.417	0.00	0.01	0.006	O	|	|	|	|	0.12
86.500	0.00	0.01	0.006	O	|	|	|	|	0.12
86.583	0.00	0.01	0.006	O	|	|	|	|	0.11
86.667	0.00	0.01	0.006	O	|	|	|	|	0.11
86.750	0.00	0.01	0.006	O	|	|	|	|	0.11
86.833	0.00	0.01	0.006	O	|	|	|	|	0.11

86.917	0.00	0.01	0.005	O	|	|	|	|	0.11
87.000	0.00	0.01	0.005	O	|	|	|	|	0.11
87.083	0.00	0.01	0.005	O	|	|	|	|	0.11
87.167	0.00	0.01	0.005	O	|	|	|	|	0.11
87.250	0.00	0.01	0.005	O	|	|	|	|	0.11
87.333	0.00	0.01	0.005	O	|	|	|	|	0.11
87.417	0.00	0.01	0.005	O	|	|	|	|	0.11
87.500	0.00	0.01	0.005	O	|	|	|	|	0.11
87.583	0.00	0.01	0.005	O	|	|	|	|	0.11
87.667	0.00	0.01	0.005	O	|	|	|	|	0.11
87.750	0.00	0.01	0.005	O	|	|	|	|	0.11
87.833	0.00	0.01	0.005	O	|	|	|	|	0.11
87.917	0.00	0.01	0.005	O	|	|	|	|	0.11
88.000	0.00	0.01	0.005	O	|	|	|	|	0.11
88.083	0.00	0.01	0.005	O	|	|	|	|	0.11
88.167	0.00	0.01	0.005	O	|	|	|	|	0.11
88.250	0.00	0.00	0.005	O	|	|	|	|	0.11
88.333	0.00	0.00	0.005	O	|	|	|	|	0.11
88.417	0.00	0.00	0.005	O	|	|	|	|	0.11
88.500	0.00	0.00	0.005	O	|	|	|	|	0.11
88.583	0.00	0.00	0.005	O	|	|	|	|	0.11
88.667	0.00	0.00	0.005	O	|	|	|	|	0.11
88.750	0.00	0.00	0.005	O	|	|	|	|	0.11
88.833	0.00	0.00	0.005	O	|	|	|	|	0.11
88.917	0.00	0.00	0.005	O	|	|	|	|	0.11
89.000	0.00	0.00	0.005	O	|	|	|	|	0.11
89.083	0.00	0.00	0.005	O	|	|	|	|	0.11
89.167	0.00	0.00	0.005	O	|	|	|	|	0.11
89.250	0.00	0.00	0.004	O	|	|	|	|	0.11
89.333	0.00	0.00	0.004	O	|	|	|	|	0.11
89.417	0.00	0.00	0.004	O	|	|	|	|	0.11
89.500	0.00	0.00	0.004	O	|	|	|	|	0.11
89.583	0.00	0.00	0.004	O	|	|	|	|	0.11
89.667	0.00	0.00	0.004	O	|	|	|	|	0.11
89.750	0.00	0.00	0.004	O	|	|	|	|	0.11
89.833	0.00	0.00	0.004	O	|	|	|	|	0.11
89.917	0.00	0.00	0.004	O	|	|	|	|	0.11
90.000	0.00	0.00	0.004	O	|	|	|	|	0.11
90.083	0.00	0.00	0.004	O	|	|	|	|	0.11
90.167	0.00	0.00	0.004	O	|	|	|	|	0.11
90.250	0.00	0.00	0.004	O	|	|	|	|	0.11
90.333	0.00	0.00	0.004	O	|	|	|	|	0.11
90.417	0.00	0.00	0.004	O	|	|	|	|	0.11
90.500	0.00	0.00	0.004	O	|	|	|	|	0.11
90.583	0.00	0.00	0.004	O	|	|	|	|	0.11
90.667	0.00	0.00	0.004	O	|	|	|	|	0.11
90.750	0.00	0.00	0.004	O	|	|	|	|	0.11
90.833	0.00	0.00	0.004	O	|	|	|	|	0.11
90.917	0.00	0.00	0.004	O	|	|	|	|	0.11
91.000	0.00	0.00	0.004	O	|	|	|	|	0.11
91.083	0.00	0.00	0.004	O	|	|	|	|	0.11
91.167	0.00	0.00	0.004	O	|	|	|	|	0.11
91.250	0.00	0.00	0.004	O	|	|	|	|	0.11
91.333	0.00	0.00	0.004	O	|	|	|	|	0.10
91.417	0.00	0.00	0.004	O	|	|	|	|	0.10
91.500	0.00	0.00	0.004	O	|	|	|	|	0.10
91.583	0.00	0.00	0.004	O	|	|	|	|	0.10
91.667	0.00	0.00	0.004	O	|	|	|	|	0.10
91.750	0.00	0.00	0.004	O	|	|	|	|	0.10
91.833	0.00	0.00	0.004	O	|	|	|	|	0.10
91.917	0.00	0.00	0.004	O	|	|	|	|	0.10
92.000	0.00	0.00	0.004	O	|	|	|	|	0.10
92.083	0.00	0.00	0.004	O	|	|	|	|	0.10
92.167	0.00	0.00	0.004	O	|	|	|	|	0.10
92.250	0.00	0.00	0.004	O	|	|	|	|	0.10
92.333	0.00	0.00	0.004	O	|	|	|	|	0.10
92.417	0.00	0.00	0.004	O	|	|	|	|	0.10
92.500	0.00	0.00	0.004	O	|	|	|	|	0.10
92.583	0.00	0.00	0.004	O	|	|	|	|	0.10
92.667	0.00	0.00	0.004	O	|	|	|	|	0.10
92.750	0.00	0.00	0.004	O	|	|	|	|	0.10
92.833	0.00	0.00	0.004	O	|	|	|	|	0.10
92.917	0.00	0.00	0.004	O	|	|	|	|	0.10
93.000	0.00	0.00	0.004	O	|	|	|	|	0.10
93.083	0.00	0.00	0.004	O	|	|	|	|	0.10

93.167	0.00	0.00	0.004	O	|	|	|	| 0.10
93.250	0.00	0.00	0.003	O	|	|	|	| 0.10
93.333	0.00	0.00	0.003	O	|	|	|	| 0.10
93.417	0.00	0.00	0.003	O	|	|	|	| 0.10
93.500	0.00	0.00	0.003	O	|	|	|	| 0.10
93.583	0.00	0.00	0.003	O	|	|	|	| 0.10
93.667	0.00	0.00	0.003	O	|	|	|	| 0.10
93.750	0.00	0.00	0.003	O	|	|	|	| 0.10
93.833	0.00	0.00	0.003	O	|	|	|	| 0.10
93.917	0.00	0.00	0.003	O	|	|	|	| 0.10
94.000	0.00	0.00	0.003	O	|	|	|	| 0.10
94.083	0.00	0.00	0.003	O	|	|	|	| 0.10
94.167	0.00	0.00	0.003	O	|	|	|	| 0.10
94.250	0.00	0.00	0.003	O	|	|	|	| 0.10
94.333	0.00	0.00	0.003	O	|	|	|	| 0.10
94.417	0.00	0.00	0.003	O	|	|	|	| 0.10
94.500	0.00	0.00	0.003	O	|	|	|	| 0.10
94.583	0.00	0.00	0.003	O	|	|	|	| 0.10
94.667	0.00	0.00	0.003	O	|	|	|	| 0.10
94.750	0.00	0.00	0.003	O	|	|	|	| 0.10
94.833	0.00	0.00	0.003	O	|	|	|	| 0.10
94.917	0.00	0.00	0.003	O	|	|	|	| 0.10
95.000	0.00	0.00	0.003	O	|	|	|	| 0.10
95.083	0.00	0.00	0.003	O	|	|	|	| 0.10
95.167	0.00	0.00	0.003	O	|	|	|	| 0.10
95.250	0.00	0.00	0.003	O	|	|	|	| 0.10
95.333	0.00	0.00	0.003	O	|	|	|	| 0.10
95.417	0.00	0.00	0.003	O	|	|	|	| 0.10
95.500	0.00	0.00	0.003	O	|	|	|	| 0.10
95.583	0.00	0.00	0.003	O	|	|	|	| 0.10
95.667	0.00	0.00	0.003	O	|	|	|	| 0.10
95.750	0.00	0.00	0.003	O	|	|	|	| 0.10
95.833	0.00	0.00	0.003	O	|	|	|	| 0.10
95.917	0.00	0.00	0.003	O	|	|	|	| 0.10
96.000	0.00	0.00	0.003	O	|	|	|	| 0.10
96.083	0.00	0.00	0.003	O	|	|	|	| 0.10
96.167	0.00	0.00	0.003	O	|	|	|	| 0.10
96.250	0.00	0.00	0.003	O	|	|	|	| 0.10
96.333	0.00	0.00	0.003	O	|	|	|	| 0.10
96.417	0.00	0.00	0.003	O	|	|	|	| 0.10
96.500	0.00	0.00	0.003	O	|	|	|	| 0.10
96.583	0.00	0.00	0.003	O	|	|	|	| 0.10
96.667	0.00	0.00	0.003	O	|	|	|	| 0.10
96.750	0.00	0.00	0.003	O	|	|	|	| 0.10
96.833	0.00	0.00	0.003	O	|	|	|	| 0.10
96.917	0.00	0.00	0.003	O	|	|	|	| 0.10
97.000	0.00	0.00	0.003	O	|	|	|	| 0.10
97.083	0.00	0.00	0.003	O	|	|	|	| 0.10
97.167	0.00	0.00	0.003	O	|	|	|	| 0.10
97.250	0.00	0.00	0.003	O	|	|	|	| 0.10
97.333	0.00	0.00	0.003	O	|	|	|	| 0.10

Remaining water in basin = 0.00 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1168
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 50.092 (CFS)
Total volume = 9.719 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

BASIN ROUTING
DMA A
PROPOSED CONDITIONS
100-YEAR 24-HOUR

FLOOD HYDROGRAPH ROUTING PROGRAM
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Study date: 10/22/14

14-0213 SHOPOFF
BASIN ROUTING
DMA A
100-YEAR 24-HOUR

Program License Serial Number 4010

******************** HYDROGRAPH INFORMATION **********************

From study/file name: APROP24100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 294
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 38.335 (CFS)
Total volume = 19.012 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 294
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.100	0.003	0.001	0.003	0.003
1.000	0.163	0.342	0.162	0.164
2.000	0.741	0.497	0.739	0.743
3.000	1.753	0.614	1.751	1.755
3.400	2.222	0.656	2.220	2.224
4.000	2.978	2.841	2.968	2.988
4.400	3.517	3.817	3.504	3.530
5.000	4.378	12.529	4.335	4.421
5.200	4.679	15.300	4.626	4.732
5.500	5.144	23.007	5.065	5.223
6.000	5.955	42.225	5.810	6.100
6.500	6.811	66.515	6.582	7.040
7.000	7.713	94.837	7.386	8.040
7.500	8.662	126.640	8.226	9.098
8.000	9.656	161.558	9.100	10.212
8.500	10.697	199.324	10.011	11.383
9.000	11.786	239.733	10.960	12.612
9.500	12.922	282.618	11.949	13.895

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	9.6	19.17	28.75	38.34	Depth (Ft.)
0.083	0.36	0.00	0.001	O					0.04
0.167	1.48	0.01	0.008	OI					0.13
0.250	1.82	0.03	0.019	OI					0.19
0.333	2.13	0.06	0.032	OI					0.26
0.417	2.72	0.10	0.048	O I					0.35
0.500	2.91	0.14	0.067	O I					0.46
0.583	2.98	0.18	0.086	O I					0.57
0.667	3.00	0.22	0.105	O I					0.67
0.750	3.00	0.26	0.124	O I					0.78
0.833	3.19	0.30	0.144	O I					0.89
0.917	3.75	0.34	0.165	O I					1.00
1.000	3.92	0.35	0.189	O I					1.05
1.083	3.80	0.36	0.213	O I					1.09
1.167	3.26	0.36	0.235	O I					1.13
1.250	3.09	0.37	0.255	O I					1.16
1.333	3.04	0.37	0.273	O I					1.19
1.417	3.02	0.38	0.291	O I					1.22
1.500	3.01	0.38	0.310	O I					1.25
1.583	3.01	0.39	0.328	O I					1.28
1.667	3.01	0.39	0.346	O I					1.32
1.750	3.01	0.40	0.364	O I					1.35
1.833	3.19	0.40	0.382	O I					1.38
1.917	3.75	0.41	0.403	O I					1.42
2.000	3.92	0.41	0.427	O I					1.46
2.083	3.98	0.42	0.451	O I					1.50
2.167	4.00	0.43	0.476	O I					1.54
2.250	4.01	0.43	0.501	O I					1.58
2.333	4.01	0.44	0.525	O I					1.63
2.417	4.01	0.45	0.550	O I					1.67
2.500	4.01	0.45	0.574	O I					1.71
2.583	3.34	0.46	0.596	O I					1.75
2.667	1.24	0.46	0.609	OI					1.77
2.750	0.62	0.46	0.612	O					1.78
2.833	0.41	0.46	0.613	O					1.78
2.917	0.37	0.46	0.612	O					1.78
3.000	0.36	0.46	0.611	O					1.78
3.083	0.38	0.46	0.611	O					1.77
3.167	0.40	0.46	0.610	O					1.77
3.250	0.42	0.46	0.610	O					1.77
3.333	0.45	0.46	0.610	O					1.77
3.417	0.47	0.46	0.610	O					1.77
3.500	0.49	0.46	0.610	O					1.77
3.583	0.52	0.46	0.610	O					1.77
3.667	0.54	0.46	0.611	O					1.77
3.750	0.56	0.46	0.611	O					1.78
3.833	0.81	0.46	0.613	O					1.78
3.917	1.52	0.46	0.618	OI					1.79
4.000	1.75	0.47	0.626	OI					1.80
4.083	1.85	0.47	0.635	OI					1.82
4.167	1.89	0.47	0.644	OI					1.83
4.250	1.92	0.47	0.654	OI					1.85
4.333	2.17	0.48	0.665	OI					1.87
4.417	2.88	0.48	0.679	O I					1.89
4.500	3.11	0.49	0.696	O I					1.92
4.583	3.21	0.49	0.715	O I					1.95
4.667	3.25	0.50	0.734	O I					1.99
4.750	3.28	0.50	0.753	O I					2.01
4.833	3.53	0.50	0.773	O I					2.03
4.917	4.24	0.50	0.796	O I					2.05
5.000	4.47	0.51	0.822	O I					2.08
5.083	4.13	0.51	0.849	O I					2.11
5.167	2.80	0.51	0.869	O I					2.13
5.250	2.42	0.51	0.883	O I					2.14
5.333	2.51	0.52	0.897	O I					2.15
5.417	3.18	0.52	0.913	O I					2.17
5.500	3.39	0.52	0.932	O I					2.19
5.583	3.69	0.52	0.953	O I					2.21

5.667	4.42	0.52	0.977	O I	|	|	|	|	2.23
5.750	4.66	0.53	1.005	O I	|	|	|	|	2.26
5.833	4.76	0.53	1.033	O I	|	|	|	|	2.29
5.917	4.81	0.53	1.063	O I	|	|	|	|	2.32
6.000	4.84	0.54	1.092	O I	|	|	|	|	2.35
6.083	5.08	0.54	1.123	O I	|	|	|	|	2.38
6.167	5.79	0.55	1.156	O I	|	|	|	|	2.41
6.250	6.02	0.55	1.193	O I	|	|	|	|	2.45
6.333	6.12	0.55	1.231	O I	|	|	|	|	2.48
6.417	6.16	0.56	1.270	O I	|	|	|	|	2.52
6.500	6.19	0.56	1.308	O I	|	|	|	|	2.56
6.583	6.44	0.57	1.348	O I	|	|	|	|	2.60
6.667	7.14	0.57	1.391	O I	|	|	|	|	2.64
6.750	7.37	0.58	1.437	O I	|	|	|	|	2.69
6.833	7.47	0.58	1.484	O I	|	|	|	|	2.73
6.917	7.51	0.59	1.532	O I	|	|	|	|	2.78
7.000	7.54	0.59	1.579	O I	|	|	|	|	2.83
7.083	7.57	0.60	1.627	O I	|	|	|	|	2.88
7.167	7.59	0.61	1.675	O I	|	|	|	|	2.92
7.250	7.61	0.61	1.723	O I	|	|	|	|	2.97
7.333	7.85	0.62	1.772	O I	|	|	|	|	3.02
7.417	8.56	0.62	1.825	O I	|	|	|	|	3.06
7.500	8.78	0.63	1.880	O I	|	|	|	|	3.11
7.583	9.10	0.63	1.937	O I	|	|	|	|	3.16
7.667	9.83	0.64	1.998	O I	|	|	|	|	3.21
7.750	10.07	0.64	2.062	O I	|	|	|	|	3.26
7.833	10.39	0.65	2.128	O I	|	|	|	|	3.32
7.917	11.11	0.65	2.198	O |	I	|	|	|	3.38
8.000	11.35	0.80	2.270	O |	I	|	|	|	3.44
8.083	11.89	1.01	2.344	O |	I	|	|	|	3.50
8.167	13.30	1.24	2.423	|O	| I	|	|	|	3.56
8.250	13.75	1.48	2.507	|O	| I	|	|	|	3.63
8.333	13.92	1.72	2.591	|O	| I	|	|	|	3.69
8.417	13.98	1.96	2.674	|O	| I	|	|	|	3.76
8.500	14.02	2.20	2.757	|O	| I	|	|	|	3.82
8.583	14.27	2.44	2.838	| O	| I	|	|	|	3.89
8.667	14.98	2.68	2.921	| O	| I	|	|	|	3.95
8.750	15.20	2.89	3.006	| O	| I	|	|	|	4.02
8.833	15.52	3.05	3.091	| O	| I	|	|	|	4.08
8.917	16.25	3.21	3.179	| O	| I	|	|	|	4.15
9.000	16.48	3.37	3.269	| O	| I	|	|	|	4.22
9.083	17.02	3.53	3.361	| O	| I	|	|	|	4.28
9.167	18.43	3.71	3.458	| O	| I	|	|	|	4.36
9.250	18.87	4.24	3.559	| O	| I	|	|	|	4.43
9.333	19.27	5.24	3.658	| O	| I	|	|	|	4.50
9.417	20.02	6.21	3.753	| O	| I	|	|	|	4.56
9.500	20.26	7.15	3.846	| O	| I	|	|	|	4.63
9.583	20.59	8.04	3.935	| O	| I	|	|	|	4.69
9.667	21.31	8.91	4.020	| O	| I	|	|	|	4.75
9.750	21.55	9.75	4.104	| O	| I	|	|	|	4.81
9.833	21.87	10.56	4.183	| O	| I	|	|	|	4.86
9.917	22.59	11.34	4.261	| O	| I	|	|	|	4.92
10.000	22.83	12.11	4.337	| O	| I	|	|	|	4.97
10.083	21.40	12.76	4.403	| O	| I	|	|	|	5.02
10.167	16.63	13.15	4.445	| O I	|	|	|	|	5.04
10.250	15.21	13.32	4.463	| OI	|	|	|	|	5.06
10.333	14.70	13.42	4.474	| OI	|	|	|	|	5.06
10.417	14.57	13.49	4.483	| OI	|	|	|	|	5.07
10.500	14.53	13.56	4.490	| OI	|	|	|	|	5.07
10.583	15.61	13.65	4.500	| O I	|	|	|	|	5.08
10.667	19.06	13.88	4.524	| O	I |	|	|	|	5.10
10.750	20.11	14.23	4.562	| O	I |	|	|	|	5.12
10.833	20.51	14.60	4.603	| O	| I	|	|	|	5.15
10.917	20.64	14.97	4.643	| O	| I	|	|	|	5.18
11.000	20.70	15.33	4.681	| O	| I	|	|	|	5.20
11.083	20.52	15.90	4.715	| O	| I	|	|	|	5.22
11.167	19.85	16.37	4.743	| O	| I	|	|	|	5.24
11.250	19.66	16.73	4.765	| O	| I	|	|	|	5.26
11.333	19.61	17.05	4.784	| O	| I	|	|	|	5.27
11.417	19.60	17.32	4.801	| O	| I	|	|	|	5.28
11.500	19.61	17.57	4.816	| O	| I	|	|	|	5.29
11.583	19.19	17.77	4.828	| O	| I	|	|	|	5.30
11.667	17.83	17.85	4.833	| O	| |	|	|	|	5.30
11.750	17.44	17.82	4.831	| O	| |	|	|	|	5.30
11.833	17.52	17.79	4.829	| O	| |	|	|	|	5.30

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11.917   18.18   17.79      4.829  |        |     OI|        |        |     5.30
12.000   18.39   17.85      4.833  |        |     OI|        |        |     5.30
12.083   20.01   17.99      4.841  |        |      OI        |        |     5.30
12.167   24.85   18.47      4.870  |        |      O|   I    |        |     5.32
12.250   26.32   19.24      4.917  |        |       O    I  |        |     5.35
12.333   27.10   20.05      4.965  |        |       O     I |        |     5.38
12.417   27.95   20.85      5.014  |        |       |O     I|        |     5.42
12.500   28.24   21.64      5.061  |        |       | O    I|        |     5.45
12.583   28.80   22.38      5.106  |        |       | O     I        |     5.48
12.667   30.21   23.20      5.152  |        |       |  O    |I       |     5.51
12.750   30.65   24.29      5.198  |        |       |   O   |I       |     5.53
12.833   31.04   25.28      5.240  |        |       |    O  |I       |     5.56
12.917   31.78   26.21      5.279  |        |       |    O  | I      |     5.58
13.000   32.03   27.07      5.315  |        |       |     O | I      |     5.61
13.083   33.22   27.90      5.351  |        |       |      O|  I     |     5.63
13.167   36.69   28.97      5.396  |        |       |       O     I  |     5.66
13.250   37.75   30.21      5.448  |        |       |       |O     I|     5.69
13.333   38.15   31.38      5.497  |        |       |       | O    I|     5.72
13.417   38.27   32.41      5.541  |        |       |       |  O   I|     5.74
13.500   38.34   33.30      5.578  |        |       |       |  O    I     5.77
13.583   35.97   33.88      5.603  |        |       |       |   O I  |     5.78
13.667   28.43   33.63      5.592  |        |       |      I|   O    |     5.78
13.750   26.17   32.67      5.552  |        |       |    I  |  O     |     5.75
13.833   25.35   31.63      5.508  |        |       |    I  | O      |     5.72
13.917   25.14   30.67      5.467  |        |       |   I   |O       |     5.70
14.000   25.05   29.83      5.432  |        |       |   I   O        |     5.68
14.083   25.90   29.17      5.404  |        |       |    I  O        |     5.66
14.167   28.66   28.88      5.392  |        |       |      IO        |     5.65
14.250   29.50   28.91      5.393  |        |       |       O        |     5.65
14.333   29.60   29.01      5.397  |        |       |       O        |     5.66
14.417   29.01   29.06      5.399  |        |       |       O        |     5.66
14.500   28.86   29.04      5.398  |        |       |       O        |     5.66
14.583   28.82   29.01      5.397  |        |       |       O        |     5.66
14.667   28.81   28.98      5.396  |        |       |       O        |     5.66
14.750   28.82   28.95      5.395  |        |       |       O        |     5.65
14.833   28.61   28.92      5.393  |        |       |      IO        |     5.65
14.917   27.94   28.82      5.389  |        |       |      IO        |     5.65
15.000   27.75   28.67      5.383  |        |       |      O|        |     5.65
15.083   27.47   28.51      5.376  |        |       |     IO|        |     5.64
15.167   26.77   28.30      5.367  |        |       |     IO|        |     5.64
15.250   26.57   28.06      5.357  |        |       |     IO|        |     5.63
15.333   26.29   27.81      5.347  |        |       |    I O|        |     5.62
15.417   25.60   27.53      5.335  |        |       |    IO |        |     5.62
15.500   25.40   27.22      5.322  |        |       |    IO |        |     5.61
15.583   24.46   26.88      5.307  |        |       |   I O |        |     5.60
15.667   21.70   26.30      5.283  |        |       | I  O  |        |     5.59
15.750   20.88   25.55      5.251  |        |       |I   O  |        |     5.57
15.833   20.58   24.82      5.221  |        |       |I  O   |        |     5.55
15.917   20.52   24.18      5.193  |        |       |I  O   |        |     5.53
16.000   20.49   23.62      5.170  |        |       |I O    |        |     5.52
16.083   17.21   22.93      5.139  |        |     I |  O    |        |     5.50
16.167    6.93   21.76      5.069  |    I   |       | O     |        |     5.45
16.250    3.84   19.99      4.962  |  I     |       O       |        |     5.38
16.333    2.71   18.19      4.853  | I      |      O|       |        |     5.31
16.417    2.41   16.50      4.751  | I      |    O  |       |        |     5.25
16.500    2.29   15.11      4.659  |I       |   O   |       |        |     5.19
16.583    2.02   14.32      4.572  |I       |  O    |       |        |     5.13
16.667    1.35   13.54      4.488  |I       |  O    |       |        |     5.07
16.750    1.15   12.78      4.406  I        | O     |       |        |     5.02
16.833    1.09   12.02      4.328  I        | O     |       |        |     4.97
16.917    1.08   11.29      4.255  I        |O      |       |        |     4.91
17.000    1.09   10.60      4.187  I       O      |       |        |     4.87
17.083    1.53    9.97      4.126  |I      O      |       |        |     4.82
17.167    2.92    9.45      4.074  | I    O|      |       |        |     4.79
17.250    3.34    9.03      4.032  | I    O|      |       |        |     4.76
17.333    3.51    8.65      3.995  | I    O|      |       |        |     4.73
17.417    3.56    8.31      3.961  | I   O |      |       |        |     4.71
17.500    3.60    7.99      3.929  |  I  O |      |       |        |     4.69
17.583    3.62    7.69      3.900  |  I  O |      |       |        |     4.67
17.667    3.63    7.42      3.873  |  I  O |      |       |        |     4.65
17.750    3.64    7.16      3.848  |  I O  |      |       |        |     4.63
17.833    3.44    6.92      3.824  | I  O  |      |       |        |     4.61
17.917    2.76    6.66      3.798  | I  O  |      |       |        |     4.60
18.000    2.57    6.39      3.772  | I  O  |      |       |        |     4.58
18.083    2.50    6.13      3.746  | I  O  |      |       |        |     4.56
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18.167	2.49	5.89	3.722	| I O	|	|	|	4.54
18.250	2.50	5.66	3.699	| I O	|	|	|	4.53
18.333	2.50	5.45	3.678	| I O	|	|	|	4.51
18.417	2.51	5.25	3.659	| I O	|	|	|	4.50
18.500	2.53	5.07	3.640	| I O	|	|	|	4.49
18.583	2.32	4.89	3.623	|I O	|	|	|	4.47
18.667	1.64	4.69	3.603	|I O	|	|	|	4.46
18.750	1.45	4.48	3.582	|I O	|	|	|	4.45
18.833	1.16	4.27	3.561	I O	|	|	|	4.43
18.917	0.47	4.03	3.538	I O	|	|	|	4.41
19.000	0.26	3.81	3.514	I O	|	|	|	4.40
19.083	0.41	3.77	3.490	I O	|	|	|	4.38
19.167	1.09	3.73	3.470	I O	|	|	|	4.36
19.250	1.30	3.70	3.452	|I O	|	|	|	4.35
19.333	1.60	3.67	3.437	|I O	|	|	|	4.34
19.417	2.32	3.65	3.425	|I O	|	|	|	4.33
19.500	2.54	3.64	3.417	| IO	|	|	|	4.33
19.583	2.42	3.62	3.409	| IO	|	|	|	4.32
19.667	1.76	3.60	3.398	|I O	|	|	|	4.31
19.750	1.57	3.58	3.385	|IO	|	|	|	4.30
19.833	1.29	3.55	3.370	|IO	|	|	|	4.29
19.917	0.59	3.52	3.352	I O	|	|	|	4.28
20.000	0.39	3.48	3.332	I O	|	|	|	4.26
20.083	0.54	3.44	3.311	I O	|	|	|	4.25
20.167	1.21	3.41	3.293	|IO	|	|	|	4.23
20.250	1.42	3.39	3.279	|IO	|	|	|	4.22
20.333	1.50	3.36	3.266	|IO	|	|	|	4.21
20.417	1.53	3.34	3.253	|IO	|	|	|	4.20
20.500	1.55	3.32	3.241	|IO	|	|	|	4.20
20.583	1.56	3.30	3.229	|IO	|	|	|	4.19
20.667	1.57	3.27	3.217	|IO	|	|	|	4.18
20.750	1.58	3.25	3.205	|IO	|	|	|	4.17
20.833	1.37	3.23	3.193	|IO	|	|	|	4.16
20.917	0.69	3.20	3.178	I O	|	|	|	4.15
21.000	0.49	3.17	3.160	I O	|	|	|	4.14
21.083	0.64	3.14	3.142	I O	|	|	|	4.12
21.167	1.32	3.11	3.128	|IO	|	|	|	4.11
21.250	1.52	3.09	3.116	|IO	|	|	|	4.10
21.333	1.38	3.07	3.105	|IO	|	|	|	4.09
21.417	0.73	3.05	3.091	I O	|	|	|	4.08
21.500	0.54	3.02	3.075	I O	|	|	|	4.07
21.583	0.69	2.99	3.058	I O	|	|	|	4.06
21.667	1.36	2.96	3.045	|IO	|	|	|	4.05
21.750	1.57	2.94	3.034	|IO	|	|	|	4.04
21.833	1.43	2.93	3.025	|IO	|	|	|	4.03
21.917	0.77	2.90	3.012	I O	|	|	|	4.03
22.000	0.58	2.88	2.997	I O	|	|	|	4.01
22.083	0.73	2.85	2.982	I O	|	|	|	4.00
22.167	1.40	2.82	2.969	|IO	|	|	|	3.99
22.250	1.61	2.79	2.961	|IO	|	|	|	3.99
22.333	1.47	2.77	2.952	|IO	|	|	|	3.98
22.417	0.81	2.73	2.941	I O	|	|	|	3.97
22.500	0.62	2.69	2.927	I O	|	|	|	3.96
22.583	0.55	2.65	2.913	I O	|	|	|	3.95
22.667	0.54	2.61	2.898	I O	|	|	|	3.94
22.750	0.53	2.57	2.884	I O	|	|	|	3.93
22.833	0.53	2.53	2.870	I O	|	|	|	3.91
22.917	0.54	2.49	2.857	I O	|	|	|	3.90
23.000	0.54	2.45	2.843	I O	|	|	|	3.89
23.083	0.55	2.41	2.830	I O	|	|	|	3.88
23.167	0.55	2.38	2.818	IO	|	|	|	3.87
23.250	0.56	2.34	2.805	IO	|	|	|	3.86
23.333	0.56	2.31	2.793	IO	|	|	|	3.85
23.417	0.56	2.27	2.781	IO	|	|	|	3.84
23.500	0.57	2.24	2.770	IO	|	|	|	3.83
23.583	0.57	2.21	2.758	IO	|	|	|	3.83
23.667	0.57	2.17	2.747	IO	|	|	|	3.82
23.750	0.58	2.14	2.736	IO	|	|	|	3.81
23.833	0.58	2.11	2.725	IO	|	|	|	3.80
23.917	0.58	2.08	2.715	IO	|	|	|	3.79
24.000	0.58	2.05	2.705	IO	|	|	|	3.78
24.083	0.48	2.02	2.694	IO	|	|	|	3.77
24.167	0.15	1.99	2.683	IO	|	|	|	3.77
24.250	0.05	1.95	2.670	IO	|	|	|	3.76
24.333	0.02	1.91	2.657	IO	|	|	|	3.75

24.417	0.01	1.88	2.644	IO					3.73
24.500	0.00	1.84	2.631	IO					3.72
24.583	0.00	1.80	2.619	IO					3.71
24.667	0.00	1.77	2.606	IO					3.71
24.750	0.00	1.73	2.594	IO					3.70
24.833	0.00	1.70	2.582	IO					3.69
24.917	0.00	1.66	2.571	IO					3.68
25.000	0.00	1.63	2.560	IO					3.67
25.083	0.00	1.60	2.548	IO					3.66
25.167	0.00	1.57	2.537	IO					3.65
25.250	0.00	1.54	2.527	IO					3.64
25.333	0.00	1.51	2.516	IO					3.63
25.417	0.00	1.48	2.506	IO					3.63
25.500	0.00	1.45	2.496	IO					3.62
25.583	0.00	1.42	2.486	IO					3.61
25.667	0.00	1.39	2.476	IO					3.60
25.750	0.00	1.36	2.467	IO					3.59
25.833	0.00	1.34	2.458	IO					3.59
25.917	0.00	1.31	2.449	IO					3.58
26.000	0.00	1.28	2.440	IO					3.57
26.083	0.00	1.26	2.431	IO					3.57
26.167	0.00	1.23	2.422	IO					3.56
26.250	0.00	1.21	2.414	IO					3.55
26.333	0.00	1.19	2.406	O					3.55
26.417	0.00	1.16	2.397	O					3.54
26.500	0.00	1.14	2.390	O					3.53
26.583	0.00	1.12	2.382	O					3.53
26.667	0.00	1.10	2.374	O					3.52
26.750	0.00	1.07	2.367	O					3.51
26.833	0.00	1.05	2.359	O					3.51
26.917	0.00	1.03	2.352	O					3.50
27.000	0.00	1.01	2.345	O					3.50
27.083	0.00	0.99	2.338	O					3.49
27.167	0.00	0.97	2.331	O					3.49
27.250	0.00	0.95	2.325	O					3.48
27.333	0.00	0.93	2.318	O					3.48
27.417	0.00	0.92	2.312	O					3.47
27.500	0.00	0.90	2.306	O					3.47
27.583	0.00	0.88	2.300	O					3.46
27.667	0.00	0.86	2.294	O					3.46
27.750	0.00	0.85	2.288	O					3.45
27.833	0.00	0.83	2.282	O					3.45
27.917	0.00	0.81	2.276	O					3.44
28.000	0.00	0.80	2.271	O					3.44
28.083	0.00	0.78	2.265	O					3.43
28.167	0.00	0.77	2.260	O					3.43
28.250	0.00	0.75	2.255	O					3.43
28.333	0.00	0.74	2.250	O					3.42
28.417	0.00	0.72	2.245	O					3.42
28.500	0.00	0.71	2.240	O					3.41
28.583	0.00	0.69	2.235	O					3.41
28.667	0.00	0.68	2.230	O					3.41
28.750	0.00	0.67	2.226	O					3.40
28.833	0.00	0.66	2.221	O					3.40
28.917	0.00	0.66	2.216	O					3.40
29.000	0.00	0.66	2.212	O					3.39
29.083	0.00	0.65	2.207	O					3.39
29.167	0.00	0.65	2.203	O					3.38
29.250	0.00	0.65	2.198	O					3.38
29.333	0.00	0.65	2.194	O					3.38
29.417	0.00	0.65	2.189	O					3.37
29.500	0.00	0.65	2.185	O					3.37
29.583	0.00	0.65	2.180	O					3.36
29.667	0.00	0.65	2.176	O					3.36
29.750	0.00	0.65	2.171	O					3.36
29.833	0.00	0.65	2.167	O					3.35
29.917	0.00	0.65	2.162	O					3.35
30.000	0.00	0.65	2.158	O					3.35
30.083	0.00	0.65	2.154	O					3.34
30.167	0.00	0.65	2.149	O					3.34
30.250	0.00	0.65	2.145	O					3.33
30.333	0.00	0.65	2.140	O					3.33
30.417	0.00	0.65	2.136	O					3.33
30.500	0.00	0.65	2.131	O					3.32
30.583	0.00	0.65	2.127	O					3.32

30.667	0.00	0.65	2.122	O					3.31
30.750	0.00	0.65	2.118	O					3.31
30.833	0.00	0.65	2.113	O					3.31
30.917	0.00	0.65	2.109	O					3.30
31.000	0.00	0.65	2.104	O					3.30
31.083	0.00	0.65	2.100	O					3.30
31.167	0.00	0.64	2.096	O					3.29
31.250	0.00	0.64	2.091	O					3.29
31.333	0.00	0.64	2.087	O					3.28
31.417	0.00	0.64	2.082	O					3.28
31.500	0.00	0.64	2.078	O					3.28
31.583	0.00	0.64	2.073	O					3.27
31.667	0.00	0.64	2.069	O					3.27
31.750	0.00	0.64	2.065	O					3.27
31.833	0.00	0.64	2.060	O					3.26
31.917	0.00	0.64	2.056	O					3.26
32.000	0.00	0.64	2.051	O					3.25
32.083	0.00	0.64	2.047	O					3.25
32.167	0.00	0.64	2.042	O					3.25
32.250	0.00	0.64	2.038	O					3.24
32.333	0.00	0.64	2.034	O					3.24
32.417	0.00	0.64	2.029	O					3.24
32.500	0.00	0.64	2.025	O					3.23
32.583	0.00	0.64	2.020	O					3.23
32.667	0.00	0.64	2.016	O					3.22
32.750	0.00	0.64	2.012	O					3.22
32.833	0.00	0.64	2.007	O					3.22
32.917	0.00	0.64	2.003	O					3.21
33.000	0.00	0.64	1.999	O					3.21
33.083	0.00	0.64	1.994	O					3.21
33.167	0.00	0.64	1.990	O					3.20
33.250	0.00	0.63	1.985	O					3.20
33.333	0.00	0.63	1.981	O					3.19
33.417	0.00	0.63	1.977	O					3.19
33.500	0.00	0.63	1.972	O					3.19
33.583	0.00	0.63	1.968	O					3.18
33.667	0.00	0.63	1.964	O					3.18
33.750	0.00	0.63	1.959	O					3.18
33.833	0.00	0.63	1.955	O					3.17
33.917	0.00	0.63	1.951	O					3.17
34.000	0.00	0.63	1.946	O					3.16
34.083	0.00	0.63	1.942	O					3.16
34.167	0.00	0.63	1.937	O					3.16
34.250	0.00	0.63	1.933	O					3.15
34.333	0.00	0.63	1.929	O					3.15
34.417	0.00	0.63	1.924	O					3.15
34.500	0.00	0.63	1.920	O					3.14
34.583	0.00	0.63	1.916	O					3.14
34.667	0.00	0.63	1.911	O					3.14
34.750	0.00	0.63	1.907	O					3.13
34.833	0.00	0.63	1.903	O					3.13
34.917	0.00	0.63	1.899	O					3.12
35.000	0.00	0.63	1.894	O					3.12
35.083	0.00	0.63	1.890	O					3.12
35.167	0.00	0.63	1.886	O					3.11
35.250	0.00	0.63	1.881	O					3.11
35.333	0.00	0.63	1.877	O					3.11
35.417	0.00	0.62	1.873	O					3.10
35.500	0.00	0.62	1.868	O					3.10
35.583	0.00	0.62	1.864	O					3.09
35.667	0.00	0.62	1.860	O					3.09
35.750	0.00	0.62	1.855	O					3.09
35.833	0.00	0.62	1.851	O					3.08
35.917	0.00	0.62	1.847	O					3.08
36.000	0.00	0.62	1.843	O					3.08
36.083	0.00	0.62	1.838	O					3.07
36.167	0.00	0.62	1.834	O					3.07
36.250	0.00	0.62	1.830	O					3.07
36.333	0.00	0.62	1.825	O					3.06
36.417	0.00	0.62	1.821	O					3.06
36.500	0.00	0.62	1.817	O					3.05
36.583	0.00	0.62	1.813	O					3.05
36.667	0.00	0.62	1.808	O					3.05
36.750	0.00	0.62	1.804	O					3.04
36.833	0.00	0.62	1.800	O					3.04

36.917	0.00	0.62	1.796	O					3.04
37.000	0.00	0.62	1.791	O					3.03
37.083	0.00	0.62	1.787	O					3.03
37.167	0.00	0.62	1.783	O					3.03
37.250	0.00	0.62	1.779	O					3.02
37.333	0.00	0.62	1.774	O					3.02
37.417	0.00	0.62	1.770	O					3.01
37.500	0.00	0.62	1.766	O					3.01
37.583	0.00	0.61	1.762	O					3.01
37.667	0.00	0.61	1.757	O					3.00
37.750	0.00	0.61	1.753	O					3.00
37.833	0.00	0.61	1.749	O					3.00
37.917	0.00	0.61	1.745	O					2.99
38.000	0.00	0.61	1.741	O					2.99
38.083	0.00	0.61	1.736	O					2.98
38.167	0.00	0.61	1.732	O					2.98
38.250	0.00	0.61	1.728	O					2.98
38.333	0.00	0.61	1.724	O					2.97
38.417	0.00	0.61	1.719	O					2.97
38.500	0.00	0.61	1.715	O					2.96
38.583	0.00	0.61	1.711	O					2.96
38.667	0.00	0.61	1.707	O					2.95
38.750	0.00	0.61	1.703	O					2.95
38.833	0.00	0.61	1.699	O					2.95
38.917	0.00	0.61	1.694	O					2.94
39.000	0.00	0.61	1.690	O					2.94
39.083	0.00	0.61	1.686	O					2.93
39.167	0.00	0.61	1.682	O					2.93
39.250	0.00	0.61	1.678	O					2.93
39.333	0.00	0.60	1.673	O					2.92
39.417	0.00	0.60	1.669	O					2.92
39.500	0.00	0.60	1.665	O					2.91
39.583	0.00	0.60	1.661	O					2.91
39.667	0.00	0.60	1.657	O					2.90
39.750	0.00	0.60	1.653	O					2.90
39.833	0.00	0.60	1.649	O					2.90
39.917	0.00	0.60	1.644	O					2.89
40.000	0.00	0.60	1.640	O					2.89
40.083	0.00	0.60	1.636	O					2.88
40.167	0.00	0.60	1.632	O					2.88
40.250	0.00	0.60	1.628	O					2.88
40.333	0.00	0.60	1.624	O					2.87
40.417	0.00	0.60	1.620	O					2.87
40.500	0.00	0.60	1.615	O					2.86
40.583	0.00	0.60	1.611	O					2.86
40.667	0.00	0.60	1.607	O					2.86
40.750	0.00	0.60	1.603	O					2.85
40.833	0.00	0.60	1.599	O					2.85
40.917	0.00	0.60	1.595	O					2.84
41.000	0.00	0.60	1.591	O					2.84
41.083	0.00	0.59	1.587	O					2.84
41.167	0.00	0.59	1.583	O					2.83
41.250	0.00	0.59	1.579	O					2.83
41.333	0.00	0.59	1.574	O					2.82
41.417	0.00	0.59	1.570	O					2.82
41.500	0.00	0.59	1.566	O					2.82
41.583	0.00	0.59	1.562	O					2.81
41.667	0.00	0.59	1.558	O					2.81
41.750	0.00	0.59	1.554	O					2.80
41.833	0.00	0.59	1.550	O					2.80
41.917	0.00	0.59	1.546	O					2.80
42.000	0.00	0.59	1.542	O					2.79
42.083	0.00	0.59	1.538	O					2.79
42.167	0.00	0.59	1.534	O					2.78
42.250	0.00	0.59	1.530	O					2.78
42.333	0.00	0.59	1.526	O					2.78
42.417	0.00	0.59	1.522	O					2.77
42.500	0.00	0.59	1.518	O					2.77
42.583	0.00	0.59	1.514	O					2.76
42.667	0.00	0.59	1.509	O					2.76
42.750	0.00	0.59	1.505	O					2.76
42.833	0.00	0.58	1.501	O					2.75
42.917	0.00	0.58	1.497	O					2.75
43.000	0.00	0.58	1.493	O					2.74
43.083	0.00	0.58	1.489	O					2.74

43.167	0.00	0.58	1.485	O	|	|	|	|	2.74
43.250	0.00	0.58	1.481	O	|	|	|	|	2.73
43.333	0.00	0.58	1.477	O	|	|	|	|	2.73
43.417	0.00	0.58	1.473	O	|	|	|	|	2.72
43.500	0.00	0.58	1.469	O	|	|	|	|	2.72
43.583	0.00	0.58	1.465	O	|	|	|	|	2.72
43.667	0.00	0.58	1.461	O	|	|	|	|	2.71
43.750	0.00	0.58	1.457	O	|	|	|	|	2.71
43.833	0.00	0.58	1.453	O	|	|	|	|	2.70
43.917	0.00	0.58	1.449	O	|	|	|	|	2.70
44.000	0.00	0.58	1.445	O	|	|	|	|	2.70
44.083	0.00	0.58	1.441	O	|	|	|	|	2.69
44.167	0.00	0.58	1.437	O	|	|	|	|	2.69
44.250	0.00	0.58	1.433	O	|	|	|	|	2.68
44.333	0.00	0.58	1.429	O	|	|	|	|	2.68
44.417	0.00	0.58	1.425	O	|	|	|	|	2.68
44.500	0.00	0.58	1.421	O	|	|	|	|	2.67
44.583	0.00	0.58	1.418	O	|	|	|	|	2.67
44.667	0.00	0.57	1.414	O	|	|	|	|	2.66
44.750	0.00	0.57	1.410	O	|	|	|	|	2.66
44.833	0.00	0.57	1.406	O	|	|	|	|	2.66
44.917	0.00	0.57	1.402	O	|	|	|	|	2.65
45.000	0.00	0.57	1.398	O	|	|	|	|	2.65
45.083	0.00	0.57	1.394	O	|	|	|	|	2.65
45.167	0.00	0.57	1.390	O	|	|	|	|	2.64
45.250	0.00	0.57	1.386	O	|	|	|	|	2.64
45.333	0.00	0.57	1.382	O	|	|	|	|	2.63
45.417	0.00	0.57	1.378	O	|	|	|	|	2.63
45.500	0.00	0.57	1.374	O	|	|	|	|	2.63
45.583	0.00	0.57	1.370	O	|	|	|	|	2.62
45.667	0.00	0.57	1.366	O	|	|	|	|	2.62
45.750	0.00	0.57	1.362	O	|	|	|	|	2.61
45.833	0.00	0.57	1.358	O	|	|	|	|	2.61
45.917	0.00	0.57	1.355	O	|	|	|	|	2.61
46.000	0.00	0.57	1.351	O	|	|	|	|	2.60
46.083	0.00	0.57	1.347	O	|	|	|	|	2.60
46.167	0.00	0.57	1.343	O	|	|	|	|	2.59
46.250	0.00	0.57	1.339	O	|	|	|	|	2.59
46.333	0.00	0.57	1.335	O	|	|	|	|	2.59
46.417	0.00	0.57	1.331	O	|	|	|	|	2.58
46.500	0.00	0.56	1.327	O	|	|	|	|	2.58
46.583	0.00	0.56	1.323	O	|	|	|	|	2.58
46.667	0.00	0.56	1.319	O	|	|	|	|	2.57
46.750	0.00	0.56	1.316	O	|	|	|	|	2.57
46.833	0.00	0.56	1.312	O	|	|	|	|	2.56
46.917	0.00	0.56	1.308	O	|	|	|	|	2.56
47.000	0.00	0.56	1.304	O	|	|	|	|	2.56
47.083	0.00	0.56	1.300	O	|	|	|	|	2.55
47.167	0.00	0.56	1.296	O	|	|	|	|	2.55
47.250	0.00	0.56	1.292	O	|	|	|	|	2.54
47.333	0.00	0.56	1.288	O	|	|	|	|	2.54
47.417	0.00	0.56	1.285	O	|	|	|	|	2.54
47.500	0.00	0.56	1.281	O	|	|	|	|	2.53
47.583	0.00	0.56	1.277	O	|	|	|	|	2.53
47.667	0.00	0.56	1.273	O	|	|	|	|	2.53
47.750	0.00	0.56	1.269	O	|	|	|	|	2.52
47.833	0.00	0.56	1.265	O	|	|	|	|	2.52
47.917	0.00	0.56	1.262	O	|	|	|	|	2.51
48.000	0.00	0.56	1.258	O	|	|	|	|	2.51
48.083	0.00	0.56	1.254	O	|	|	|	|	2.51
48.167	0.00	0.56	1.250	O	|	|	|	|	2.50
48.250	0.00	0.56	1.246	O	|	|	|	|	2.50
48.333	0.00	0.55	1.242	O	|	|	|	|	2.50
48.417	0.00	0.55	1.239	O	|	|	|	|	2.49
48.500	0.00	0.55	1.235	O	|	|	|	|	2.49
48.583	0.00	0.55	1.231	O	|	|	|	|	2.48
48.667	0.00	0.55	1.227	O	|	|	|	|	2.48
48.750	0.00	0.55	1.223	O	|	|	|	|	2.48
48.833	0.00	0.55	1.220	O	|	|	|	|	2.47
48.917	0.00	0.55	1.216	O	|	|	|	|	2.47
49.000	0.00	0.55	1.212	O	|	|	|	|	2.47
49.083	0.00	0.55	1.208	O	|	|	|	|	2.46
49.167	0.00	0.55	1.204	O	|	|	|	|	2.46
49.250	0.00	0.55	1.201	O	|	|	|	|	2.45
49.333	0.00	0.55	1.197	O	|	|	|	|	2.45

49.417	0.00	0.55	1.193	O					2.45
49.500	0.00	0.55	1.189	O					2.44
49.583	0.00	0.55	1.185	O					2.44
49.667	0.00	0.55	1.182	O					2.44
49.750	0.00	0.55	1.178	O					2.43
49.833	0.00	0.55	1.174	O					2.43
49.917	0.00	0.55	1.170	O					2.42
50.000	0.00	0.55	1.167	O					2.42
50.083	0.00	0.55	1.163	O					2.42
50.167	0.00	0.55	1.159	O					2.41
50.250	0.00	0.54	1.155	O					2.41
50.333	0.00	0.54	1.152	O					2.41
50.417	0.00	0.54	1.148	O					2.40
50.500	0.00	0.54	1.144	O					2.40
50.583	0.00	0.54	1.140	O					2.39
50.667	0.00	0.54	1.137	O					2.39
50.750	0.00	0.54	1.133	O					2.39
50.833	0.00	0.54	1.129	O					2.38
50.917	0.00	0.54	1.125	O					2.38
51.000	0.00	0.54	1.122	O					2.38
51.083	0.00	0.54	1.118	O					2.37
51.167	0.00	0.54	1.114	O					2.37
51.250	0.00	0.54	1.110	O					2.37
51.333	0.00	0.54	1.107	O					2.36
51.417	0.00	0.54	1.103	O					2.36
51.500	0.00	0.54	1.099	O					2.35
51.583	0.00	0.54	1.096	O					2.35
51.667	0.00	0.54	1.092	O					2.35
51.750	0.00	0.54	1.088	O					2.34
51.833	0.00	0.54	1.085	O					2.34
51.917	0.00	0.54	1.081	O					2.34
52.000	0.00	0.54	1.077	O					2.33
52.083	0.00	0.54	1.073	O					2.33
52.167	0.00	0.54	1.070	O					2.32
52.250	0.00	0.53	1.066	O					2.32
52.333	0.00	0.53	1.062	O					2.32
52.417	0.00	0.53	1.059	O					2.31
52.500	0.00	0.53	1.055	O					2.31
52.583	0.00	0.53	1.051	O					2.31
52.667	0.00	0.53	1.048	O					2.30
52.750	0.00	0.53	1.044	O					2.30
52.833	0.00	0.53	1.040	O					2.30
52.917	0.00	0.53	1.037	O					2.29
53.000	0.00	0.53	1.033	O					2.29
53.083	0.00	0.53	1.029	O					2.29
53.167	0.00	0.53	1.026	O					2.28
53.250	0.00	0.53	1.022	O					2.28
53.333	0.00	0.53	1.018	O					2.27
53.417	0.00	0.53	1.015	O					2.27
53.500	0.00	0.53	1.011	O					2.27
53.583	0.00	0.53	1.008	O					2.26
53.667	0.00	0.53	1.004	O					2.26
53.750	0.00	0.53	1.000	O					2.26
53.833	0.00	0.53	0.997	O					2.25
53.917	0.00	0.53	0.993	O					2.25
54.000	0.00	0.53	0.989	O					2.25
54.083	0.00	0.53	0.986	O					2.24
54.167	0.00	0.52	0.982	O					2.24
54.250	0.00	0.52	0.979	O					2.23
54.333	0.00	0.52	0.975	O					2.23
54.417	0.00	0.52	0.971	O					2.23
54.500	0.00	0.52	0.968	O					2.22
54.583	0.00	0.52	0.964	O					2.22
54.667	0.00	0.52	0.961	O					2.22
54.750	0.00	0.52	0.957	O					2.21
54.833	0.00	0.52	0.953	O					2.21
54.917	0.00	0.52	0.950	O					2.21
55.000	0.00	0.52	0.946	O					2.20
55.083	0.00	0.52	0.943	O					2.20
55.167	0.00	0.52	0.939	O					2.20
55.250	0.00	0.52	0.935	O					2.19
55.333	0.00	0.52	0.932	O					2.19
55.417	0.00	0.52	0.928	O					2.19
55.500	0.00	0.52	0.925	O					2.18
55.583	0.00	0.52	0.921	O					2.18

55.667	0.00	0.52	0.918	O	|	|	|	|	2.17
55.750	0.00	0.52	0.914	O	|	|	|	|	2.17
55.833	0.00	0.52	0.910	O	|	|	|	|	2.17
55.917	0.00	0.52	0.907	O	|	|	|	|	2.16
56.000	0.00	0.52	0.903	O	|	|	|	|	2.16
56.083	0.00	0.52	0.900	O	|	|	|	|	2.16
56.167	0.00	0.51	0.896	O	|	|	|	|	2.15
56.250	0.00	0.51	0.893	O	|	|	|	|	2.15
56.333	0.00	0.51	0.889	O	|	|	|	|	2.15
56.417	0.00	0.51	0.886	O	|	|	|	|	2.14
56.500	0.00	0.51	0.882	O	|	|	|	|	2.14
56.583	0.00	0.51	0.879	O	|	|	|	|	2.14
56.667	0.00	0.51	0.875	O	|	|	|	|	2.13
56.750	0.00	0.51	0.871	O	|	|	|	|	2.13
56.833	0.00	0.51	0.868	O	|	|	|	|	2.13
56.917	0.00	0.51	0.864	O	|	|	|	|	2.12
57.000	0.00	0.51	0.861	O	|	|	|	|	2.12
57.083	0.00	0.51	0.857	O	|	|	|	|	2.12
57.167	0.00	0.51	0.854	O	|	|	|	|	2.11
57.250	0.00	0.51	0.850	O	|	|	|	|	2.11
57.333	0.00	0.51	0.847	O	|	|	|	|	2.10
57.417	0.00	0.51	0.843	O	|	|	|	|	2.10
57.500	0.00	0.51	0.840	O	|	|	|	|	2.10
57.583	0.00	0.51	0.836	O	|	|	|	|	2.09
57.667	0.00	0.51	0.833	O	|	|	|	|	2.09
57.750	0.00	0.51	0.829	O	|	|	|	|	2.09
57.833	0.00	0.51	0.826	O	|	|	|	|	2.08
57.917	0.00	0.51	0.822	O	|	|	|	|	2.08
58.000	0.00	0.51	0.819	O	|	|	|	|	2.08
58.083	0.00	0.51	0.815	O	|	|	|	|	2.07
58.167	0.00	0.51	0.812	O	|	|	|	|	2.07
58.250	0.00	0.50	0.808	O	|	|	|	|	2.07
58.333	0.00	0.50	0.805	O	|	|	|	|	2.06
58.417	0.00	0.50	0.802	O	|	|	|	|	2.06
58.500	0.00	0.50	0.798	O	|	|	|	|	2.06
58.583	0.00	0.50	0.795	O	|	|	|	|	2.05
58.667	0.00	0.50	0.791	O	|	|	|	|	2.05
58.750	0.00	0.50	0.788	O	|	|	|	|	2.05
58.833	0.00	0.50	0.784	O	|	|	|	|	2.04
58.917	0.00	0.50	0.781	O	|	|	|	|	2.04
59.000	0.00	0.50	0.777	O	|	|	|	|	2.04
59.083	0.00	0.50	0.774	O	|	|	|	|	2.03
59.167	0.00	0.50	0.770	O	|	|	|	|	2.03
59.250	0.00	0.50	0.767	O	|	|	|	|	2.03
59.333	0.00	0.50	0.764	O	|	|	|	|	2.02
59.417	0.00	0.50	0.760	O	|	|	|	|	2.02
59.500	0.00	0.50	0.757	O	|	|	|	|	2.02
59.583	0.00	0.50	0.753	O	|	|	|	|	2.01
59.667	0.00	0.50	0.750	O	|	|	|	|	2.01
59.750	0.00	0.50	0.746	O	|	|	|	|	2.01
59.833	0.00	0.50	0.743	O	|	|	|	|	2.00
59.917	0.00	0.50	0.739	O	|	|	|	|	2.00
60.000	0.00	0.50	0.736	O	|	|	|	|	1.99
60.083	0.00	0.49	0.733	O	|	|	|	|	1.99
60.167	0.00	0.49	0.729	O	|	|	|	|	1.98
60.250	0.00	0.49	0.726	O	|	|	|	|	1.97
60.333	0.00	0.49	0.722	O	|	|	|	|	1.97
60.417	0.00	0.49	0.719	O	|	|	|	|	1.96
60.500	0.00	0.49	0.716	O	|	|	|	|	1.96
60.583	0.00	0.49	0.712	O	|	|	|	|	1.95
60.667	0.00	0.49	0.709	O	|	|	|	|	1.94
60.750	0.00	0.49	0.706	O	|	|	|	|	1.94
60.833	0.00	0.49	0.702	O	|	|	|	|	1.93
60.917	0.00	0.49	0.699	O	|	|	|	|	1.93
61.000	0.00	0.48	0.696	O	|	|	|	|	1.92
61.083	0.00	0.48	0.692	O	|	|	|	|	1.92
61.167	0.00	0.48	0.689	O	|	|	|	|	1.91
61.250	0.00	0.48	0.686	O	|	|	|	|	1.90
61.333	0.00	0.48	0.682	O	|	|	|	|	1.90
61.417	0.00	0.48	0.679	O	|	|	|	|	1.89
61.500	0.00	0.48	0.676	O	|	|	|	|	1.89
61.583	0.00	0.48	0.672	O	|	|	|	|	1.88
61.667	0.00	0.48	0.669	O	|	|	|	|	1.88
61.750	0.00	0.48	0.666	O	|	|	|	|	1.87
61.833	0.00	0.48	0.662	O	|	|	|	|	1.86

61.917	0.00	0.48	0.659	O	|	|	|	|	1.86
62.000	0.00	0.47	0.656	O	|	|	|	|	1.85
62.083	0.00	0.47	0.653	O	|	|	|	|	1.85
62.167	0.00	0.47	0.649	O	|	|	|	|	1.84
62.250	0.00	0.47	0.646	O	|	|	|	|	1.84
62.333	0.00	0.47	0.643	O	|	|	|	|	1.83
62.417	0.00	0.47	0.640	O	|	|	|	|	1.82
62.500	0.00	0.47	0.636	O	|	|	|	|	1.82
62.583	0.00	0.47	0.633	O	|	|	|	|	1.81
62.667	0.00	0.47	0.630	O	|	|	|	|	1.81
62.750	0.00	0.47	0.627	O	|	|	|	|	1.80
62.833	0.00	0.47	0.624	O	|	|	|	|	1.80
62.917	0.00	0.46	0.620	O	|	|	|	|	1.79
63.000	0.00	0.46	0.617	O	|	|	|	|	1.79
63.083	0.00	0.46	0.614	O	|	|	|	|	1.78
63.167	0.00	0.46	0.611	O	|	|	|	|	1.77
63.250	0.00	0.46	0.608	O	|	|	|	|	1.77
63.333	0.00	0.46	0.604	O	|	|	|	|	1.76
63.417	0.00	0.46	0.601	O	|	|	|	|	1.76
63.500	0.00	0.46	0.598	O	|	|	|	|	1.75
63.583	0.00	0.46	0.595	O	|	|	|	|	1.75
63.667	0.00	0.46	0.592	O	|	|	|	|	1.74
63.750	0.00	0.46	0.589	O	|	|	|	|	1.74
63.833	0.00	0.46	0.586	O	|	|	|	|	1.73
63.917	0.00	0.45	0.582	O	|	|	|	|	1.73
64.000	0.00	0.45	0.579	O	|	|	|	|	1.72
64.083	0.00	0.45	0.576	O	|	|	|	|	1.71
64.167	0.00	0.45	0.573	O	|	|	|	|	1.71
64.250	0.00	0.45	0.570	O	|	|	|	|	1.70
64.333	0.00	0.45	0.567	O	|	|	|	|	1.70
64.417	0.00	0.45	0.564	O	|	|	|	|	1.69
64.500	0.00	0.45	0.561	O	|	|	|	|	1.69
64.583	0.00	0.45	0.558	O	|	|	|	|	1.68
64.667	0.00	0.45	0.554	O	|	|	|	|	1.68
64.750	0.00	0.45	0.551	O	|	|	|	|	1.67
64.833	0.00	0.45	0.548	O	|	|	|	|	1.67
64.917	0.00	0.44	0.545	O	|	|	|	|	1.66
65.000	0.00	0.44	0.542	O	|	|	|	|	1.66
65.083	0.00	0.44	0.539	O	|	|	|	|	1.65
65.167	0.00	0.44	0.536	O	|	|	|	|	1.65
65.250	0.00	0.44	0.533	O	|	|	|	|	1.64
65.333	0.00	0.44	0.530	O	|	|	|	|	1.63
65.417	0.00	0.44	0.527	O	|	|	|	|	1.63
65.500	0.00	0.44	0.524	O	|	|	|	|	1.62
65.583	0.00	0.44	0.521	O	|	|	|	|	1.62
65.667	0.00	0.44	0.518	O	|	|	|	|	1.61
65.750	0.00	0.44	0.515	O	|	|	|	|	1.61
65.833	0.00	0.44	0.512	O	|	|	|	|	1.60
65.917	0.00	0.43	0.509	O	|	|	|	|	1.60
66.000	0.00	0.43	0.506	O	|	|	|	|	1.59
66.083	0.00	0.43	0.503	O	|	|	|	|	1.59
66.167	0.00	0.43	0.500	O	|	|	|	|	1.58
66.250	0.00	0.43	0.497	O	|	|	|	|	1.58
66.333	0.00	0.43	0.494	O	|	|	|	|	1.57
66.417	0.00	0.43	0.491	O	|	|	|	|	1.57
66.500	0.00	0.43	0.488	O	|	|	|	|	1.56
66.583	0.00	0.43	0.485	O	|	|	|	|	1.56
66.667	0.00	0.43	0.482	O	|	|	|	|	1.55
66.750	0.00	0.43	0.479	O	|	|	|	|	1.55
66.833	0.00	0.43	0.476	O	|	|	|	|	1.54
66.917	0.00	0.43	0.473	O	|	|	|	|	1.54
67.000	0.00	0.42	0.470	O	|	|	|	|	1.53
67.083	0.00	0.42	0.468	O	|	|	|	|	1.53
67.167	0.00	0.42	0.465	O	|	|	|	|	1.52
67.250	0.00	0.42	0.462	O	|	|	|	|	1.52
67.333	0.00	0.42	0.459	O	|	|	|	|	1.51
67.417	0.00	0.42	0.456	O	|	|	|	|	1.51
67.500	0.00	0.42	0.453	O	|	|	|	|	1.50
67.583	0.00	0.42	0.450	O	|	|	|	|	1.50
67.667	0.00	0.42	0.447	O	|	|	|	|	1.49
67.750	0.00	0.42	0.444	O	|	|	|	|	1.49
67.833	0.00	0.42	0.441	O	|	|	|	|	1.48
67.917	0.00	0.42	0.439	O	|	|	|	|	1.48
68.000	0.00	0.42	0.436	O	|	|	|	|	1.47
68.083	0.00	0.41	0.433	O	|	|	|	|	1.47

68.167	0.00	0.41	0.430	O				1.46
68.250	0.00	0.41	0.427	O				1.46
68.333	0.00	0.41	0.424	O				1.45
68.417	0.00	0.41	0.422	O				1.45
68.500	0.00	0.41	0.419	O				1.44
68.583	0.00	0.41	0.416	O				1.44
68.667	0.00	0.41	0.413	O				1.43
68.750	0.00	0.41	0.410	O				1.43
68.833	0.00	0.41	0.407	O				1.42
68.917	0.00	0.41	0.405	O				1.42
69.000	0.00	0.41	0.402	O				1.41
69.083	0.00	0.41	0.399	O				1.41
69.167	0.00	0.40	0.396	O				1.40
69.250	0.00	0.40	0.393	O				1.40
69.333	0.00	0.40	0.391	O				1.39
69.417	0.00	0.40	0.388	O				1.39
69.500	0.00	0.40	0.385	O				1.38
69.583	0.00	0.40	0.382	O				1.38
69.667	0.00	0.40	0.380	O				1.37
69.750	0.00	0.40	0.377	O				1.37
69.833	0.00	0.40	0.374	O				1.37
69.917	0.00	0.40	0.371	O				1.36
70.000	0.00	0.40	0.369	O				1.36
70.083	0.00	0.40	0.366	O				1.35
70.167	0.00	0.40	0.363	O				1.35
70.250	0.00	0.39	0.360	O				1.34
70.333	0.00	0.39	0.358	O				1.34
70.417	0.00	0.39	0.355	O				1.33
70.500	0.00	0.39	0.352	O				1.33
70.583	0.00	0.39	0.350	O				1.32
70.667	0.00	0.39	0.347	O				1.32
70.750	0.00	0.39	0.344	O				1.31
70.833	0.00	0.39	0.342	O				1.31
70.917	0.00	0.39	0.339	O				1.30
71.000	0.00	0.39	0.336	O				1.30
71.083	0.00	0.39	0.334	O				1.29
71.167	0.00	0.39	0.331	O				1.29
71.250	0.00	0.39	0.328	O				1.29
71.333	0.00	0.39	0.326	O				1.28
71.417	0.00	0.38	0.323	O				1.28
71.500	0.00	0.38	0.320	O				1.27
71.583	0.00	0.38	0.318	O				1.27
71.667	0.00	0.38	0.315	O				1.26
71.750	0.00	0.38	0.312	O				1.26
71.833	0.00	0.38	0.310	O				1.25
71.917	0.00	0.38	0.307	O				1.25
72.000	0.00	0.38	0.304	O				1.24
72.083	0.00	0.38	0.302	O				1.24
72.167	0.00	0.38	0.299	O				1.24
72.250	0.00	0.38	0.297	O				1.23
72.333	0.00	0.38	0.294	O				1.23
72.417	0.00	0.38	0.291	O				1.22
72.500	0.00	0.38	0.289	O				1.22
72.583	0.00	0.38	0.286	O				1.21
72.667	0.00	0.37	0.284	O				1.21
72.750	0.00	0.37	0.281	O				1.20
72.833	0.00	0.37	0.279	O				1.20
72.917	0.00	0.37	0.276	O				1.20
73.000	0.00	0.37	0.273	O				1.19
73.083	0.00	0.37	0.271	O				1.19
73.167	0.00	0.37	0.268	O				1.18
73.250	0.00	0.37	0.266	O				1.18
73.333	0.00	0.37	0.263	O				1.17
73.417	0.00	0.37	0.261	O				1.17
73.500	0.00	0.37	0.258	O				1.16
73.583	0.00	0.37	0.256	O				1.16
73.667	0.00	0.37	0.253	O				1.16
73.750	0.00	0.37	0.251	O				1.15
73.833	0.00	0.36	0.248	O				1.15
73.917	0.00	0.36	0.246	O				1.14
74.000	0.00	0.36	0.243	O				1.14
74.083	0.00	0.36	0.241	O				1.13
74.167	0.00	0.36	0.238	O				1.13
74.250	0.00	0.36	0.236	O				1.13
74.333	0.00	0.36	0.233	O				1.12

74.417	0.00	0.36	0.231	O	|	|	|	|	1.12
74.500	0.00	0.36	0.228	O	|	|	|	|	1.11
74.583	0.00	0.36	0.226	O	|	|	|	|	1.11
74.667	0.00	0.36	0.223	O	|	|	|	|	1.10
74.750	0.00	0.36	0.221	O	|	|	|	|	1.10
74.833	0.00	0.36	0.218	O	|	|	|	|	1.10
74.917	0.00	0.36	0.216	O	|	|	|	|	1.09
75.000	0.00	0.36	0.213	O	|	|	|	|	1.09
75.083	0.00	0.35	0.211	O	|	|	|	|	1.08
75.167	0.00	0.35	0.208	O	|	|	|	|	1.08
75.250	0.00	0.35	0.206	O	|	|	|	|	1.07
75.333	0.00	0.35	0.204	O	|	|	|	|	1.07
75.417	0.00	0.35	0.201	O	|	|	|	|	1.07
75.500	0.00	0.35	0.199	O	|	|	|	|	1.06
75.583	0.00	0.35	0.196	O	|	|	|	|	1.06
75.667	0.00	0.35	0.194	O	|	|	|	|	1.05
75.750	0.00	0.35	0.191	O	|	|	|	|	1.05
75.833	0.00	0.35	0.189	O	|	|	|	|	1.05
75.917	0.00	0.35	0.187	O	|	|	|	|	1.04
76.000	0.00	0.35	0.184	O	|	|	|	|	1.04
76.083	0.00	0.35	0.182	O	|	|	|	|	1.03
76.167	0.00	0.35	0.179	O	|	|	|	|	1.03
76.250	0.00	0.35	0.177	O	|	|	|	|	1.02
76.333	0.00	0.35	0.175	O	|	|	|	|	1.02
76.417	0.00	0.34	0.172	O	|	|	|	|	1.02
76.500	0.00	0.34	0.170	O	|	|	|	|	1.01
76.583	0.00	0.34	0.168	O	|	|	|	|	1.01
76.667	0.00	0.34	0.165	O	|	|	|	|	1.00
76.750	0.00	0.34	0.163	O	|	|	|	|	1.00
76.833	0.00	0.34	0.161	O	|	|	|	|	0.99
76.917	0.00	0.33	0.158	O	|	|	|	|	0.97
77.000	0.00	0.33	0.156	O	|	|	|	|	0.96
77.083	0.00	0.32	0.154	O	|	|	|	|	0.95
77.167	0.00	0.32	0.152	O	|	|	|	|	0.94
77.250	0.00	0.31	0.149	O	|	|	|	|	0.92
77.333	0.00	0.31	0.147	O	|	|	|	|	0.91
77.417	0.00	0.30	0.145	O	|	|	|	|	0.90
77.500	0.00	0.30	0.143	O	|	|	|	|	0.89
77.583	0.00	0.30	0.141	O	|	|	|	|	0.88
77.667	0.00	0.29	0.139	O	|	|	|	|	0.86
77.750	0.00	0.29	0.137	O	|	|	|	|	0.85
77.833	0.00	0.28	0.135	O	|	|	|	|	0.84
77.917	0.00	0.28	0.133	O	|	|	|	|	0.83
78.000	0.00	0.27	0.131	O	|	|	|	|	0.82
78.083	0.00	0.27	0.129	O	|	|	|	|	0.81
78.167	0.00	0.27	0.127	O	|	|	|	|	0.80
78.250	0.00	0.26	0.126	O	|	|	|	|	0.79
78.333	0.00	0.26	0.124	O	|	|	|	|	0.78
78.417	0.00	0.25	0.122	O	|	|	|	|	0.77
78.500	0.00	0.25	0.120	O	|	|	|	|	0.76
78.583	0.00	0.25	0.119	O	|	|	|	|	0.75
78.667	0.00	0.24	0.117	O	|	|	|	|	0.74
78.750	0.00	0.24	0.115	O	|	|	|	|	0.73
78.833	0.00	0.24	0.114	O	|	|	|	|	0.72
78.917	0.00	0.23	0.112	O	|	|	|	|	0.71
79.000	0.00	0.23	0.110	O	|	|	|	|	0.70
79.083	0.00	0.23	0.109	O	|	|	|	|	0.70
79.167	0.00	0.22	0.107	O	|	|	|	|	0.69
79.250	0.00	0.22	0.106	O	|	|	|	|	0.68
79.333	0.00	0.22	0.104	O	|	|	|	|	0.67
79.417	0.00	0.21	0.103	O	|	|	|	|	0.66
79.500	0.00	0.21	0.101	O	|	|	|	|	0.65
79.583	0.00	0.21	0.100	O	|	|	|	|	0.64
79.667	0.00	0.20	0.098	O	|	|	|	|	0.64
79.750	0.00	0.20	0.097	O	|	|	|	|	0.63
79.833	0.00	0.20	0.096	O	|	|	|	|	0.62
79.917	0.00	0.20	0.094	O	|	|	|	|	0.61
80.000	0.00	0.19	0.093	O	|	|	|	|	0.61
80.083	0.00	0.19	0.092	O	|	|	|	|	0.60
80.167	0.00	0.19	0.090	O	|	|	|	|	0.59
80.250	0.00	0.18	0.089	O	|	|	|	|	0.58
80.333	0.00	0.18	0.088	O	|	|	|	|	0.58
80.417	0.00	0.18	0.087	O	|	|	|	|	0.57
80.500	0.00	0.18	0.085	O	|	|	|	|	0.56
80.583	0.00	0.17	0.084	O	|	|	|	|	0.56

80.667	0.00	0.17	0.083	O					0.55
80.750	0.00	0.17	0.082	O					0.54
80.833	0.00	0.17	0.081	O					0.54
80.917	0.00	0.16	0.079	O					0.53
81.000	0.00	0.16	0.078	O					0.52
81.083	0.00	0.16	0.077	O					0.52
81.167	0.00	0.16	0.076	O					0.51
81.250	0.00	0.15	0.075	O					0.51
81.333	0.00	0.15	0.074	O					0.50
81.417	0.00	0.15	0.073	O					0.49
81.500	0.00	0.15	0.072	O					0.49
81.583	0.00	0.15	0.071	O					0.48
81.667	0.00	0.14	0.070	O					0.48
81.750	0.00	0.14	0.069	O					0.47
81.833	0.00	0.14	0.068	O					0.47
81.917	0.00	0.14	0.067	O					0.46
82.000	0.00	0.14	0.066	O					0.46
82.083	0.00	0.13	0.065	O					0.45
82.167	0.00	0.13	0.064	O					0.44
82.250	0.00	0.13	0.063	O					0.44
82.333	0.00	0.13	0.062	O					0.43
82.417	0.00	0.13	0.062	O					0.43
82.500	0.00	0.12	0.061	O					0.42
82.583	0.00	0.12	0.060	O					0.42
82.667	0.00	0.12	0.059	O					0.42
82.750	0.00	0.12	0.058	O					0.41
82.833	0.00	0.12	0.057	O					0.41
82.917	0.00	0.12	0.057	O					0.40
83.000	0.00	0.11	0.056	O					0.40
83.083	0.00	0.11	0.055	O					0.39
83.167	0.00	0.11	0.054	O					0.39
83.250	0.00	0.11	0.054	O					0.38
83.333	0.00	0.11	0.053	O					0.38
83.417	0.00	0.11	0.052	O					0.38
83.500	0.00	0.10	0.051	O					0.37
83.583	0.00	0.10	0.051	O					0.37
83.667	0.00	0.10	0.050	O					0.36
83.750	0.00	0.10	0.049	O					0.36
83.833	0.00	0.10	0.049	O					0.36
83.917	0.00	0.10	0.048	O					0.35
84.000	0.00	0.10	0.047	O					0.35
84.083	0.00	0.09	0.047	O					0.35
84.167	0.00	0.09	0.046	O					0.34
84.250	0.00	0.09	0.045	O					0.34
84.333	0.00	0.09	0.045	O					0.33
84.417	0.00	0.09	0.044	O					0.33
84.500	0.00	0.09	0.043	O					0.33
84.583	0.00	0.09	0.043	O					0.32
84.667	0.00	0.08	0.042	O					0.32
84.750	0.00	0.08	0.042	O					0.32
84.833	0.00	0.08	0.041	O					0.31
84.917	0.00	0.08	0.041	O					0.31
85.000	0.00	0.08	0.040	O					0.31
85.083	0.00	0.08	0.039	O					0.31
85.167	0.00	0.08	0.039	O					0.30
85.250	0.00	0.08	0.038	O					0.30
85.333	0.00	0.08	0.038	O					0.30
85.417	0.00	0.07	0.037	O					0.29
85.500	0.00	0.07	0.037	O					0.29
85.583	0.00	0.07	0.036	O					0.29
85.667	0.00	0.07	0.036	O					0.28
85.750	0.00	0.07	0.035	O					0.28
85.833	0.00	0.07	0.035	O					0.28
85.917	0.00	0.07	0.034	O					0.28
86.000	0.00	0.07	0.034	O					0.27
86.083	0.00	0.07	0.034	O					0.27
86.167	0.00	0.07	0.033	O					0.27
86.250	0.00	0.06	0.033	O					0.27
86.333	0.00	0.06	0.032	O					0.26
86.417	0.00	0.06	0.032	O					0.26
86.500	0.00	0.06	0.031	O					0.26
86.583	0.00	0.06	0.031	O					0.26
86.667	0.00	0.06	0.030	O					0.25
86.750	0.00	0.06	0.030	O					0.25
86.833	0.00	0.06	0.030	O					0.25

86.917	0.00	0.06	0.029	O	|	|	|	|	0.25
87.000	0.00	0.06	0.029	O	|	|	|	|	0.25
87.083	0.00	0.06	0.029	O	|	|	|	|	0.24
87.167	0.00	0.05	0.028	O	|	|	|	|	0.24
87.250	0.00	0.05	0.028	O	|	|	|	|	0.24
87.333	0.00	0.05	0.027	O	|	|	|	|	0.24
87.417	0.00	0.05	0.027	O	|	|	|	|	0.24
87.500	0.00	0.05	0.027	O	|	|	|	|	0.23
87.583	0.00	0.05	0.026	O	|	|	|	|	0.23
87.667	0.00	0.05	0.026	O	|	|	|	|	0.23
87.750	0.00	0.05	0.026	O	|	|	|	|	0.23
87.833	0.00	0.05	0.025	O	|	|	|	|	0.23
87.917	0.00	0.05	0.025	O	|	|	|	|	0.22
88.000	0.00	0.05	0.025	O	|	|	|	|	0.22
88.083	0.00	0.05	0.024	O	|	|	|	|	0.22
88.167	0.00	0.05	0.024	O	|	|	|	|	0.22
88.250	0.00	0.05	0.024	O	|	|	|	|	0.22
88.333	0.00	0.04	0.023	O	|	|	|	|	0.21
88.417	0.00	0.04	0.023	O	|	|	|	|	0.21
88.500	0.00	0.04	0.023	O	|	|	|	|	0.21
88.583	0.00	0.04	0.022	O	|	|	|	|	0.21
88.667	0.00	0.04	0.022	O	|	|	|	|	0.21
88.750	0.00	0.04	0.022	O	|	|	|	|	0.21
88.833	0.00	0.04	0.022	O	|	|	|	|	0.20
88.917	0.00	0.04	0.021	O	|	|	|	|	0.20
89.000	0.00	0.04	0.021	O	|	|	|	|	0.20
89.083	0.00	0.04	0.021	O	|	|	|	|	0.20
89.167	0.00	0.04	0.021	O	|	|	|	|	0.20
89.250	0.00	0.04	0.020	O	|	|	|	|	0.20
89.333	0.00	0.04	0.020	O	|	|	|	|	0.20
89.417	0.00	0.04	0.020	O	|	|	|	|	0.19
89.500	0.00	0.04	0.020	O	|	|	|	|	0.19
89.583	0.00	0.04	0.019	O	|	|	|	|	0.19
89.667	0.00	0.04	0.019	O	|	|	|	|	0.19
89.750	0.00	0.03	0.019	O	|	|	|	|	0.19
89.833	0.00	0.03	0.019	O	|	|	|	|	0.19
89.917	0.00	0.03	0.018	O	|	|	|	|	0.19
90.000	0.00	0.03	0.018	O	|	|	|	|	0.18
90.083	0.00	0.03	0.018	O	|	|	|	|	0.18
90.167	0.00	0.03	0.018	O	|	|	|	|	0.18
90.250	0.00	0.03	0.017	O	|	|	|	|	0.18
90.333	0.00	0.03	0.017	O	|	|	|	|	0.18
90.417	0.00	0.03	0.017	O	|	|	|	|	0.18
90.500	0.00	0.03	0.017	O	|	|	|	|	0.18
90.583	0.00	0.03	0.017	O	|	|	|	|	0.18
90.667	0.00	0.03	0.016	O	|	|	|	|	0.18
90.750	0.00	0.03	0.016	O	|	|	|	|	0.17
90.833	0.00	0.03	0.016	O	|	|	|	|	0.17
90.917	0.00	0.03	0.016	O	|	|	|	|	0.17
91.000	0.00	0.03	0.016	O	|	|	|	|	0.17
91.083	0.00	0.03	0.015	O	|	|	|	|	0.17
91.167	0.00	0.03	0.015	O	|	|	|	|	0.17
91.250	0.00	0.03	0.015	O	|	|	|	|	0.17
91.333	0.00	0.03	0.015	O	|	|	|	|	0.17
91.417	0.00	0.03	0.015	O	|	|	|	|	0.17
91.500	0.00	0.03	0.014	O	|	|	|	|	0.16
91.583	0.00	0.03	0.014	O	|	|	|	|	0.16
91.667	0.00	0.02	0.014	O	|	|	|	|	0.16
91.750	0.00	0.02	0.014	O	|	|	|	|	0.16
91.833	0.00	0.02	0.014	O	|	|	|	|	0.16
91.917	0.00	0.02	0.014	O	|	|	|	|	0.16
92.000	0.00	0.02	0.013	O	|	|	|	|	0.16
92.083	0.00	0.02	0.013	O	|	|	|	|	0.16
92.167	0.00	0.02	0.013	O	|	|	|	|	0.16
92.250	0.00	0.02	0.013	O	|	|	|	|	0.16
92.333	0.00	0.02	0.013	O	|	|	|	|	0.16
92.417	0.00	0.02	0.013	O	|	|	|	|	0.15
92.500	0.00	0.02	0.013	O	|	|	|	|	0.15
92.583	0.00	0.02	0.012	O	|	|	|	|	0.15
92.667	0.00	0.02	0.012	O	|	|	|	|	0.15
92.750	0.00	0.02	0.012	O	|	|	|	|	0.15
92.833	0.00	0.02	0.012	O	|	|	|	|	0.15
92.917	0.00	0.02	0.012	O	|	|	|	|	0.15
93.000	0.00	0.02	0.012	O	|	|	|	|	0.15
93.083	0.00	0.02	0.012	O	|	|	|	|	0.15

93.167	0.00	0.02	0.011	O	|	|	|	|	0.15
93.250	0.00	0.02	0.011	O	|	|	|	|	0.15
93.333	0.00	0.02	0.011	O	|	|	|	|	0.15
93.417	0.00	0.02	0.011	O	|	|	|	|	0.15
93.500	0.00	0.02	0.011	O	|	|	|	|	0.14
93.583	0.00	0.02	0.011	O	|	|	|	|	0.14
93.667	0.00	0.02	0.011	O	|	|	|	|	0.14
93.750	0.00	0.02	0.011	O	|	|	|	|	0.14
93.833	0.00	0.02	0.010	O	|	|	|	|	0.14
93.917	0.00	0.02	0.010	O	|	|	|	|	0.14
94.000	0.00	0.02	0.010	O	|	|	|	|	0.14
94.083	0.00	0.02	0.010	O	|	|	|	|	0.14
94.167	0.00	0.02	0.010	O	|	|	|	|	0.14
94.250	0.00	0.02	0.010	O	|	|	|	|	0.14
94.333	0.00	0.02	0.010	O	|	|	|	|	0.14
94.417	0.00	0.02	0.010	O	|	|	|	|	0.14
94.500	0.00	0.01	0.010	O	|	|	|	|	0.14
94.583	0.00	0.01	0.009	O	|	|	|	|	0.14
94.667	0.00	0.01	0.009	O	|	|	|	|	0.14
94.750	0.00	0.01	0.009	O	|	|	|	|	0.14
94.833	0.00	0.01	0.009	O	|	|	|	|	0.13
94.917	0.00	0.01	0.009	O	|	|	|	|	0.13
95.000	0.00	0.01	0.009	O	|	|	|	|	0.13
95.083	0.00	0.01	0.009	O	|	|	|	|	0.13
95.167	0.00	0.01	0.009	O	|	|	|	|	0.13
95.250	0.00	0.01	0.009	O	|	|	|	|	0.13
95.333	0.00	0.01	0.009	O	|	|	|	|	0.13
95.417	0.00	0.01	0.009	O	|	|	|	|	0.13
95.500	0.00	0.01	0.008	O	|	|	|	|	0.13
95.583	0.00	0.01	0.008	O	|	|	|	|	0.13
95.667	0.00	0.01	0.008	O	|	|	|	|	0.13
95.750	0.00	0.01	0.008	O	|	|	|	|	0.13
95.833	0.00	0.01	0.008	O	|	|	|	|	0.13
95.917	0.00	0.01	0.008	O	|	|	|	|	0.13
96.000	0.00	0.01	0.008	O	|	|	|	|	0.13
96.083	0.00	0.01	0.008	O	|	|	|	|	0.13
96.167	0.00	0.01	0.008	O	|	|	|	|	0.13
96.250	0.00	0.01	0.008	O	|	|	|	|	0.13
96.333	0.00	0.01	0.008	O	|	|	|	|	0.13
96.417	0.00	0.01	0.008	O	|	|	|	|	0.13
96.500	0.00	0.01	0.007	O	|	|	|	|	0.13
96.583	0.00	0.01	0.007	O	|	|	|	|	0.12
96.667	0.00	0.01	0.007	O	|	|	|	|	0.12
96.750	0.00	0.01	0.007	O	|	|	|	|	0.12
96.833	0.00	0.01	0.007	O	|	|	|	|	0.12
96.917	0.00	0.01	0.007	O	|	|	|	|	0.12
97.000	0.00	0.01	0.007	O	|	|	|	|	0.12
97.083	0.00	0.01	0.007	O	|	|	|	|	0.12
97.167	0.00	0.01	0.007	O	|	|	|	|	0.12
97.250	0.00	0.01	0.007	O	|	|	|	|	0.12
97.333	0.00	0.01	0.007	O	|	|	|	|	0.12
97.417	0.00	0.01	0.007	O	|	|	|	|	0.12
97.500	0.00	0.01	0.007	O	|	|	|	|	0.12
97.583	0.00	0.01	0.007	O	|	|	|	|	0.12
97.667	0.00	0.01	0.007	O	|	|	|	|	0.12
97.750	0.00	0.01	0.006	O	|	|	|	|	0.12
97.833	0.00	0.01	0.006	O	|	|	|	|	0.12
97.917	0.00	0.01	0.006	O	|	|	|	|	0.12
98.000	0.00	0.01	0.006	O	|	|	|	|	0.12
98.083	0.00	0.01	0.006	O	|	|	|	|	0.12
98.167	0.00	0.01	0.006	O	|	|	|	|	0.12
98.250	0.00	0.01	0.006	O	|	|	|	|	0.12
98.333	0.00	0.01	0.006	O	|	|	|	|	0.12
98.417	0.00	0.01	0.006	O	|	|	|	|	0.12
98.500	0.00	0.01	0.006	O	|	|	|	|	0.12
98.583	0.00	0.01	0.006	O	|	|	|	|	0.12
98.667	0.00	0.01	0.006	O	|	|	|	|	0.12
98.750	0.00	0.01	0.006	O	|	|	|	|	0.12
98.833	0.00	0.01	0.006	O	|	|	|	|	0.12
98.917	0.00	0.01	0.006	O	|	|	|	|	0.12
99.000	0.00	0.01	0.006	O	|	|	|	|	0.12
99.083	0.00	0.01	0.006	O	|	|	|	|	0.12
99.167	0.00	0.01	0.006	O	|	|	|	|	0.11
99.250	0.00	0.01	0.006	O	|	|	|	|	0.11
99.333	0.00	0.01	0.006	O	|	|	|	|	0.11

99.417	0.00	0.01	0.005	O	|	|	|	|	0.11
99.500	0.00	0.01	0.005	O	|	|	|	|	0.11
99.583	0.00	0.01	0.005	O	|	|	|	|	0.11
99.667	0.00	0.01	0.005	O	|	|	|	|	0.11
99.750	0.00	0.01	0.005	O	|	|	|	|	0.11
99.833	0.00	0.01	0.005	O	|	|	|	|	0.11
99.917	0.00	0.01	0.005	O	|	|	|	|	0.11
100.000	0.00	0.01	0.005	O	|	|	|	|	0.11
100.083	0.00	0.01	0.005	O	|	|	|	|	0.11
100.167	0.00	0.01	0.005	O	|	|	|	|	0.11
100.250	0.00	0.01	0.005	O	|	|	|	|	0.11
100.333	0.00	0.01	0.005	O	|	|	|	|	0.11
100.417	0.00	0.01	0.005	O	|	|	|	|	0.11
100.500	0.00	0.01	0.005	O	|	|	|	|	0.11
100.583	0.00	0.01	0.005	O	|	|	|	|	0.11
100.667	0.00	0.01	0.005	O	|	|	|	|	0.11
100.750	0.00	0.00	0.005	O	|	|	|	|	0.11
100.833	0.00	0.00	0.005	O	|	|	|	|	0.11
100.917	0.00	0.00	0.005	O	|	|	|	|	0.11
101.000	0.00	0.00	0.005	O	|	|	|	|	0.11
101.083	0.00	0.00	0.005	O	|	|	|	|	0.11
101.167	0.00	0.00	0.005	O	|	|	|	|	0.11
101.250	0.00	0.00	0.005	O	|	|	|	|	0.11
101.333	0.00	0.00	0.005	O	|	|	|	|	0.11
101.417	0.00	0.00	0.005	O	|	|	|	|	0.11
101.500	0.00	0.00	0.005	O	|	|	|	|	0.11
101.583	0.00	0.00	0.005	O	|	|	|	|	0.11
101.667	0.00	0.00	0.005	O	|	|	|	|	0.11
101.750	0.00	0.00	0.004	O	|	|	|	|	0.11
101.833	0.00	0.00	0.004	O	|	|	|	|	0.11
101.917	0.00	0.00	0.004	O	|	|	|	|	0.11
102.000	0.00	0.00	0.004	O	|	|	|	|	0.11
102.083	0.00	0.00	0.004	O	|	|	|	|	0.11
102.167	0.00	0.00	0.004	O	|	|	|	|	0.11
102.250	0.00	0.00	0.004	O	|	|	|	|	0.11
102.333	0.00	0.00	0.004	O	|	|	|	|	0.11
102.417	0.00	0.00	0.004	O	|	|	|	|	0.11
102.500	0.00	0.00	0.004	O	|	|	|	|	0.11
102.583	0.00	0.00	0.004	O	|	|	|	|	0.11
102.667	0.00	0.00	0.004	O	|	|	|	|	0.11
102.750	0.00	0.00	0.004	O	|	|	|	|	0.11
102.833	0.00	0.00	0.004	O	|	|	|	|	0.11
102.917	0.00	0.00	0.004	O	|	|	|	|	0.11
103.000	0.00	0.00	0.004	O	|	|	|	|	0.11
103.083	0.00	0.00	0.004	O	|	|	|	|	0.11
103.167	0.00	0.00	0.004	O	|	|	|	|	0.11
103.250	0.00	0.00	0.004	O	|	|	|	|	0.11
103.333	0.00	0.00	0.004	O	|	|	|	|	0.11
103.417	0.00	0.00	0.004	O	|	|	|	|	0.11
103.500	0.00	0.00	0.004	O	|	|	|	|	0.11
103.583	0.00	0.00	0.004	O	|	|	|	|	0.11
103.667	0.00	0.00	0.004	O	|	|	|	|	0.11
103.750	0.00	0.00	0.004	O	|	|	|	|	0.11
103.833	0.00	0.00	0.004	O	|	|	|	|	0.11
103.917	0.00	0.00	0.004	O	|	|	|	|	0.10
104.000	0.00	0.00	0.004	O	|	|	|	|	0.10
104.083	0.00	0.00	0.004	O	|	|	|	|	0.10
104.167	0.00	0.00	0.004	O	|	|	|	|	0.10
104.250	0.00	0.00	0.004	O	|	|	|	|	0.10
104.333	0.00	0.00	0.004	O	|	|	|	|	0.10
104.417	0.00	0.00	0.004	O	|	|	|	|	0.10
104.500	0.00	0.00	0.004	O	|	|	|	|	0.10
104.583	0.00	0.00	0.004	O	|	|	|	|	0.10
104.667	0.00	0.00	0.004	O	|	|	|	|	0.10
104.750	0.00	0.00	0.004	O	|	|	|	|	0.10
104.833	0.00	0.00	0.004	O	|	|	|	|	0.10
104.917	0.00	0.00	0.004	O	|	|	|	|	0.10
105.000	0.00	0.00	0.004	O	|	|	|	|	0.10
105.083	0.00	0.00	0.004	O	|	|	|	|	0.10
105.167	0.00	0.00	0.004	O	|	|	|	|	0.10
105.250	0.00	0.00	0.004	O	|	|	|	|	0.10
105.333	0.00	0.00	0.004	O	|	|	|	|	0.10
105.417	0.00	0.00	0.004	O	|	|	|	|	0.10
105.500	0.00	0.00	0.004	O	|	|	|	|	0.10
105.583	0.00	0.00	0.004	O	|	|	|	|	0.10

105.667	0.00	0.00	0.004	O	|	|	|	| 0.10
105.750	0.00	0.00	0.004	O	|	|	|	| 0.10
105.833	0.00	0.00	0.003	O	|	|	|	| 0.10
105.917	0.00	0.00	0.003	O	|	|	|	| 0.10
106.000	0.00	0.00	0.003	O	|	|	|	| 0.10
106.083	0.00	0.00	0.003	O	|	|	|	| 0.10
106.167	0.00	0.00	0.003	O	|	|	|	| 0.10
106.250	0.00	0.00	0.003	O	|	|	|	| 0.10
106.333	0.00	0.00	0.003	O	|	|	|	| 0.10
106.417	0.00	0.00	0.003	O	|	|	|	| 0.10
106.500	0.00	0.00	0.003	O	|	|	|	| 0.10
106.583	0.00	0.00	0.003	O	|	|	|	| 0.10
106.667	0.00	0.00	0.003	O	|	|	|	| 0.10
106.750	0.00	0.00	0.003	O	|	|	|	| 0.10
106.833	0.00	0.00	0.003	O	|	|	|	| 0.10
106.917	0.00	0.00	0.003	O	|	|	|	| 0.10
107.000	0.00	0.00	0.003	O	|	|	|	| 0.10
107.083	0.00	0.00	0.003	O	|	|	|	| 0.10
107.167	0.00	0.00	0.003	O	|	|	|	| 0.10
107.250	0.00	0.00	0.003	O	|	|	|	| 0.10
107.333	0.00	0.00	0.003	O	|	|	|	| 0.10
107.417	0.00	0.00	0.003	O	|	|	|	| 0.10
107.500	0.00	0.00	0.003	O	|	|	|	| 0.10
107.583	0.00	0.00	0.003	O	|	|	|	| 0.10
107.667	0.00	0.00	0.003	O	|	|	|	| 0.10
107.750	0.00	0.00	0.003	O	|	|	|	| 0.10
107.833	0.00	0.00	0.003	O	|	|	|	| 0.10
107.917	0.00	0.00	0.003	O	|	|	|	| 0.10
108.000	0.00	0.00	0.003	O	|	|	|	| 0.10
108.083	0.00	0.00	0.003	O	|	|	|	| 0.10
108.167	0.00	0.00	0.003	O	|	|	|	| 0.10
108.250	0.00	0.00	0.003	O	|	|	|	| 0.10
108.333	0.00	0.00	0.003	O	|	|	|	| 0.10
108.417	0.00	0.00	0.003	O	|	|	|	| 0.10
108.500	0.00	0.00	0.003	O	|	|	|	| 0.10
108.583	0.00	0.00	0.003	O	|	|	|	| 0.10
108.667	0.00	0.00	0.003	O	|	|	|	| 0.10
108.750	0.00	0.00	0.003	O	|	|	|	| 0.10
108.833	0.00	0.00	0.003	O	|	|	|	| 0.10
108.917	0.00	0.00	0.003	O	|	|	|	| 0.10
109.000	0.00	0.00	0.003	O	|	|	|	| 0.10
109.083	0.00	0.00	0.003	O	|	|	|	| 0.10
109.167	0.00	0.00	0.003	O	|	|	|	| 0.10
109.250	0.00	0.00	0.003	O	|	|	|	| 0.10
109.333	0.00	0.00	0.003	O	|	|	|	| 0.10
109.417	0.00	0.00	0.003	O	|	|	|	| 0.10
109.500	0.00	0.00	0.003	O	|	|	|	| 0.10
109.583	0.00	0.00	0.003	O	|	|	|	| 0.10
109.667	0.00	0.00	0.003	O	|	|	|	| 0.10
109.750	0.00	0.00	0.003	O	|	|	|	| 0.10
109.833	0.00	0.00	0.003	O	|	|	|	| 0.10
109.917	0.00	0.00	0.003	O	|	|	|	| 0.10

Remaining water in basin = 0.00 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 1319
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 33.882 (CFS)
Total volume = 19.009 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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BASIN ROUTING
DMA B
CALCULATIONS

Basin Routing
14-0213 Shopoff
DMA B

Basin Information	Extended Detention	
Vbmp:	116,126	CF
	2.666	AC-FT
Bottom Elevation:	2438.3	FT
Bottom Length:	750	FT
Bottom Width:	250	FT
Bottom Area:	187550	SF
Bottom Slope:	1	%
Side Slope:	3	:1
D85:	0.79	IN

Vbmp		**2-Year Orifice**		**10-Year Orifice (RECT)**		**100-YR /Outlet Box Weir**	
		Q 2-YR 24-HR	8.8	Q 10-YR 24-HR	41.1		
Opening (IN)	3.5	Opening (IN)	6.75	Opening Height (IN)	7		
Opening (FT)	0.292	Opening (FT)	0.563	Opening Height (FT)	0.583	3'x6' Box	
AREA (SF)	0.067	AREA (SF)	0.249	Opening Length (FT)	10.0		
# of Orifices	2	# of Orifices	7	AREA (SF)	5.833	L (FT)	10
Total Area (SF)	0.134	Total Area (SF)	1.740	# of Orifices	1		
G (FT/s^2)	32.2	G (FT/s^2)	32.2	Total Area (SF)	5.833		
Cd	0.66	Cd	0.66	G (FT/s^2)	32.2		
Invert H (FT)	0	Invert H (FT)	1.9	Cd	0.4	C	2.7
				Invert H (FT)	2.4	Weir H (FT)	3.1

#	Elevation (FT)	Area (SF)	Depth (FT)	Storage (AC-FT)	h (FT)	Q (CFS)	h (FT)	Q (CFS)	h (FT)	Q (CFS)	h (FT)	Q (CFS)	Qtotal (CFS)
1	2438.30	200	0.0	0.000		0.000		0.000		0.000		0.000	0.000
2	2,438.40	554.9	0.1	0.000		0.000		0.000		0.000		0.000	0.000
3	2,438.80	13,872.52	0.5	0.053	0.35	0.421		0.000		0.000		0.000	0.421
4	2,439.30	57,145.55	1.0	0.430	0.85	0.654		0.000		0.000		0.000	0.654
5	2,439.80	125,277.17	1.5	1.478	1.35	0.824		0.000		0.000		0.000	0.824
6	***2,440.20***	***169,834.59***	***1.9***	***2.842***	***1.75***	***0.937***		***0.000***		***0.000***		***0.000***	***0.937***
7	2,440.30	176,648.62	2.0	3.240	1.85	0.964		0.000		0.000		0.000	0.964
8	***2,440.70***	***184,925.72***	***2.4***	***4.909***	***2.25***	***1.063***	***0.22***	***4.309***		***0.000***		***0.000***	***5.372***
9	2,440.80	186,306.58	2.5	5.335	2.35	1.086	0.32	5.202		0.000		0.000	6.288
10	2,441.30	193,307.53	3.0	7.513	2.85	1.196	0.82	8.337	0.31	10.398		0.000	19.930
11	***2,441.40***	***194,727.05***	***3.1***	***7.959***	***2.95***	***1.216***	***0.92***	***8.831***	***0.41***	***11.965***		***0.000***	***22.013***
12	2,441.80	200,469.52	3.5	9.773	3.35	1.296	1.32	10.580	0.81	16.835	0.40	6.831	35.542
13	2,442.30	207,792.53	4.0	12.116	3.85	1.389	1.82	12.425	1.31	21.418	0.90	23.053	58.286
14	2,442.80	215,276.58	4.5	14.544	4.35	1.477	2.32	14.030	1.81	25.180	1.40	44.726	85.412
15	2,443.30	222,921.66	5.0	17.059	4.85	1.559	2.82	15.468	2.31	28.449	1.90	70.712	116.189
16	2,443.80	230,727.77	5.5	19.662	5.35	1.638	3.32	16.784	2.81	31.379	2.40	100.388	150.189
17	2,444.30	238,694.91	6.0	22.356	5.85	1.712	3.82	18.004	3.31	34.058	2.90	133.340	187.115
18	2,444.50	241,926.86	6.2	23.460	6.05	1.741	4.02	18.470	3.51	35.073	3.10	147.369	202.653

BASIN ROUTING
DMA B
PROPOSED CONDITIONS
2-YEAR 24-HOUR

FLOOD HYDROGRAPH ROUTING PROGRAM
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Study date: 10/22/14

14-0213 SHOPOFF
BASIN ROUTING
DMA B
2-YEAR 24-HOUR

Program License Serial Number 4010

********** HYDROGRAPH INFORMATION **********

From study/file name: BPROP242.rte
**********HYDROGRAPH DATA**********
Number of intervals = 295
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 15.291 (CFS)
Total volume = 7.865 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 295
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.100	0.001	0.010	0.001	0.001
0.500	0.053	0.421	0.052	0.054
1.000	0.430	0.654	0.428	0.432
1.500	1.478	0.824	1.475	1.481
1.900	2.842	0.937	2.839	2.845
2.000	3.240	0.964	3.237	3.243
2.400	4.909	5.372	4.891	4.927
2.500	5.335	6.288	5.313	5.357
3.000	7.513	19.930	7.444	7.582
3.100	7.959	22.013	7.883	8.035
3.500	9.773	35.542	9.651	9.895
4.000	12.116	58.286	11.915	12.317
4.500	14.544	85.412	14.250	14.838
5.000	17.059	116.189	16.659	17.459
5.500	19.662	150.189	19.145	20.179
6.000	22.356	187.115	21.712	23.000
6.200	23.460	202.653	22.762	24.158

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 3.8 7.65 11.47 15.29	Depth (Ft.)
0.083	0.15	0.00	0.000	O | | | |	0.05
0.167	0.73	0.03	0.003	OI | | | |	0.12
0.250	0.92	0.07	0.009	OI | | | |	0.16
0.333	1.07	0.12	0.015	O I | | | |	0.21
0.417	1.39	0.18	0.022	O I | | | |	0.26
0.500	1.50	0.25	0.031	O I | | | |	0.33
0.583	1.54	0.31	0.039	O I | | | |	0.40
0.667	1.56	0.38	0.048	O I | | | |	0.46
0.750	1.56	0.42	0.056	O I | | | |	0.50
0.833	1.64	0.43	0.064	O I | | | |	0.51
0.917	1.93	0.43	0.073	O I | | | |	0.53
1.000	2.03	0.44	0.084	O I | | | |	0.54
1.083	1.99	0.45	0.094	O I | | | |	0.56
1.167	1.72	0.45	0.104	O I | | | |	0.57
1.250	1.62	0.46	0.113	O I | | | |	0.58
1.333	1.59	0.46	0.120	O I | | | |	0.59
1.417	1.57	0.47	0.128	O I | | | |	0.60
1.500	1.57	0.47	0.136	O I | | | |	0.61
1.583	1.57	0.48	0.143	O I | | | |	0.62
1.667	1.57	0.48	0.151 |O I | | | |	0.63
1.750	1.57	0.49	0.158 |O I | | | |	0.64
1.833	1.64	0.49	0.166 |O I | | | |	0.65
1.917	1.93	0.50	0.175 |O I | | | |	0.66
2.000	2.03	0.50	0.185 |O I | | | |	0.67
2.083	2.07	0.51	0.196 |O I | | | |	0.69
2.167	2.08	0.52	0.206 |O I | | | |	0.70
2.250	2.08	0.52	0.217 |O I | | | |	0.72
2.333	2.09	0.53	0.228 |O I | | | |	0.73
2.417	2.09	0.54	0.238 |O I | | | |	0.75
2.500	2.09	0.54	0.249 |O I | | | |	0.76
2.583	2.16	0.55	0.260 |O I | | | |	0.77
2.667	2.45	0.56	0.272 |O I | | | |	0.79
2.750	2.55	0.56	0.285 |O I | | | |	0.81
2.833	2.59	0.57	0.299 |O I | | | |	0.83
2.917	2.60	0.58	0.313 |O I | | | |	0.84
3.000	2.61	0.59	0.327 |O I | | | |	0.86
3.083	2.61	0.60	0.341 |O I | | | |	0.88
3.167	2.61	0.61	0.355 |O I | | | |	0.90
3.250	2.61	0.62	0.368 |O I | | | |	0.92
3.333	2.61	0.62	0.382 |O I | | | |	0.94
3.417	2.61	0.63	0.396 |O I | | | |	0.95
3.500	2.61	0.64	0.409 |O I | | | |	0.97
3.583	2.61	0.65	0.423 |O I | | | |	0.99
3.667	2.61	0.66	0.436 |O I | | | |	1.00
3.750	2.61	0.66	0.450 |O I | | | |	1.01
3.833	2.68	0.66	0.463 |O I | | | |	1.02
3.917	2.97	0.66	0.478 |O I | | | |	1.02
4.000	3.07	0.66	0.495 |O I | | | |	1.03
4.083	3.11	0.67	0.511 |O I | | | |	1.04
4.167	3.12	0.67	0.528 |O I | | | |	1.05
4.250	3.13	0.67	0.545 |O I | | | |	1.05
4.333	3.20	0.68	0.562 |O I | | | |	1.06
4.417	3.49	0.68	0.581 |O I| | | |	1.07
4.500	3.59	0.68	0.600 |O I| | | |	1.08
4.583	3.63	0.68	0.621 |O I| | | |	1.09
4.667	3.65	0.69	0.641 |O I| | | |	1.10
4.750	3.65	0.69	0.661 |O I| | | |	1.11
4.833	3.73	0.69	0.682 |O I| | | |	1.12
4.917	4.02	0.70	0.704 |O I | | |	1.13
5.000	4.11	0.70	0.727 |O I | | |	1.14
5.083	4.01	0.71	0.750 |O I | | |	1.15
5.167	3.44	0.71	0.771 |O I| | |	1.16
5.250	3.25	0.71	0.789 |O I | | |	1.17
5.333	3.25	0.72	0.806 |O I | | |	1.18
5.417	3.51	0.72	0.825 |O I| | |	1.19
5.500	3.60	0.72	0.844 |O I| | |	1.20
5.583	3.71	0.72	0.864 |O I| | |	1.21

5.667	4.01	0.73	0.886	O	I			1.22
5.750	4.11	0.73	0.909	O	I			1.23
5.833	4.15	0.74	0.932	O	I			1.24
5.917	4.17	0.74	0.956	O	I			1.25
6.000	4.17	0.74	0.980	O	I			1.26
6.083	4.25	0.75	1.003	O	I			1.27
6.167	4.54	0.75	1.029	O	I			1.29
6.250	4.64	0.76	1.055	O	I			1.30
6.333	4.68	0.76	1.082	O	I			1.31
6.417	4.69	0.76	1.109	O	I			1.32
6.500	4.69	0.77	1.136	O	I			1.34
6.583	4.77	0.77	1.163	O	I			1.35
6.667	5.06	0.78	1.192	O	I			1.36
6.750	5.16	0.78	1.221	O	I			1.38
6.833	5.20	0.79	1.252	O	I			1.39
6.917	5.21	0.79	1.282	O	I			1.41
7.000	5.22	0.80	1.312	O	I			1.42
7.083	5.22	0.80	1.343	O	I			1.44
7.167	5.22	0.81	1.373	O	I			1.45
7.250	5.22	0.81	1.404	O	I			1.46
7.333	5.29	0.82	1.434	O	I			1.48
7.417	5.58	0.82	1.466	O	I			1.49
7.500	5.68	0.83	1.499	O	I			1.51
7.583	5.79	0.83	1.533	O	I			1.52
7.667	6.10	0.83	1.568	O	I			1.53
7.750	6.20	0.83	1.605	O	I			1.54
7.833	6.31	0.84	1.642	O	I			1.55
7.917	6.62	0.84	1.681	O	I			1.56
8.000	6.72	0.84	1.721	O	I			1.57
8.083	5.94	0.85	1.759	O	I			1.58
8.167	2.69	0.85	1.783	O	I			1.59
8.250	1.62	0.85	1.792	O	I			1.59
8.333	1.22	0.85	1.796	O	I			1.59
8.417	1.11	0.85	1.798	O	I			1.59
8.500	1.09	0.85	1.799	O	I			1.59
8.583	1.19	0.85	1.801	O	I			1.59
8.667	1.57	0.85	1.805	O	I			1.60
8.750	1.73	0.85	1.811	O	I			1.60
8.833	1.91	0.85	1.817	O	I			1.60
8.917	2.32	0.85	1.826	O	I			1.60
9.000	2.48	0.85	1.837	O	I			1.61
9.083	2.75	0.85	1.849	O	I			1.61
9.167	3.52	0.86	1.864	O	I			1.61
9.250	3.80	0.86	1.884	O	I			1.62
9.333	4.03	0.86	1.905	O	I			1.63
9.417	4.45	0.86	1.928	O	I			1.63
9.500	4.62	0.86	1.953	O	I			1.64
9.583	4.80	0.87	1.980	O	I			1.65
9.667	5.21	0.87	2.008	O	I			1.66
9.750	5.38	0.87	2.039	O	I			1.66
9.833	5.56	0.87	2.071	O	I			1.67
9.917	5.96	0.88	2.104	O	I			1.68
10.000	6.13	0.88	2.140	O	I			1.69
10.083	5.59	0.88	2.174	O	I			1.70
10.167	3.17	0.88	2.198	O	I			1.71
10.250	2.38	0.88	2.211	O	I			1.71
10.333	2.08	0.89	2.220	O	I			1.72
10.417	2.01	0.89	2.228	O	I			1.72
10.500	2.01	0.89	2.236	O	I			1.72
10.583	2.46	0.89	2.245	O	I			1.73
10.667	4.26	0.89	2.262	O	I			1.73
10.750	4.89	0.89	2.288	O	I			1.74
10.833	5.17	0.89	2.316	O	I			1.75
10.917	5.29	0.90	2.346	O	I			1.75
11.000	5.35	0.90	2.377	O	I			1.76
11.083	5.32	0.90	2.407	O	I			1.77
11.167	5.00	0.90	2.437	O	I			1.78
11.250	4.92	0.91	2.464	O	I			1.79
11.333	4.91	0.91	2.492	O	I			1.80
11.417	4.93	0.91	2.520	O	I			1.81
11.500	4.96	0.91	2.547	O	I			1.81
11.583	4.81	0.91	2.575	O	I			1.82
11.667	4.14	0.92	2.599	O	I			1.83
11.750	3.94	0.92	2.621	O	I			1.84
11.833	3.96	0.92	2.642	O	I			1.84

11.917	4.32	0.92	2.664	O	I			1.85
12.000	4.46	0.92	2.688	O	I			1.85
12.083	5.16	0.93	2.715	O	I			1.86
12.167	7.69	0.93	2.752	O	I			1.87
12.250	8.56	0.93	2.802	O	I			1.89
12.333	9.02	0.94	2.856	O	I			1.90
12.417	9.53	0.94	2.913	O	I			1.92
12.500	9.72	0.95	2.973	O	I			1.93
12.583	10.00	0.95	3.035	O	I			1.95
12.667	10.77	0.95	3.100	O	I			1.96
12.750	11.05	0.96	3.168	O	I			1.98
12.833	11.27	0.96	3.238	O	I			2.00
12.917	11.69	1.15	3.310	O	I			2.02
13.000	11.85	1.34	3.383	O	I			2.03
13.083	12.39	1.53	3.456	O	I			2.05
13.167	14.21	1.75	3.536	O	I			2.07
13.250	14.84	1.98	3.624	O	I			2.09
13.333	15.12	2.21	3.712	O	I			2.11
13.417	15.23	2.45	3.801	O	I			2.13
13.500	15.29	2.68	3.888	O	I			2.16
13.583	14.36	2.90	3.971	O	I			2.18
13.667	10.50	3.07	4.036	O	I			2.19
13.750	9.23	3.19	4.083	O	I			2.20
13.833	8.73	3.29	4.122	O	I			2.21
13.917	8.58	3.39	4.159	O	I			2.22
14.000	8.55	3.48	4.194	O	I			2.23
14.083	8.90	3.58	4.230	O	I			2.24
14.167	10.34	3.69	4.271	O	I			2.25
14.250	10.84	3.81	4.318	O	I			2.26
14.333	10.98	3.94	4.367	O	I			2.27
14.417	10.72	4.06	4.414	O	I			2.28
14.500	10.65	4.18	4.459	O	I			2.29
14.583	10.65	4.30	4.503	O	I			2.30
14.667	10.67	4.41	4.547	O	I			2.31
14.750	10.69	4.53	4.589	O	I			2.32
14.833	10.63	4.64	4.631	O	I			2.33
14.917	10.31	4.74	4.671	O	I			2.34
15.000	10.22	4.84	4.709	O	I			2.35
15.083	10.11	4.94	4.745	O	I			2.36
15.167	9.77	5.03	4.779	O	I			2.37
15.250	9.67	5.11	4.811	O	I			2.38
15.333	9.56	5.19	4.842	O	I			2.38
15.417	9.22	5.27	4.871	O	I			2.39
15.500	9.12	5.34	4.897	O	I			2.40
15.583	8.74	5.40	4.922	O	I			2.40
15.667	7.34	5.44	4.940	O	I			2.41
15.750	6.89	5.46	4.951	O	I			2.41
15.833	6.72	5.48	4.960	O	I			2.41
15.917	6.68	5.50	4.969	O	I			2.41
16.000	6.69	5.52	4.977	O	I			2.42
16.083	6.05	5.53	4.983	O	I			2.42
16.167	3.48	5.52	4.977	O	I			2.42
16.250	2.63	5.48	4.961	O	I			2.41
16.333	2.28	5.44	4.940	O	I			2.41
16.417	2.16	5.39	4.918	O	I			2.40
16.500	2.12	5.34	4.896	O	I			2.40
16.583	2.02	5.28	4.873	O	I			2.39
16.667	1.72	5.22	4.850	O	I			2.39
16.750	1.63	5.15	4.826	O	I			2.38
16.833	1.59	5.09	4.802	O	I			2.37
16.917	1.57	5.03	4.778	O	I			2.37
17.000	1.57	4.96	4.754	O	I			2.36
17.083	1.71	4.90	4.732	O	I			2.36
17.167	2.29	4.85	4.712	O	I			2.35
17.250	2.49	4.81	4.695	O	I			2.35
17.333	2.57	4.77	4.679	O	I			2.34
17.417	2.59	4.73	4.664	O	I			2.34
17.500	2.60	4.69	4.650	O	I			2.34
17.583	2.61	4.65	4.636	O	I			2.33
17.667	2.61	4.61	4.622	O	I			2.33
17.750	2.61	4.58	4.608	O	I			2.33
17.833	2.54	4.54	4.594	O	I			2.32
17.917	2.25	4.50	4.580	O	I			2.32
18.000	2.15	4.46	4.564	O	I			2.32
18.083	2.11	4.42	4.548	O	I			2.31

18.167	2.10	4.38	4.532	| I |O | | | 2.31
18.250	2.09	4.34	4.517	| I |O | | | 2.31
18.333	2.09	4.30	4.501	| I O | | | 2.30
18.417	2.09	4.26	4.486	| I O | | | 2.30
18.500	2.09	4.22	4.472	| I O | | | 2.30
18.583	2.01	4.18	4.457	| I O | | | 2.29
18.667	1.72	4.14	4.441	| I O | | | 2.29
18.750	1.63	4.09	4.424	| I O | | | 2.28
18.833	1.51	4.05	4.407	| I O | | | 2.28
18.917	1.21	4.00	4.389	| I O | | | 2.28
19.000	1.11	3.95	4.369	| I O | | | 2.27
19.083	1.14	3.90	4.350	| I O | | | 2.27
19.167	1.42	3.85	4.332	| I O | | | 2.26
19.250	1.51	3.81	4.316	| I O| | | | 2.26
19.333	1.62	3.77	4.301	| I O| | | | 2.25
19.417	1.92	3.73	4.287	| I O| | | | 2.25
19.500	2.02	3.70	4.275	| I O| | | | 2.25
19.583	1.99	3.67	4.263	| I O| | | | 2.25
19.667	1.72	3.63	4.251	| I O| | | | 2.24
19.750	1.62	3.60	4.238	| I O| | | | 2.24
19.833	1.51	3.56	4.224	| I O| | | | 2.24
19.917	1.21	3.52	4.209	| I O| | | | 2.23
20.000	1.11	3.48	4.193	| I O| | | | 2.23
20.083	1.14	3.44	4.177	| I O| | | | 2.22
20.167	1.42	3.40	4.162	| I O| | | | 2.22
20.250	1.51	3.36	4.149	| I O| | | | 2.22
20.333	1.54	3.33	4.136	| I O | | | | 2.21
20.417	1.56	3.30	4.124	| I O | | | | 2.21
20.500	1.56	3.27	4.112	| I O | | | | 2.21
20.583	1.56	3.24	4.100	| I O | | | | 2.21
20.667	1.57	3.21	4.089	| I O | | | | 2.20
20.750	1.57	3.18	4.078	| I O | | | | 2.20
20.833	1.49	3.15	4.067	| I O | | | | 2.20
20.917	1.20	3.11	4.054	| I O | | | | 2.20
21.000	1.10	3.08	4.041	| I O | | | | 2.19
21.083	1.14	3.04	4.028	| I O | | | | 2.19
21.167	1.42	3.01	4.015	| I O | | | | 2.19
21.250	1.51	2.98	4.005	| I O | | | | 2.18
21.333	1.47	2.96	3.995	| I O | | | | 2.18
21.417	1.19	2.93	3.984	| I O | | | | 2.18
21.500	1.10	2.90	3.971	| I O | | | | 2.18
21.583	1.14	2.86	3.959	| I O | | | | 2.17
21.667	1.42	2.84	3.949	| I O | | | | 2.17
21.750	1.51	2.81	3.939	| I O | | | | 2.17
21.833	1.47	2.79	3.930	| I O | | | | 2.17
21.917	1.19	2.76	3.920	| I O | | | | 2.16
22.000	1.10	2.73	3.909	| I O | | | | 2.16
22.083	1.14	2.70	3.898	| I O | | | | 2.16
22.167	1.42	2.68	3.888	| I O | | | | 2.16
22.250	1.51	2.65	3.880	| I O | | | | 2.15
22.333	1.47	2.63	3.872	| I O | | | | 2.15
22.417	1.19	2.61	3.863	| I O | | | | 2.15
22.500	1.10	2.58	3.853	| I O | | | | 2.15
22.583	1.06	2.56	3.843	| I O | | | | 2.14
22.667	1.05	2.53	3.833	| I O | | | | 2.14
22.750	1.05	2.50	3.823	| I O | | | | 2.14
22.833	1.04	2.48	3.813	| I O | | | | 2.14
22.917	1.04	2.45	3.803	| I O | | | | 2.13
23.000	1.04	2.43	3.793	| I O | | | | 2.13
23.083	1.04	2.40	3.784	| I O | | | | 2.13
23.167	1.04	2.38	3.775	| I O | | | | 2.13
23.250	1.04	2.35	3.766	| I O | | | | 2.13
23.333	1.04	2.33	3.757	| I O | | | | 2.12
23.417	1.04	2.31	3.748	| I O | | | | 2.12
23.500	1.04	2.28	3.739	| I O | | | | 2.12
23.583	1.04	2.26	3.731	| I O | | | | 2.12
23.667	1.04	2.24	3.723	| I O | | | | 2.12
23.750	1.04	2.22	3.714	| I O | | | | 2.11
23.833	1.04	2.20	3.706	| I O | | | | 2.11
23.917	1.04	2.18	3.699	| I O | | | | 2.11
24.000	1.04	2.15	3.691	| I O | | | | 2.11
24.083	0.90	2.13	3.683	|I O | | | | 2.11
24.167	0.32	2.11	3.672	I O | | | | 2.10
24.250	0.12	2.07	3.659	I O | | | | 2.10
24.333	0.04	2.04	3.646	I O | | | | 2.10

24.417	0.02	2.00	3.632	I O	|	|	|	2.09
24.500	0.01	1.96	3.619	I O	|	|	|	2.09
24.583	0.00	1.93	3.605	I O	|	|	|	2.09
24.667	0.00	1.89	3.592	I O	|	|	|	2.08
24.750	0.00	1.86	3.579	I O	|	|	|	2.08
24.833	0.00	1.83	3.566	I O	|	|	|	2.08
24.917	0.00	1.79	3.554	I O	|	|	|	2.08
25.000	0.00	1.76	3.542	I O	|	|	|	2.07
25.083	0.00	1.73	3.530	I O	|	|	|	2.07
25.167	0.00	1.70	3.518	I O	|	|	|	2.07
25.250	0.00	1.67	3.506	I O	|	|	|	2.06
25.333	0.00	1.64	3.495	I O	|	|	|	2.06
25.417	0.00	1.61	3.484	I O	|	|	|	2.06
25.500	0.00	1.58	3.473	I O	|	|	|	2.06
25.583	0.00	1.55	3.462	I O	|	|	|	2.05
25.667	0.00	1.52	3.451	I O	|	|	|	2.05
25.750	0.00	1.50	3.441	I O	|	|	|	2.05
25.833	0.00	1.47	3.431	I O	|	|	|	2.05
25.917	0.00	1.44	3.421	I O	|	|	|	2.04
26.000	0.00	1.42	3.411	I O	|	|	|	2.04
26.083	0.00	1.39	3.401	I O	|	|	|	2.04
26.167	0.00	1.37	3.392	I O	|	|	|	2.04
26.250	0.00	1.34	3.383	I O	|	|	|	2.03
26.333	0.00	1.32	3.373	I O	|	|	|	2.03
26.417	0.00	1.29	3.364	I O	|	|	|	2.03
26.500	0.00	1.27	3.356	I O	|	|	|	2.03
26.583	0.00	1.25	3.347	I O	|	|	|	2.03
26.667	0.00	1.22	3.338	I O	|	|	|	2.02
26.750	0.00	1.20	3.330	I O	|	|	|	2.02
26.833	0.00	1.18	3.322	I O	|	|	|	2.02
26.917	0.00	1.16	3.314	I O	|	|	|	2.02
27.000	0.00	1.14	3.306	I O	|	|	|	2.02
27.083	0.00	1.12	3.298	I O	|	|	|	2.01
27.167	0.00	1.10	3.291	I O	|	|	|	2.01
27.250	0.00	1.08	3.283	I O	|	|	|	2.01
27.333	0.00	1.06	3.276	I O	|	|	|	2.01
27.417	0.00	1.04	3.268	I O	|	|	|	2.01
27.500	0.00	1.02	3.261	I O	|	|	|	2.01
27.583	0.00	1.00	3.254	I O	|	|	|	2.00
27.667	0.00	0.98	3.248	I O	|	|	|	2.00
27.750	0.00	0.97	3.241	I O	|	|	|	2.00
27.833	0.00	0.96	3.234	I O	|	|	|	2.00
27.917	0.00	0.96	3.228	I O	|	|	|	2.00
28.000	0.00	0.96	3.221	I O	|	|	|	2.00
28.083	0.00	0.96	3.214	I O	|	|	|	1.99
28.167	0.00	0.96	3.208	I O	|	|	|	1.99
28.250	0.00	0.96	3.201	I O	|	|	|	1.99
28.333	0.00	0.96	3.194	I O	|	|	|	1.99
28.417	0.00	0.96	3.188	I O	|	|	|	1.99
28.500	0.00	0.96	3.181	I O	|	|	|	1.99
28.583	0.00	0.96	3.175	I O	|	|	|	1.98
28.667	0.00	0.96	3.168	I O	|	|	|	1.98
28.750	0.00	0.96	3.161	I O	|	|	|	1.98
28.833	0.00	0.96	3.155	I O	|	|	|	1.98
28.917	0.00	0.96	3.148	I O	|	|	|	1.98
29.000	0.00	0.96	3.142	I O	|	|	|	1.98
29.083	0.00	0.96	3.135	I O	|	|	|	1.97
29.167	0.00	0.96	3.128	I O	|	|	|	1.97
29.250	0.00	0.96	3.122	I O	|	|	|	1.97
29.333	0.00	0.96	3.115	IO	|	|	|	1.97
29.417	0.00	0.96	3.109	IO	|	|	|	1.97
29.500	0.00	0.95	3.102	IO	|	|	|	1.97
29.583	0.00	0.95	3.096	IO	|	|	|	1.96
29.667	0.00	0.95	3.089	IO	|	|	|	1.96
29.750	0.00	0.95	3.082	IO	|	|	|	1.96
29.833	0.00	0.95	3.076	IO	|	|	|	1.96
29.917	0.00	0.95	3.069	IO	|	|	|	1.96
30.000	0.00	0.95	3.063	IO	|	|	|	1.96
30.083	0.00	0.95	3.056	IO	|	|	|	1.95
30.167	0.00	0.95	3.050	IO	|	|	|	1.95
30.250	0.00	0.95	3.043	IO	|	|	|	1.95
30.333	0.00	0.95	3.036	IO	|	|	|	1.95
30.417	0.00	0.95	3.030	IO	|	|	|	1.95
30.500	0.00	0.95	3.023	IO	|	|	|	1.95
30.583	0.00	0.95	3.017	IO	|	|	|	1.94

30.667	0.00	0.95	3.010	IO				1.94
30.750	0.00	0.95	3.004	IO				1.94
30.833	0.00	0.95	2.997	IO				1.94
30.917	0.00	0.95	2.991	IO				1.94
31.000	0.00	0.95	2.984	IO				1.94
31.083	0.00	0.95	2.978	IO				1.93
31.167	0.00	0.95	2.971	IO				1.93
31.250	0.00	0.95	2.965	IO				1.93
31.333	0.00	0.94	2.958	IO				1.93
31.417	0.00	0.94	2.952	IO				1.93
31.500	0.00	0.94	2.945	IO				1.93
31.583	0.00	0.94	2.939	IO				1.92
31.667	0.00	0.94	2.932	IO				1.92
31.750	0.00	0.94	2.926	IO				1.92
31.833	0.00	0.94	2.919	IO				1.92
31.917	0.00	0.94	2.913	IO				1.92
32.000	0.00	0.94	2.906	IO				1.92
32.083	0.00	0.94	2.900	IO				1.91
32.167	0.00	0.94	2.893	IO				1.91
32.250	0.00	0.94	2.887	IO				1.91
32.333	0.00	0.94	2.880	IO				1.91
32.417	0.00	0.94	2.874	IO				1.91
32.500	0.00	0.94	2.867	IO				1.91
32.583	0.00	0.94	2.861	IO				1.90
32.667	0.00	0.94	2.854	IO				1.90
32.750	0.00	0.94	2.848	IO				1.90
32.833	0.00	0.94	2.842	IO				1.90
32.917	0.00	0.94	2.835	IO				1.90
33.000	0.00	0.94	2.829	IO				1.90
33.083	0.00	0.94	2.822	IO				1.89
33.167	0.00	0.93	2.816	IO				1.89
33.250	0.00	0.93	2.809	IO				1.89
33.333	0.00	0.93	2.803	IO				1.89
33.417	0.00	0.93	2.796	IO				1.89
33.500	0.00	0.93	2.790	IO				1.88
33.583	0.00	0.93	2.784	IO				1.88
33.667	0.00	0.93	2.777	IO				1.88
33.750	0.00	0.93	2.771	IO				1.88
33.833	0.00	0.93	2.764	IO				1.88
33.917	0.00	0.93	2.758	IO				1.88
34.000	0.00	0.93	2.752	IO				1.87
34.083	0.00	0.93	2.745	IO				1.87
34.167	0.00	0.93	2.739	IO				1.87
34.250	0.00	0.93	2.732	IO				1.87
34.333	0.00	0.93	2.726	IO				1.87
34.417	0.00	0.93	2.720	IO				1.86
34.500	0.00	0.93	2.713	IO				1.86
34.583	0.00	0.93	2.707	IO				1.86
34.667	0.00	0.93	2.700	IO				1.86
34.750	0.00	0.92	2.694	IO				1.86
34.833	0.00	0.92	2.688	IO				1.85
34.917	0.00	0.92	2.681	IO				1.85
35.000	0.00	0.92	2.675	IO				1.85
35.083	0.00	0.92	2.669	IO				1.85
35.167	0.00	0.92	2.662	IO				1.85
35.250	0.00	0.92	2.656	IO				1.85
35.333	0.00	0.92	2.650	IO				1.84
35.417	0.00	0.92	2.643	IO				1.84
35.500	0.00	0.92	2.637	IO				1.84
35.583	0.00	0.92	2.631	IO				1.84
35.667	0.00	0.92	2.624	IO				1.84
35.750	0.00	0.92	2.618	IO				1.83
35.833	0.00	0.92	2.612	IO				1.83
35.917	0.00	0.92	2.605	IO				1.83
36.000	0.00	0.92	2.599	IO				1.83
36.083	0.00	0.92	2.593	IO				1.83
36.167	0.00	0.92	2.586	IO				1.83
36.250	0.00	0.92	2.580	IO				1.82
36.333	0.00	0.91	2.574	IO				1.82
36.417	0.00	0.91	2.567	IO				1.82
36.500	0.00	0.91	2.561	IO				1.82
36.583	0.00	0.91	2.555	IO				1.82
36.667	0.00	0.91	2.549	IO				1.81
36.750	0.00	0.91	2.542	IO				1.81
36.833	0.00	0.91	2.536	IO				1.81

36.917	0.00	0.91	2.530	IO					1.81
37.000	0.00	0.91	2.523	IO					1.81
37.083	0.00	0.91	2.517	IO					1.80
37.167	0.00	0.91	2.511	IO					1.80
37.250	0.00	0.91	2.505	IO					1.80
37.333	0.00	0.91	2.498	IO					1.80
37.417	0.00	0.91	2.492	IO					1.80
37.500	0.00	0.91	2.486	IO					1.80
37.583	0.00	0.91	2.480	IO					1.79
37.667	0.00	0.91	2.473	IO					1.79
37.750	0.00	0.91	2.467	IO					1.79
37.833	0.00	0.91	2.461	IO					1.79
37.917	0.00	0.90	2.455	IO					1.79
38.000	0.00	0.90	2.448	IO					1.78
38.083	0.00	0.90	2.442	IO					1.78
38.167	0.00	0.90	2.436	IO					1.78
38.250	0.00	0.90	2.430	IO					1.78
38.333	0.00	0.90	2.424	IO					1.78
38.417	0.00	0.90	2.417	IO					1.78
38.500	0.00	0.90	2.411	IO					1.77
38.583	0.00	0.90	2.405	IO					1.77
38.667	0.00	0.90	2.399	IO					1.77
38.750	0.00	0.90	2.393	IO					1.77
38.833	0.00	0.90	2.386	IO					1.77
38.917	0.00	0.90	2.380	IO					1.76
39.000	0.00	0.90	2.374	IO					1.76
39.083	0.00	0.90	2.368	IO					1.76
39.167	0.00	0.90	2.362	IO					1.76
39.250	0.00	0.90	2.355	IO					1.76
39.333	0.00	0.90	2.349	IO					1.76
39.417	0.00	0.90	2.343	IO					1.75
39.500	0.00	0.90	2.337	IO					1.75
39.583	0.00	0.89	2.331	IO					1.75
39.667	0.00	0.89	2.325	IO					1.75
39.750	0.00	0.89	2.318	IO					1.75
39.833	0.00	0.89	2.312	IO					1.74
39.917	0.00	0.89	2.306	IO					1.74
40.000	0.00	0.89	2.300	IO					1.74
40.083	0.00	0.89	2.294	IO					1.74
40.167	0.00	0.89	2.288	IO					1.74
40.250	0.00	0.89	2.282	IO					1.74
40.333	0.00	0.89	2.275	IO					1.73
40.417	0.00	0.89	2.269	IO					1.73
40.500	0.00	0.89	2.263	IO					1.73
40.583	0.00	0.89	2.257	IO					1.73
40.667	0.00	0.89	2.251	IO					1.73
40.750	0.00	0.89	2.245	IO					1.72
40.833	0.00	0.89	2.239	IO					1.72
40.917	0.00	0.89	2.233	IO					1.72
41.000	0.00	0.89	2.227	IO					1.72
41.083	0.00	0.89	2.220	IO					1.72
41.167	0.00	0.88	2.214	IO					1.72
41.250	0.00	0.88	2.208	IO					1.71
41.333	0.00	0.88	2.202	IO					1.71
41.417	0.00	0.88	2.196	IO					1.71
41.500	0.00	0.88	2.190	IO					1.71
41.583	0.00	0.88	2.184	IO					1.71
41.667	0.00	0.88	2.178	IO					1.71
41.750	0.00	0.88	2.172	IO					1.70
41.833	0.00	0.88	2.166	IO					1.70
41.917	0.00	0.88	2.160	IO					1.70
42.000	0.00	0.88	2.154	IO					1.70
42.083	0.00	0.88	2.147	IO					1.70
42.167	0.00	0.88	2.141	IO					1.69
42.250	0.00	0.88	2.135	IO					1.69
42.333	0.00	0.88	2.129	IO					1.69
42.417	0.00	0.88	2.123	IO					1.69
42.500	0.00	0.88	2.117	IO					1.69
42.583	0.00	0.88	2.111	IO					1.69
42.667	0.00	0.88	2.105	IO					1.68
42.750	0.00	0.88	2.099	IO					1.68
42.833	0.00	0.87	2.093	IO					1.68
42.917	0.00	0.87	2.087	IO					1.68
43.000	0.00	0.87	2.081	IO					1.68
43.083	0.00	0.87	2.075	IO					1.68

43.167	0.00	0.87	2.069	IO					1.67
43.250	0.00	0.87	2.063	IO					1.67
43.333	0.00	0.87	2.057	IO					1.67
43.417	0.00	0.87	2.051	IO					1.67
43.500	0.00	0.87	2.045	IO					1.67
43.583	0.00	0.87	2.039	IO					1.66
43.667	0.00	0.87	2.033	IO					1.66
43.750	0.00	0.87	2.027	IO					1.66
43.833	0.00	0.87	2.021	IO					1.66
43.917	0.00	0.87	2.015	IO					1.66
44.000	0.00	0.87	2.009	IO					1.66
44.083	0.00	0.87	2.003	IO					1.65
44.167	0.00	0.87	1.997	IO					1.65
44.250	0.00	0.87	1.991	IO					1.65
44.333	0.00	0.87	1.985	IO					1.65
44.417	0.00	0.87	1.979	IO					1.65
44.500	0.00	0.87	1.973	IO					1.65
44.583	0.00	0.86	1.967	IO					1.64
44.667	0.00	0.86	1.961	IO					1.64
44.750	0.00	0.86	1.955	IO					1.64
44.833	0.00	0.86	1.949	IO					1.64
44.917	0.00	0.86	1.944	IO					1.64
45.000	0.00	0.86	1.938	IO					1.63
45.083	0.00	0.86	1.932	IO					1.63
45.167	0.00	0.86	1.926	IO					1.63
45.250	0.00	0.86	1.920	IO					1.63
45.333	0.00	0.86	1.914	IO					1.63
45.417	0.00	0.86	1.908	IO					1.63
45.500	0.00	0.86	1.902	IO					1.62
45.583	0.00	0.86	1.896	IO					1.62
45.667	0.00	0.86	1.890	IO					1.62
45.750	0.00	0.86	1.884	IO					1.62
45.833	0.00	0.86	1.878	IO					1.62
45.917	0.00	0.86	1.872	IO					1.62
46.000	0.00	0.86	1.867	IO					1.61
46.083	0.00	0.86	1.861	IO					1.61
46.167	0.00	0.86	1.855	IO					1.61
46.250	0.00	0.85	1.849	IO					1.61
46.333	0.00	0.85	1.843	IO					1.61
46.417	0.00	0.85	1.837	IO					1.61
46.500	0.00	0.85	1.831	IO					1.60
46.583	0.00	0.85	1.825	IO					1.60
46.667	0.00	0.85	1.820	IO					1.60
46.750	0.00	0.85	1.814	IO					1.60
46.833	0.00	0.85	1.808	IO					1.60
46.917	0.00	0.85	1.802	IO					1.59
47.000	0.00	0.85	1.796	IO					1.59
47.083	0.00	0.85	1.790	IO					1.59
47.167	0.00	0.85	1.784	IO					1.59
47.250	0.00	0.85	1.779	IO					1.59
47.333	0.00	0.85	1.773	IO					1.59
47.417	0.00	0.85	1.767	IO					1.58
47.500	0.00	0.85	1.761	IO					1.58
47.583	0.00	0.85	1.755	IO					1.58
47.667	0.00	0.85	1.749	IO					1.58
47.750	0.00	0.85	1.743	IO					1.58
47.833	0.00	0.85	1.738	IO					1.58
47.917	0.00	0.85	1.732	IO					1.57
48.000	0.00	0.84	1.726	IO					1.57
48.083	0.00	0.84	1.720	IO					1.57
48.167	0.00	0.84	1.714	IO					1.57
48.250	0.00	0.84	1.709	IO					1.57
48.333	0.00	0.84	1.703	IO					1.57
48.417	0.00	0.84	1.697	IO					1.56
48.500	0.00	0.84	1.691	IO					1.56
48.583	0.00	0.84	1.685	IO					1.56
48.667	0.00	0.84	1.680	IO					1.56
48.750	0.00	0.84	1.674	IO					1.56
48.833	0.00	0.84	1.668	IO					1.56
48.917	0.00	0.84	1.662	IO					1.55
49.000	0.00	0.84	1.656	IO					1.55
49.083	0.00	0.84	1.651	IO					1.55
49.167	0.00	0.84	1.645	IO					1.55
49.250	0.00	0.84	1.639	IO					1.55
49.333	0.00	0.84	1.633	IO					1.55

49.417	0.00	0.84	1.628	IO				1.54
49.500	0.00	0.84	1.622	IO				1.54
49.583	0.00	0.84	1.616	IO				1.54
49.667	0.00	0.83	1.610	IO				1.54
49.750	0.00	0.83	1.605	IO				1.54
49.833	0.00	0.83	1.599	IO				1.54
49.917	0.00	0.83	1.593	IO				1.53
50.000	0.00	0.83	1.587	IO				1.53
50.083	0.00	0.83	1.582	IO				1.53
50.167	0.00	0.83	1.576	IO				1.53
50.250	0.00	0.83	1.570	IO				1.53
50.333	0.00	0.83	1.564	IO				1.53
50.417	0.00	0.83	1.559	IO				1.52
50.500	0.00	0.83	1.553	IO				1.52
50.583	0.00	0.83	1.547	IO				1.52
50.667	0.00	0.83	1.542	IO				1.52
50.750	0.00	0.83	1.536	IO				1.52
50.833	0.00	0.83	1.530	IO				1.52
50.917	0.00	0.83	1.524	IO				1.51
51.000	0.00	0.83	1.519	IO				1.51
51.083	0.00	0.83	1.513	IO				1.51
51.167	0.00	0.83	1.507	IO				1.51
51.250	0.00	0.83	1.502	IO				1.51
51.333	0.00	0.83	1.496	IO				1.51
51.417	0.00	0.83	1.490	IO				1.50
51.500	0.00	0.82	1.485	IO				1.50
51.583	0.00	0.82	1.479	IO				1.50
51.667	0.00	0.82	1.473	IO				1.50
51.750	0.00	0.82	1.468	IO				1.50
51.833	0.00	0.82	1.462	IO				1.49
51.917	0.00	0.82	1.456	IO				1.49
52.000	0.00	0.82	1.451	IO				1.49
52.083	0.00	0.82	1.445	IO				1.48
52.167	0.00	0.82	1.439	IO				1.48
52.250	0.00	0.82	1.434	IO				1.48
52.333	0.00	0.82	1.428	IO				1.48
52.417	0.00	0.82	1.423	IO				1.47
52.500	0.00	0.81	1.417	IO				1.47
52.583	0.00	0.81	1.411	IO				1.47
52.667	0.00	0.81	1.406	IO				1.47
52.750	0.00	0.81	1.400	IO				1.46
52.833	0.00	0.81	1.395	IO				1.46
52.917	0.00	0.81	1.389	IO				1.46
53.000	0.00	0.81	1.383	IO				1.45
53.083	0.00	0.81	1.378	IO				1.45
53.167	0.00	0.81	1.372	IO				1.45
53.250	0.00	0.81	1.367	IO				1.45
53.333	0.00	0.81	1.361	IO				1.44
53.417	0.00	0.80	1.356	IO				1.44
53.500	0.00	0.80	1.350	IO				1.44
53.583	0.00	0.80	1.345	IO				1.44
53.667	0.00	0.80	1.339	IO				1.43
53.750	0.00	0.80	1.334	IO				1.43
53.833	0.00	0.80	1.328	IO				1.43
53.917	0.00	0.80	1.322	IO				1.43
54.000	0.00	0.80	1.317	IO				1.42
54.083	0.00	0.80	1.312	IO				1.42
54.167	0.00	0.80	1.306	IO				1.42
54.250	0.00	0.80	1.301	IO				1.42
54.333	0.00	0.79	1.295	IO				1.41
54.417	0.00	0.79	1.290	IO				1.41
54.500	0.00	0.79	1.284	IO				1.41
54.583	0.00	0.79	1.279	IO				1.40
54.667	0.00	0.79	1.273	IO				1.40
54.750	0.00	0.79	1.268	IO				1.40
54.833	0.00	0.79	1.262	IO				1.40
54.917	0.00	0.79	1.257	IO				1.39
55.000	0.00	0.79	1.252	IO				1.39
55.083	0.00	0.79	1.246	IO				1.39
55.167	0.00	0.79	1.241	IO				1.39
55.250	0.00	0.78	1.235	IO				1.38
55.333	0.00	0.78	1.230	IO				1.38
55.417	0.00	0.78	1.224	IO				1.38
55.500	0.00	0.78	1.219	IO				1.38
55.583	0.00	0.78	1.214	IO				1.37

55.667	0.00	0.78	1.208	IO				1.37
55.750	0.00	0.78	1.203	IO				1.37
55.833	0.00	0.78	1.198	IO				1.37
55.917	0.00	0.78	1.192	IO				1.36
56.000	0.00	0.78	1.187	IO				1.36
56.083	0.00	0.78	1.182	IO				1.36
56.167	0.00	0.78	1.176	IO				1.36
56.250	0.00	0.77	1.171	IO				1.35
56.333	0.00	0.77	1.166	IO				1.35
56.417	0.00	0.77	1.160	IO				1.35
56.500	0.00	0.77	1.155	IO				1.35
56.583	0.00	0.77	1.150	IO				1.34
56.667	0.00	0.77	1.144	IO				1.34
56.750	0.00	0.77	1.139	IO				1.34
56.833	0.00	0.77	1.134	IO				1.34
56.917	0.00	0.77	1.128	IO				1.33
57.000	0.00	0.77	1.123	IO				1.33
57.083	0.00	0.77	1.118	IO				1.33
57.167	0.00	0.76	1.113	IO				1.33
57.250	0.00	0.76	1.107	IO				1.32
57.333	0.00	0.76	1.102	IO				1.32
57.417	0.00	0.76	1.097	IO				1.32
57.500	0.00	0.76	1.092	IO				1.32
57.583	0.00	0.76	1.086	IO				1.31
57.667	0.00	0.76	1.081	IO				1.31
57.750	0.00	0.76	1.076	IO				1.31
57.833	0.00	0.76	1.071	IO				1.31
57.917	0.00	0.76	1.065	IO				1.30
58.000	0.00	0.76	1.060	IO				1.30
58.083	0.00	0.76	1.055	IO				1.30
58.167	0.00	0.75	1.050	IO				1.30
58.250	0.00	0.75	1.045	IO				1.29
58.333	0.00	0.75	1.039	IO				1.29
58.417	0.00	0.75	1.034	IO				1.29
58.500	0.00	0.75	1.029	IO				1.29
58.583	0.00	0.75	1.024	IO				1.28
58.667	0.00	0.75	1.019	IO				1.28
58.750	0.00	0.75	1.014	IO				1.28
58.833	0.00	0.75	1.008	IO				1.28
58.917	0.00	0.75	1.003	IO				1.27
59.000	0.00	0.75	0.998	IO				1.27
59.083	0.00	0.75	0.993	IO				1.27
59.167	0.00	0.74	0.988	IO				1.27
59.250	0.00	0.74	0.983	IO				1.26
59.333	0.00	0.74	0.978	IO				1.26
59.417	0.00	0.74	0.972	IO				1.26
59.500	0.00	0.74	0.967	IO				1.26
59.583	0.00	0.74	0.962	IO				1.25
59.667	0.00	0.74	0.957	IO				1.25
59.750	0.00	0.74	0.952	IO				1.25
59.833	0.00	0.74	0.947	IO				1.25
59.917	0.00	0.74	0.942	IO				1.24
60.000	0.00	0.74	0.937	IO				1.24
60.083	0.00	0.74	0.932	IO				1.24
60.167	0.00	0.73	0.927	IO				1.24
60.250	0.00	0.73	0.922	IO				1.23
60.333	0.00	0.73	0.917	IO				1.23
60.417	0.00	0.73	0.912	IO				1.23
60.500	0.00	0.73	0.907	IO				1.23
60.583	0.00	0.73	0.901	IO				1.22
60.667	0.00	0.73	0.896	IO				1.22
60.750	0.00	0.73	0.891	IO				1.22
60.833	0.00	0.73	0.886	IO				1.22
60.917	0.00	0.73	0.881	IO				1.22
61.000	0.00	0.73	0.876	IO				1.21
61.083	0.00	0.73	0.871	IO				1.21
61.167	0.00	0.72	0.866	IO				1.21
61.250	0.00	0.72	0.861	IO				1.21
61.333	0.00	0.72	0.856	IO				1.20
61.417	0.00	0.72	0.851	IO				1.20
61.500	0.00	0.72	0.846	IO				1.20
61.583	0.00	0.72	0.842	IO				1.20
61.667	0.00	0.72	0.837	IO				1.19
61.750	0.00	0.72	0.832	IO				1.19
61.833	0.00	0.72	0.827	IO				1.19

61.917	0.00	0.72	0.822	IO					1.19
62.000	0.00	0.72	0.817	IO					1.18
62.083	0.00	0.72	0.812	IO					1.18
62.167	0.00	0.72	0.807	IO					1.18
62.250	0.00	0.71	0.802	IO					1.18
62.333	0.00	0.71	0.797	IO					1.18
62.417	0.00	0.71	0.792	IO					1.17
62.500	0.00	0.71	0.787	IO					1.17
62.583	0.00	0.71	0.782	IO					1.17
62.667	0.00	0.71	0.777	IO					1.17
62.750	0.00	0.71	0.773	IO					1.16
62.833	0.00	0.71	0.768	IO					1.16
62.917	0.00	0.71	0.763	IO					1.16
63.000	0.00	0.71	0.758	IO					1.16
63.083	0.00	0.71	0.753	IO					1.15
63.167	0.00	0.71	0.748	IO					1.15
63.250	0.00	0.70	0.743	IO					1.15
63.333	0.00	0.70	0.739	IO					1.15
63.417	0.00	0.70	0.734	IO					1.14
63.500	0.00	0.70	0.729	IO					1.14
63.583	0.00	0.70	0.724	IO					1.14
63.667	0.00	0.70	0.719	IO					1.14
63.750	0.00	0.70	0.714	IO					1.14
63.833	0.00	0.70	0.710	IO					1.13
63.917	0.00	0.70	0.705	IO					1.13
64.000	0.00	0.70	0.700	IO					1.13
64.083	0.00	0.70	0.695	IO					1.13
64.167	0.00	0.70	0.690	IO					1.12
64.250	0.00	0.70	0.685	IO					1.12
64.333	0.00	0.69	0.681	IO					1.12
64.417	0.00	0.69	0.676	IO					1.12
64.500	0.00	0.69	0.671	IO					1.12
64.583	0.00	0.69	0.666	IO					1.11
64.667	0.00	0.69	0.662	IO					1.11
64.750	0.00	0.69	0.657	IO					1.11
64.833	0.00	0.69	0.652	IO					1.11
64.917	0.00	0.69	0.647	IO					1.10
65.000	0.00	0.69	0.643	IO					1.10
65.083	0.00	0.69	0.638	IO					1.10
65.167	0.00	0.69	0.633	IO					1.10
65.250	0.00	0.69	0.628	IO					1.09
65.333	0.00	0.69	0.624	IO					1.09
65.417	0.00	0.68	0.619	IO					1.09
65.500	0.00	0.68	0.614	IO					1.09
65.583	0.00	0.68	0.610	IO					1.09
65.667	0.00	0.68	0.605	IO					1.08
65.750	0.00	0.68	0.600	IO					1.08
65.833	0.00	0.68	0.595	IO					1.08
65.917	0.00	0.68	0.591	IO					1.08
66.000	0.00	0.68	0.586	IO					1.07
66.083	0.00	0.68	0.581	IO					1.07
66.167	0.00	0.68	0.577	IO					1.07
66.250	0.00	0.68	0.572	IO					1.07
66.333	0.00	0.68	0.567	IO					1.07
66.417	0.00	0.68	0.563	IO					1.06
66.500	0.00	0.67	0.558	IO					1.06
66.583	0.00	0.67	0.553	IO					1.06
66.667	0.00	0.67	0.549	IO					1.06
66.750	0.00	0.67	0.544	IO					1.05
66.833	0.00	0.67	0.540	IO					1.05
66.917	0.00	0.67	0.535	IO					1.05
67.000	0.00	0.67	0.530	IO					1.05
67.083	0.00	0.67	0.526	IO					1.05
67.167	0.00	0.67	0.521	IO					1.04
67.250	0.00	0.67	0.516	IO					1.04
67.333	0.00	0.67	0.512	IO					1.04
67.417	0.00	0.67	0.507	IO					1.04
67.500	0.00	0.67	0.503	IO					1.03
67.583	0.00	0.67	0.498	IO					1.03
67.667	0.00	0.66	0.494	IO					1.03
67.750	0.00	0.66	0.489	IO					1.03
67.833	0.00	0.66	0.484	IO					1.03
67.917	0.00	0.66	0.480	IO					1.02
68.000	0.00	0.66	0.475	IO					1.02
68.083	0.00	0.66	0.471	IO					1.02

68.167	0.00	0.66	0.466	IO					1.02
68.250	0.00	0.66	0.462	IO					1.02
68.333	0.00	0.66	0.457	IO					1.01
68.417	0.00	0.66	0.453	IO					1.01
68.500	0.00	0.66	0.448	IO					1.01
68.583	0.00	0.66	0.444	IO					1.01
68.667	0.00	0.66	0.439	IO					1.00
68.750	0.00	0.65	0.435	IO					1.00
68.833	0.00	0.65	0.430	IO					1.00
68.917	0.00	0.65	0.425	IO					0.99
69.000	0.00	0.65	0.421	IO					0.99
69.083	0.00	0.65	0.417	IO					0.98
69.167	0.00	0.64	0.412	IO					0.98
69.250	0.00	0.64	0.408	IO					0.97
69.333	0.00	0.64	0.403	IO					0.96
69.417	0.00	0.63	0.399	IO					0.96
69.500	0.00	0.63	0.395	IO					0.95
69.583	0.00	0.63	0.390	IO					0.95
69.667	0.00	0.63	0.386	IO					0.94
69.750	0.00	0.62	0.382	IO					0.94
69.833	0.00	0.62	0.377	IO					0.93
69.917	0.00	0.62	0.373	IO					0.92
70.000	0.00	0.62	0.369	IO					0.92
70.083	0.00	0.61	0.365	IO					0.91
70.167	0.00	0.61	0.360	IO					0.91
70.250	0.00	0.61	0.356	IO					0.90
70.333	0.00	0.61	0.352	IO					0.90
70.417	0.00	0.60	0.348	IO					0.89
70.500	0.00	0.60	0.344	IO					0.89
70.583	0.00	0.60	0.340	IO					0.88
70.667	0.00	0.60	0.335	IO					0.87
70.750	0.00	0.59	0.331	IO					0.87
70.833	0.00	0.59	0.327	IO					0.86
70.917	0.00	0.59	0.323	IO					0.86
71.000	0.00	0.59	0.319	IO					0.85
71.083	0.00	0.58	0.315	IO					0.85
71.167	0.00	0.58	0.311	IO					0.84
71.250	0.00	0.58	0.307	IO					0.84
71.333	0.00	0.58	0.303	IO					0.83
71.417	0.00	0.57	0.299	IO					0.83
71.500	0.00	0.57	0.295	IO					0.82
71.583	0.00	0.57	0.291	IO					0.82
71.667	0.00	0.57	0.287	IO					0.81
71.750	0.00	0.56	0.284	IO					0.81
71.833	0.00	0.56	0.280	IO					0.80
71.917	0.00	0.56	0.276	IO					0.80
72.000	0.00	0.56	0.272	IO					0.79
72.083	0.00	0.55	0.268	IO					0.79
72.167	0.00	0.55	0.264	IO					0.78
72.250	0.00	0.55	0.261	IO					0.78
72.333	0.00	0.55	0.257	IO					0.77
72.417	0.00	0.54	0.253	IO					0.77
72.500	0.00	0.54	0.249	IO					0.76
72.583	0.00	0.54	0.246	IO					0.76
72.667	0.00	0.54	0.242	IO					0.75
72.750	0.00	0.54	0.238	IO					0.75
72.833	0.00	0.53	0.234	IO					0.74
72.917	0.00	0.53	0.231	IO					0.74
73.000	0.00	0.53	0.227	IO					0.73
73.083	0.00	0.53	0.224	IO					0.73
73.167	0.00	0.52	0.220	IO					0.72
73.250	0.00	0.52	0.216	IO					0.72
73.333	0.00	0.52	0.213	IO					0.71
73.417	0.00	0.52	0.209	IO					0.71
73.500	0.00	0.52	0.206	IO					0.70
73.583	0.00	0.51	0.202	IO					0.70
73.667	0.00	0.51	0.199	IO					0.69
73.750	0.00	0.51	0.195	IO					0.69
73.833	0.00	0.51	0.191	IO					0.68
73.917	0.00	0.50	0.188	IO					0.68
74.000	0.00	0.50	0.185	IO					0.67
74.083	0.00	0.50	0.181	IO					0.67
74.167	0.00	0.50	0.178	IO					0.67
74.250	0.00	0.50	0.174	IO					0.66
74.333	0.00	0.49	0.171	IO					0.66

74.417	0.00	0.49	0.167	IO					0.65
74.500	0.00	0.49	0.164	IO					0.65
74.583	0.00	0.49	0.161	IO					0.64
74.667	0.00	0.49	0.157	IO					0.64
74.750	0.00	0.48	0.154	IO					0.63
74.833	0.00	0.48	0.151	IO					0.63
74.917	0.00	0.48	0.147	IO					0.63
75.000	0.00	0.48	0.144	O					0.62
75.083	0.00	0.48	0.141	O					0.62
75.167	0.00	0.47	0.138	O					0.61
75.250	0.00	0.47	0.134	O					0.61
75.333	0.00	0.47	0.131	O					0.60
75.417	0.00	0.47	0.128	O					0.60
75.500	0.00	0.47	0.125	O					0.59
75.583	0.00	0.46	0.121	O					0.59
75.667	0.00	0.46	0.118	O					0.59
75.750	0.00	0.46	0.115	O					0.58
75.833	0.00	0.46	0.112	O					0.58
75.917	0.00	0.46	0.109	O					0.57
76.000	0.00	0.45	0.106	O					0.57
76.083	0.00	0.45	0.103	O					0.57
76.167	0.00	0.45	0.099	O					0.56
76.250	0.00	0.45	0.096	O					0.56
76.333	0.00	0.45	0.093	O					0.55
76.417	0.00	0.44	0.090	O					0.55
76.500	0.00	0.44	0.087	O					0.55
76.583	0.00	0.44	0.084	O					0.54
76.667	0.00	0.44	0.081	O					0.54
76.750	0.00	0.44	0.078	O					0.53
76.833	0.00	0.43	0.075	O					0.53
76.917	0.00	0.43	0.072	O					0.53
77.000	0.00	0.43	0.069	O					0.52
77.083	0.00	0.43	0.066	O					0.52
77.167	0.00	0.43	0.063	O					0.51
77.250	0.00	0.43	0.060	O					0.51
77.333	0.00	0.42	0.057	O					0.51
77.417	0.00	0.42	0.054	O					0.50
77.500	0.00	0.41	0.052	O					0.49
77.583	0.00	0.39	0.049	O					0.47
77.667	0.00	0.37	0.046	O					0.45
77.750	0.00	0.35	0.044	O					0.43
77.833	0.00	0.33	0.041	O					0.41
77.917	0.00	0.31	0.039	O					0.39
78.000	0.00	0.30	0.037	O					0.38
78.083	0.00	0.28	0.035	O					0.36
78.167	0.00	0.26	0.033	O					0.35
78.250	0.00	0.25	0.031	O					0.33
78.333	0.00	0.24	0.030	O					0.32
78.417	0.00	0.22	0.028	O					0.31
78.500	0.00	0.21	0.027	O					0.30
78.583	0.00	0.20	0.025	O					0.29
78.667	0.00	0.19	0.024	O					0.28
78.750	0.00	0.18	0.023	O					0.27
78.833	0.00	0.17	0.021	O					0.26
78.917	0.00	0.16	0.020	O					0.25
79.000	0.00	0.15	0.019	O					0.24
79.083	0.00	0.15	0.018	O					0.23
79.167	0.00	0.14	0.017	O					0.22
79.250	0.00	0.13	0.016	O					0.22
79.333	0.00	0.12	0.015	O					0.21
79.417	0.00	0.12	0.015	O					0.20
79.500	0.00	0.11	0.014	O					0.20
79.583	0.00	0.10	0.013	O					0.19
79.667	0.00	0.10	0.012	O					0.19
79.750	0.00	0.09	0.012	O					0.18
79.833	0.00	0.09	0.011	O					0.18
79.917	0.00	0.08	0.010	O					0.17
80.000	0.00	0.08	0.010	O					0.17
80.083	0.00	0.08	0.009	O					0.16
80.167	0.00	0.07	0.009	O					0.16
80.250	0.00	0.07	0.008	O					0.16
80.333	0.00	0.06	0.008	O					0.15
80.417	0.00	0.06	0.007	O					0.15
80.500	0.00	0.06	0.007	O					0.15
80.583	0.00	0.05	0.007	O					0.14

80.667	0.00	0.05	0.006	O	|	|	|	|	0.14
80.750	0.00	0.05	0.006	O	|	|	|	|	0.14
80.833	0.00	0.05	0.006	O	|	|	|	|	0.14
80.917	0.00	0.04	0.005	O	|	|	|	|	0.13
81.000	0.00	0.04	0.005	O	|	|	|	|	0.13
81.083	0.00	0.04	0.005	O	|	|	|	|	0.13
81.167	0.00	0.04	0.004	O	|	|	|	|	0.13
81.250	0.00	0.04	0.004	O	|	|	|	|	0.12
81.333	0.00	0.03	0.004	O	|	|	|	|	0.12
81.417	0.00	0.03	0.004	O	|	|	|	|	0.12
81.500	0.00	0.03	0.004	O	|	|	|	|	0.12
81.583	0.00	0.03	0.003	O	|	|	|	|	0.12
81.667	0.00	0.03	0.003	O	|	|	|	|	0.12
81.750	0.00	0.03	0.003	O	|	|	|	|	0.12
81.833	0.00	0.02	0.003	O	|	|	|	|	0.11
81.917	0.00	0.02	0.003	O	|	|	|	|	0.11
82.000	0.00	0.02	0.002	O	|	|	|	|	0.11
82.083	0.00	0.02	0.002	O	|	|	|	|	0.11
82.167	0.00	0.02	0.002	O	|	|	|	|	0.11
82.250	0.00	0.02	0.002	O	|	|	|	|	0.11
82.333	0.00	0.02	0.002	O	|	|	|	|	0.11
82.417	0.00	0.02	0.002	O	|	|	|	|	0.11
82.500	0.00	0.02	0.002	O	|	|	|	|	0.11
82.583	0.00	0.01	0.002	O	|	|	|	|	0.10
82.667	0.00	0.01	0.002	O	|	|	|	|	0.10
82.750	0.00	0.01	0.001	O	|	|	|	|	0.10
82.833	0.00	0.01	0.001	O	|	|	|	|	0.10
82.917	0.00	0.01	0.001	O	|	|	|	|	0.10
83.000	0.00	0.01	0.001	O	|	|	|	|	0.10
83.083	0.00	0.01	0.001	O	|	|	|	|	0.10
83.167	0.00	0.01	0.001	O	|	|	|	|	0.10
83.250	0.00	0.01	0.001	O	|	|	|	|	0.09
83.333	0.00	0.01	0.001	O	|	|	|	|	0.09
83.417	0.00	0.01	0.001	O	|	|	|	|	0.08
83.500	0.00	0.01	0.001	O	|	|	|	|	0.08
83.583	0.00	0.01	0.001	O	|	|	|	|	0.07
83.667	0.00	0.01	0.001	O	|	|	|	|	0.07
83.750	0.00	0.01	0.001	O	|	|	|	|	0.06
83.833	0.00	0.01	0.001	O	|	|	|	|	0.06
83.917	0.00	0.01	0.001	O	|	|	|	|	0.05
84.000	0.00	0.01	0.001	O	|	|	|	|	0.05
84.083	0.00	0.00	0.000	O	|	|	|	|	0.05
84.167	0.00	0.00	0.000	O	|	|	|	|	0.04
84.250	0.00	0.00	0.000	O	|	|	|	|	0.04
84.333	0.00	0.00	0.000	O	|	|	|	|	0.04
84.417	0.00	0.00	0.000	O	|	|	|	|	0.04
84.500	0.00	0.00	0.000	O	|	|	|	|	0.03
84.583	0.00	0.00	0.000	O	|	|	|	|	0.03
84.667	0.00	0.00	0.000	O	|	|	|	|	0.03
84.750	0.00	0.00	0.000	O	|	|	|	|	0.03
84.833	0.00	0.00	0.000	O	|	|	|	|	0.03
84.917	0.00	0.00	0.000	O	|	|	|	|	0.02
85.000	0.00	0.00	0.000	O	|	|	|	|	0.02
85.083	0.00	0.00	0.000	O	|	|	|	|	0.02
85.167	0.00	0.00	0.000	O	|	|	|	|	0.02
85.250	0.00	0.00	0.000	O	|	|	|	|	0.02
85.333	0.00	0.00	0.000	O	|	|	|	|	0.02
85.417	0.00	0.00	0.000	O	|	|	|	|	0.02
85.500	0.00	0.00	0.000	O	|	|	|	|	0.01
85.583	0.00	0.00	0.000	O	|	|	|	|	0.01
85.667	0.00	0.00	0.000	O	|	|	|	|	0.01
85.750	0.00	0.00	0.000	O	|	|	|	|	0.01
85.833	0.00	0.00	0.000	O	|	|	|	|	0.01
85.917	0.00	0.00	0.000	O	|	|	|	|	0.01
86.000	0.00	0.00	0.000	O	|	|	|	|	0.01

**********HYDROGRAPH DATA**********

Number of intervals = 1032
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 5.530 (CFS)
Total volume = 7.865 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

BASIN ROUTING
DMA B
PROPOSED CONDITIONS
10-YEAR 24-HOUR

FLOOD HYDROGRAPH ROUTING PROGRAM
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Study date: 10/22/14

14-0213 SHOPOFF
BASIN ROUTING
DMA B
10-YEAR 24-HOUR

Program License Serial Number 4010

********** HYDROGRAPH INFORMATION **********

From study/file name: BPROP2410.rte
**********HYDROGRAPH DATA**********
Number of intervals = 295
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 32.387 (CFS)
Total volume = 15.772 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 295
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

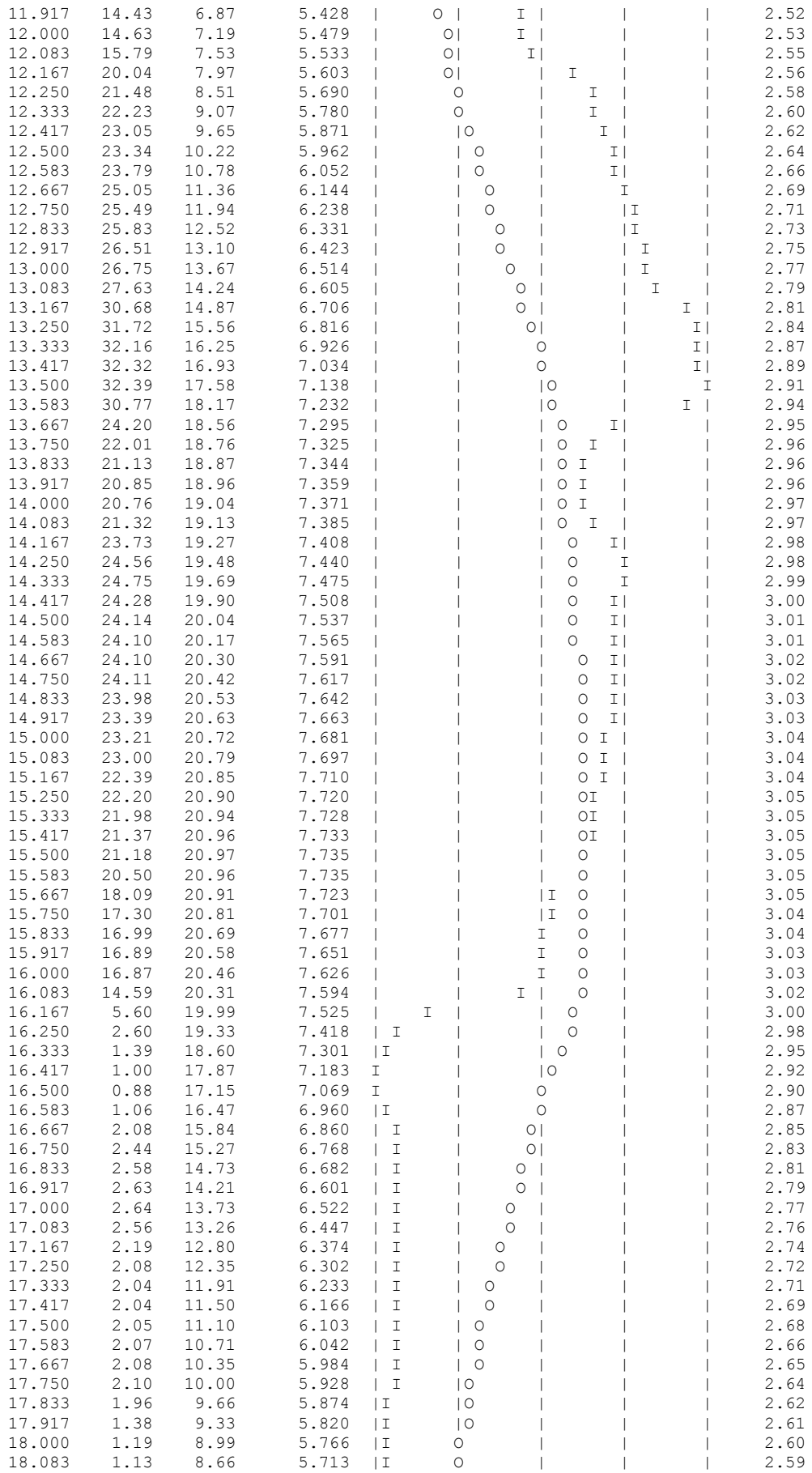
Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.100	0.001	0.010	0.001	0.001
0.500	0.053	0.421	0.052	0.054
1.000	0.430	0.654	0.428	0.432
1.500	1.478	0.824	1.475	1.481
1.900	2.842	0.937	2.839	2.845
2.000	3.240	0.964	3.237	3.243
2.400	4.909	5.372	4.891	4.927
2.500	5.335	6.288	5.313	5.357
3.000	7.513	19.930	7.444	7.582
3.100	7.959	22.013	7.883	8.035
3.500	9.773	35.542	9.651	9.895
4.000	12.116	58.286	11.915	12.317
4.500	14.544	85.412	14.250	14.838
5.000	17.059	116.189	16.659	17.459
5.500	19.662	150.189	19.145	20.179
6.000	22.356	187.115	21.712	23.000
6.200	23.460	202.653	22.762	24.158

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	8.1	16.19	24.29	32.39	Depth (Ft.)
0.083	0.25	0.01	0.001	O					0.08
0.167	1.23	0.05	0.006	OI					0.14
0.250	1.56	0.12	0.015	OI					0.21
0.333	1.82	0.20	0.025	OI					0.29
0.417	2.36	0.30	0.038	O I					0.38
0.500	2.54	0.42	0.052	O I					0.50
0.583	2.62	0.43	0.067	O I					0.52
0.667	2.64	0.44	0.082	O I					0.54
0.750	2.65	0.45	0.098	O I					0.56
0.833	2.78	0.46	0.113	O I					0.58
0.917	3.27	0.47	0.131	O I					0.60
1.000	3.44	0.48	0.151	O I					0.63
1.083	3.38	0.49	0.171	O I					0.66
1.167	2.91	0.50	0.189	O I					0.68
1.250	2.75	0.51	0.205	O I					0.70
1.333	2.69	0.52	0.220	O I					0.72
1.417	2.67	0.53	0.235	O I					0.74
1.500	2.66	0.54	0.250	O I					0.76
1.583	2.66	0.55	0.264	O I					0.78
1.667	2.66	0.56	0.279	O I					0.80
1.750	2.66	0.57	0.293	O I					0.82
1.833	2.78	0.58	0.308	O I					0.84
1.917	3.27	0.59	0.325	O I					0.86
2.000	3.44	0.60	0.344	O I					0.89
2.083	3.50	0.61	0.363	O I					0.91
2.167	3.53	0.63	0.383	O I					0.94
2.250	3.53	0.64	0.403	O I					0.96
2.333	3.54	0.65	0.423	O I					0.99
2.417	3.54	0.66	0.443	O I					1.01
2.500	3.54	0.66	0.463	O I					1.02
2.583	3.67	0.66	0.483	O I					1.03
2.667	4.16	0.67	0.506	O I					1.04
2.750	4.32	0.67	0.530	O I					1.05
2.833	4.39	0.67	0.555	O I					1.06
2.917	4.41	0.68	0.581	O I					1.07
3.000	4.42	0.68	0.607	O I					1.08
3.083	4.43	0.69	0.633	O I					1.10
3.167	4.43	0.69	0.658	O I					1.11
3.250	4.43	0.70	0.684	O I					1.12
3.333	4.43	0.70	0.710	O I					1.13
3.417	4.43	0.70	0.735	O I					1.15
3.500	4.43	0.71	0.761	O I					1.16
3.583	4.43	0.71	0.787	O I					1.17
3.667	4.43	0.72	0.812	O I					1.18
3.750	4.43	0.72	0.838	O I					1.19
3.833	4.55	0.72	0.864	O I					1.21
3.917	5.04	0.73	0.892	O I					1.22
4.000	5.21	0.73	0.922	O I					1.23
4.083	5.27	0.74	0.953	O I					1.25
4.167	5.30	0.74	0.984	O I					1.26
4.250	5.31	0.75	1.016	O I					1.28
4.333	4.62	0.75	1.045	O I					1.29
4.417	1.90	0.76	1.062	OI					1.30
4.500	1.01	0.76	1.067	O					1.30
4.583	0.66	0.76	1.067	O					1.30
4.667	0.57	0.76	1.066	O					1.30
4.750	0.55	0.76	1.065	O					1.30
4.833	0.71	0.76	1.064	O					1.30
4.917	1.33	0.76	1.066	OI					1.30
5.000	1.56	0.76	1.071	OI					1.31
5.083	2.17	0.76	1.078	O I					1.31
5.167	4.20	0.76	1.095	O I					1.32
5.250	4.88	0.77	1.121	O I					1.33
5.333	4.52	0.77	1.148	O I					1.34
5.417	2.10	0.77	1.166	O I					1.35
5.500	1.30	0.77	1.172	OI					1.35
5.583	1.16	0.77	1.175	OI					1.36

5.667	1.67	0.78	1.179	OI	|	|	|	|	1.36
5.750	1.86	0.78	1.186	OI	|	|	|	|	1.36
5.833	1.95	0.78	1.194	OI	|	|	|	|	1.36
5.917	2.00	0.78	1.202	OI	|	|	|	|	1.37
6.000	2.04	0.78	1.211	O I	|	|	|	|	1.37
6.083	2.23	0.78	1.220	O I	|	|	|	|	1.38
6.167	2.86	0.78	1.232	O I	|	|	|	|	1.38
6.250	3.09	0.79	1.247	O I	|	|	|	|	1.39
6.333	3.20	0.79	1.264	O I	|	|	|	|	1.40
6.417	3.25	0.79	1.280	O I	|	|	|	|	1.41
6.500	3.29	0.79	1.297	O I	|	|	|	|	1.41
6.583	3.48	0.80	1.315	O I	|	|	|	|	1.42
6.667	4.11	0.80	1.336	O I	|	|	|	|	1.43
6.750	4.34	0.80	1.359	O I	|	|	|	|	1.44
6.833	4.45	0.81	1.384	O I	|	|	|	|	1.46
6.917	4.51	0.81	1.409	O I	|	|	|	|	1.47
7.000	4.54	0.82	1.435	O I	|	|	|	|	1.48
7.083	4.58	0.82	1.461	O I	|	|	|	|	1.49
7.167	4.61	0.82	1.487	O I	|	|	|	|	1.50
7.250	4.64	0.83	1.513	O I	|	|	|	|	1.51
7.333	4.82	0.83	1.540	O I	|	|	|	|	1.52
7.417	5.44	0.83	1.569	O I	|	|	|	|	1.53
7.500	5.67	0.83	1.602	O I	|	|	|	|	1.54
7.583	5.93	0.84	1.636	O I	|	|	|	|	1.55
7.667	6.59	0.84	1.673	O I	|	|	|	|	1.56
7.750	6.83	0.84	1.714	O I	|	|	|	|	1.57
7.833	7.09	0.85	1.756	O I	|	|	|	|	1.58
7.917	7.75	0.85	1.801	O I	|	|	|	|	1.59
8.000	7.99	0.85	1.849	O I	|	|	|	|	1.61
8.083	8.41	0.86	1.900	O I	|	|	|	|	1.62
8.167	9.67	0.86	1.956	O I	|	|	|	|	1.64
8.250	10.10	0.87	2.018	O I	|	|	|	|	1.66
8.333	10.30	0.87	2.083	O I	|	|	|	|	1.68
8.417	10.39	0.88	2.148	O I	|	|	|	|	1.70
8.500	10.43	0.88	2.213	O I	|	|	|	|	1.72
8.583	10.62	0.89	2.280	O I	|	|	|	|	1.74
8.667	11.25	0.90	2.349	O I	|	|	|	|	1.76
8.750	11.48	0.90	2.421	O I	|	|	|	|	1.78
8.833	11.74	0.91	2.495	O I	|	|	|	|	1.80
8.917	12.39	0.91	2.572	O I	|	|	|	|	1.82
9.000	12.63	0.92	2.652	O I	|	|	|	|	1.84
9.083	13.05	0.93	2.734	O I	|	|	|	|	1.87
9.167	14.31	0.94	2.821	O I	|	|	|	|	1.89
9.250	14.74	0.94	2.915	O I	|	|	|	|	1.92
9.333	15.09	0.95	3.011	O I	|	|	|	|	1.94
9.417	15.77	0.96	3.111	O I	|	|	|	|	1.97
9.500	16.02	0.96	3.214	O I	|	|	|	|	1.99
9.583	16.29	1.17	3.318	|O	|	|	|	|	2.02
9.667	16.95	1.45	3.423	|O	|	|	|	|	2.04
9.750	17.18	1.73	3.530	|O	|	|	|	|	2.07
9.833	17.45	2.01	3.636	|O	|	|	|	|	2.09
9.917	18.11	2.29	3.744	| O	|	|	|	|	2.12
10.000	18.34	2.58	3.852	| O	|	|	|	|	2.15
10.083	17.39	2.86	3.957	| O	|	|	|	|	2.17
10.167	13.24	3.08	4.042	| O	|	|	|	|	2.19
10.250	11.87	3.25	4.107	| O	|	|	|	|	2.21
10.333	11.33	3.40	4.164	| O	|	|	|	|	2.22
10.417	11.16	3.54	4.217	| O	|	|	|	|	2.23
10.500	11.12	3.68	4.269	| O	|	|	|	|	2.25
10.583	11.86	3.82	4.322	| O	|	|	|	|	2.26
10.667	14.88	3.99	4.387	| O	|	|	|	|	2.27
10.750	15.91	4.20	4.465	| O	|	|	|	|	2.29
10.833	16.34	4.41	4.547	| O	|	|	|	|	2.31
10.917	16.51	4.63	4.629	| O	|	|	|	|	2.33
11.000	16.58	4.85	4.710	| O	|	|	|	|	2.35
11.083	16.48	5.06	4.790	| O	|	|	|	|	2.37
11.167	15.91	5.26	4.866	| O	|	|	|	|	2.39
11.250	15.74	5.43	4.938	| O	|	|	|	|	2.41
11.333	15.68	5.58	5.008	| O	|	|	|	|	2.42
11.417	15.68	5.73	5.077	| O	|	|	|	|	2.44
11.500	15.69	5.88	5.145	| O	|	|	|	|	2.46
11.583	15.40	6.02	5.211	| O	|	|	|	|	2.47
11.667	14.23	6.15	5.271	| O	|	|	|	|	2.49
11.750	13.85	6.27	5.325	| O	|	|	|	|	2.50
11.833	13.86	6.55	5.376	| O	|	|	|	|	2.51



11.917	14.43	6.87	5.428	O	I			2.52
12.000	14.63	7.19	5.479	O	I			2.53
12.083	15.79	7.53	5.533	O	I			2.55
12.167	20.04	7.97	5.603	O	I			2.56
12.250	21.48	8.51	5.690	O	I			2.58
12.333	22.23	9.07	5.780	O	I			2.60
12.417	23.05	9.65	5.871	O	I			2.62
12.500	23.34	10.22	5.962	O	I			2.64
12.583	23.79	10.78	6.052	O	I			2.66
12.667	25.05	11.36	6.144	O	I			2.69
12.750	25.49	11.94	6.238	O	I			2.71
12.833	25.83	12.52	6.331	O	I			2.73
12.917	26.51	13.10	6.423	O	I			2.75
13.000	26.75	13.67	6.514	O	I			2.77
13.083	27.63	14.24	6.605	O	I			2.79
13.167	30.68	14.87	6.706	O	I			2.81
13.250	31.72	15.56	6.816	O	I			2.84
13.333	32.16	16.25	6.926	O	I			2.87
13.417	32.32	16.93	7.034	O	I			2.89
13.500	32.39	17.58	7.138	O	I			2.91
13.583	30.77	18.17	7.232	O	I			2.94
13.667	24.20	18.56	7.295	O	I			2.95
13.750	22.01	18.76	7.325	O	I			2.96
13.833	21.13	18.87	7.344	O	I			2.96
13.917	20.85	18.96	7.359	O	I			2.96
14.000	20.76	19.04	7.371	O	I			2.97
14.083	21.32	19.13	7.385	O	I			2.97
14.167	23.73	19.27	7.408	O	I			2.98
14.250	24.56	19.48	7.440	O	I			2.98
14.333	24.75	19.69	7.475	O	I			2.99
14.417	24.28	19.90	7.508	O	I			3.00
14.500	24.14	20.04	7.537	O	I			3.01
14.583	24.10	20.17	7.565	O	I			3.01
14.667	24.10	20.30	7.591	O	I			3.02
14.750	24.11	20.42	7.617	O	I			3.02
14.833	23.98	20.53	7.642	O	I			3.03
14.917	23.39	20.63	7.663	O	I			3.03
15.000	23.21	20.72	7.681	O	I			3.04
15.083	23.00	20.79	7.697	O	I			3.04
15.167	22.39	20.85	7.710	O	I			3.04
15.250	22.20	20.90	7.720	O	I			3.05
15.333	21.98	20.94	7.728	O	I			3.05
15.417	21.37	20.96	7.733	O	I			3.05
15.500	21.18	20.97	7.735	O				3.05
15.583	20.50	20.96	7.735	O				3.05
15.667	18.09	20.91	7.723	I	O			3.05
15.750	17.30	20.81	7.701	I	O			3.04
15.833	16.99	20.69	7.677	I	O			3.04
15.917	16.89	20.58	7.651	I	O			3.03
16.000	16.87	20.46	7.626	I	O			3.03
16.083	14.59	20.31	7.594	I	O			3.02
16.167	5.60	19.99	7.525	I	O			3.00
16.250	2.60	19.33	7.418	I	O			2.98
16.333	1.39	18.60	7.301	I	O			2.95
16.417	1.00	17.87	7.183	I	O			2.92
16.500	0.88	17.15	7.069	I	O			2.90
16.583	1.06	16.47	6.960	I	O			2.87
16.667	2.08	15.84	6.860	I	O			2.85
16.750	2.44	15.27	6.768	I	O			2.83
16.833	2.58	14.73	6.682	I	O			2.81
16.917	2.63	14.21	6.601	I	O			2.79
17.000	2.64	13.73	6.522	I	O			2.77
17.083	2.56	13.26	6.447	I	O			2.76
17.167	2.19	12.80	6.374	I	O			2.74
17.250	2.08	12.35	6.302	I	O			2.72
17.333	2.04	11.91	6.233	I	O			2.71
17.417	2.04	11.50	6.166	I	O			2.69
17.500	2.05	11.10	6.103	I	O			2.68
17.583	2.07	10.71	6.042	I	O			2.66
17.667	2.08	10.35	5.984	I	O			2.65
17.750	2.10	10.00	5.928	I	O			2.64
17.833	1.96	9.66	5.874	I	O			2.62
17.917	1.38	9.33	5.820	I	O			2.61
18.000	1.19	8.99	5.766	I	O			2.60
18.083	1.13	8.66	5.713	I	O			2.59

18.167	1.12	8.34	5.662	|I O |	|	|	|	2.58
18.250	1.12	8.03	5.614	|I O|	|	|	|	2.56
18.333	1.13	7.74	5.567	|I O|	|	|	|	2.55
18.417	1.15	7.46	5.523	|I O|	|	|	|	2.54
18.500	1.16	7.20	5.480	|I O|	|	|	|	2.53
18.583	1.03	6.94	5.439	|I O |	|	|	|	2.52
18.667	0.44	6.68	5.397	I O |	|	|	|	2.51
18.750	0.26	6.41	5.355	I O |	|	|	|	2.50
18.833	0.41	6.24	5.313	I O |	|	|	|	2.49
18.917	1.29	6.16	5.276	|I O |	|	|	|	2.49
19.000	1.59	6.09	5.244	|I O |	|	|	|	2.48
19.083	1.48	6.03	5.213	|I O |	|	|	|	2.47
19.167	0.66	5.95	5.179	I O |	|	|	|	2.46
19.250	0.39	5.87	5.142	I O |	|	|	|	2.45
19.333	0.45	5.79	5.105	I O |	|	|	|	2.45
19.417	1.02	5.72	5.070	|I O |	|	|	|	2.44
19.500	1.22	5.65	5.039	|I O |	|	|	|	2.43
19.583	1.16	5.59	5.008	|I O |	|	|	|	2.42
19.667	0.60	5.52	4.976	I O |	|	|	|	2.42
19.750	0.42	5.44	4.942	I O |	|	|	|	2.41
19.833	0.56	5.37	4.908	I O |	|	|	|	2.40
19.917	1.34	5.29	4.878	|I O |	|	|	|	2.39
20.000	1.61	5.22	4.852	|I O |	|	|	|	2.39
20.083	1.51	5.15	4.827	|I O |	|	|	|	2.38
20.167	0.77	5.08	4.799	I O |	|	|	|	2.37
20.250	0.53	5.00	4.769	I O |	|	|	|	2.37
20.333	0.45	4.92	4.738	I O |	|	|	|	2.36
20.417	0.42	4.84	4.708	I O |	|	|	|	2.35
20.500	0.42	4.76	4.678	I O |	|	|	|	2.34
20.583	0.43	4.68	4.648	I O |	|	|	|	2.34
20.667	0.44	4.61	4.619	I O |	|	|	|	2.33
20.750	0.45	4.53	4.591	I O |	|	|	|	2.32
20.833	0.64	4.46	4.563	I O |	|	|	|	2.32
20.917	1.37	4.40	4.540	|I O |	|	|	|	2.31
21.000	1.62	4.34	4.520	|I O |	|	|	|	2.31
21.083	1.54	4.30	4.501	|I O |	|	|	|	2.30
21.167	0.87	4.24	4.480	I O |	|	|	|	2.30
21.250	0.66	4.18	4.456	I O |	|	|	|	2.29
21.333	0.75	4.11	4.433	I O |	|	|	|	2.29
21.417	1.41	4.06	4.412	|I O |	|	|	|	2.28
21.500	1.63	4.01	4.395	|I O |	|	|	|	2.28
21.583	1.55	3.97	4.378	|I O |	|	|	|	2.27
21.667	0.92	3.92	4.360	I O |	|	|	|	2.27
21.750	0.71	3.86	4.338	I O |	|	|	|	2.26
21.833	0.80	3.81	4.317	I O |	|	|	|	2.26
21.917	1.43	3.76	4.299	|I O |	|	|	|	2.25
22.000	1.64	3.72	4.284	|I O |	|	|	|	2.25
22.083	1.56	3.68	4.269	|I O |	|	|	|	2.25
22.167	0.96	3.64	4.253	I O |	|	|	|	2.24
22.250	0.76	3.59	4.234	I O |	|	|	|	2.24
22.333	0.84	3.54	4.215	I O |	|	|	|	2.23
22.417	1.45	3.49	4.198	|I O |	|	|	|	2.23
22.500	1.65	3.46	4.185	|I O |	|	|	|	2.23
22.583	1.73	3.43	4.173	|I O |	|	|	|	2.22
22.667	1.75	3.40	4.161	|I O |	|	|	|	2.22
22.750	1.76	3.37	4.150	|I O |	|	|	|	2.22
22.833	1.77	3.34	4.139	|I O |	|	|	|	2.22
22.917	1.77	3.31	4.128	|I O |	|	|	|	2.21
23.000	1.77	3.28	4.118	|I O |	|	|	|	2.21
23.083	1.77	3.26	4.108	|I O |	|	|	|	2.21
23.167	1.77	3.23	4.097	|I O |	|	|	|	2.21
23.250	1.77	3.20	4.088	|I O |	|	|	|	2.20
23.333	1.77	3.18	4.078	|I O |	|	|	|	2.20
23.417	1.77	3.15	4.068	|I O |	|	|	|	2.20
23.500	1.77	3.13	4.059	|I O |	|	|	|	2.20
23.583	1.77	3.10	4.049	|I O |	|	|	|	2.19
23.667	1.77	3.08	4.040	|I O |	|	|	|	2.19
23.750	1.77	3.05	4.031	|I O |	|	|	|	2.19
23.833	1.77	3.03	4.023	|IO |	|	|	|	2.19
23.917	1.77	3.01	4.014	|IO |	|	|	|	2.19
24.000	1.77	2.99	4.006	|IO |	|	|	|	2.18
24.083	1.52	2.96	3.997	|IO |	|	|	|	2.18
24.167	0.54	2.93	3.983	I O |	|	|	|	2.18
24.250	0.21	2.88	3.966	I O |	|	|	|	2.17
24.333	0.07	2.83	3.947	I O |	|	|	|	2.17

24.417	0.03	2.78	3.928	I O	|	|	|	2.16
24.500	0.01	2.73	3.909	I O	|	|	|	2.16
24.583	0.00	2.68	3.891	I O	|	|	|	2.16
24.667	0.00	2.63	3.872	I O	|	|	|	2.15
24.750	0.00	2.59	3.854	I O	|	|	|	2.15
24.833	0.00	2.54	3.837	I O	|	|	|	2.14
24.917	0.00	2.49	3.819	I O	|	|	|	2.14
25.000	0.00	2.45	3.802	I O	|	|	|	2.13
25.083	0.00	2.41	3.786	I O	|	|	|	2.13
25.167	0.00	2.36	3.769	I O	|	|	|	2.13
25.250	0.00	2.32	3.753	I O	|	|	|	2.12
25.333	0.00	2.28	3.737	I O	|	|	|	2.12
25.417	0.00	2.24	3.722	I O	|	|	|	2.12
25.500	0.00	2.20	3.707	I O	|	|	|	2.11
25.583	0.00	2.16	3.692	I O	|	|	|	2.11
25.667	0.00	2.12	3.677	I O	|	|	|	2.10
25.750	0.00	2.08	3.662	I O	|	|	|	2.10
25.833	0.00	2.04	3.648	I O	|	|	|	2.10
25.917	0.00	2.01	3.634	IO	|	|	|	2.09
26.000	0.00	1.97	3.621	IO	|	|	|	2.09
26.083	0.00	1.93	3.607	IO	|	|	|	2.09
26.167	0.00	1.90	3.594	IO	|	|	|	2.08
26.250	0.00	1.86	3.581	IO	|	|	|	2.08
26.333	0.00	1.83	3.568	IO	|	|	|	2.08
26.417	0.00	1.80	3.556	IO	|	|	|	2.08
26.500	0.00	1.77	3.544	IO	|	|	|	2.07
26.583	0.00	1.73	3.531	IO	|	|	|	2.07
26.667	0.00	1.70	3.520	IO	|	|	|	2.07
26.750	0.00	1.67	3.508	IO	|	|	|	2.06
26.833	0.00	1.64	3.497	IO	|	|	|	2.06
26.917	0.00	1.61	3.485	IO	|	|	|	2.06
27.000	0.00	1.58	3.474	IO	|	|	|	2.06
27.083	0.00	1.55	3.464	IO	|	|	|	2.05
27.167	0.00	1.53	3.453	IO	|	|	|	2.05
27.250	0.00	1.50	3.443	IO	|	|	|	2.05
27.333	0.00	1.47	3.432	IO	|	|	|	2.05
27.417	0.00	1.45	3.422	IO	|	|	|	2.04
27.500	0.00	1.42	3.412	IO	|	|	|	2.04
27.583	0.00	1.39	3.403	IO	|	|	|	2.04
27.667	0.00	1.37	3.393	IO	|	|	|	2.04
27.750	0.00	1.34	3.384	IO	|	|	|	2.03
27.833	0.00	1.32	3.375	IO	|	|	|	2.03
27.917	0.00	1.30	3.366	IO	|	|	|	2.03
28.000	0.00	1.27	3.357	IO	|	|	|	2.03
28.083	0.00	1.25	3.348	IO	|	|	|	2.03
28.167	0.00	1.23	3.340	IO	|	|	|	2.02
28.250	0.00	1.21	3.331	IO	|	|	|	2.02
28.333	0.00	1.18	3.323	IO	|	|	|	2.02
28.417	0.00	1.16	3.315	IO	|	|	|	2.02
28.500	0.00	1.14	3.307	IO	|	|	|	2.02
28.583	0.00	1.12	3.299	IO	|	|	|	2.01
28.667	0.00	1.10	3.292	IO	|	|	|	2.01
28.750	0.00	1.08	3.284	IO	|	|	|	2.01
28.833	0.00	1.06	3.277	IO	|	|	|	2.01
28.917	0.00	1.04	3.269	IO	|	|	|	2.01
29.000	0.00	1.02	3.262	IO	|	|	|	2.01
29.083	0.00	1.00	3.255	O	|	|	|	2.00
29.167	0.00	0.99	3.249	O	|	|	|	2.00
29.250	0.00	0.97	3.242	O	|	|	|	2.00
29.333	0.00	0.96	3.235	O	|	|	|	2.00
29.417	0.00	0.96	3.228	O	|	|	|	2.00
29.500	0.00	0.96	3.222	O	|	|	|	2.00
29.583	0.00	0.96	3.215	O	|	|	|	1.99
29.667	0.00	0.96	3.209	O	|	|	|	1.99
29.750	0.00	0.96	3.202	O	|	|	|	1.99
29.833	0.00	0.96	3.195	O	|	|	|	1.99
29.917	0.00	0.96	3.189	O	|	|	|	1.99
30.000	0.00	0.96	3.182	O	|	|	|	1.99
30.083	0.00	0.96	3.176	O	|	|	|	1.98
30.167	0.00	0.96	3.169	O	|	|	|	1.98
30.250	0.00	0.96	3.162	O	|	|	|	1.98
30.333	0.00	0.96	3.156	O	|	|	|	1.98
30.417	0.00	0.96	3.149	O	|	|	|	1.98
30.500	0.00	0.96	3.143	O	|	|	|	1.98
30.583	0.00	0.96	3.136	O	|	|	|	1.97

30.667	0.00	0.96	3.129	O					1.97
30.750	0.00	0.96	3.123	O					1.97
30.833	0.00	0.96	3.116	O					1.97
30.917	0.00	0.96	3.110	O					1.97
31.000	0.00	0.95	3.103	O					1.97
31.083	0.00	0.95	3.096	O					1.96
31.167	0.00	0.95	3.090	O					1.96
31.250	0.00	0.95	3.083	O					1.96
31.333	0.00	0.95	3.077	O					1.96
31.417	0.00	0.95	3.070	O					1.96
31.500	0.00	0.95	3.064	O					1.96
31.583	0.00	0.95	3.057	O					1.95
31.667	0.00	0.95	3.051	O					1.95
31.750	0.00	0.95	3.044	O					1.95
31.833	0.00	0.95	3.037	O					1.95
31.917	0.00	0.95	3.031	O					1.95
32.000	0.00	0.95	3.024	O					1.95
32.083	0.00	0.95	3.018	O					1.94
32.167	0.00	0.95	3.011	O					1.94
32.250	0.00	0.95	3.005	O					1.94
32.333	0.00	0.95	2.998	O					1.94
32.417	0.00	0.95	2.992	O					1.94
32.500	0.00	0.95	2.985	O					1.94
32.583	0.00	0.95	2.979	O					1.93
32.667	0.00	0.95	2.972	O					1.93
32.750	0.00	0.95	2.966	O					1.93
32.833	0.00	0.94	2.959	O					1.93
32.917	0.00	0.94	2.953	O					1.93
33.000	0.00	0.94	2.946	O					1.93
33.083	0.00	0.94	2.940	O					1.92
33.167	0.00	0.94	2.933	O					1.92
33.250	0.00	0.94	2.927	O					1.92
33.333	0.00	0.94	2.920	O					1.92
33.417	0.00	0.94	2.914	O					1.92
33.500	0.00	0.94	2.907	O					1.92
33.583	0.00	0.94	2.901	O					1.91
33.667	0.00	0.94	2.894	O					1.91
33.750	0.00	0.94	2.888	O					1.91
33.833	0.00	0.94	2.881	O					1.91
33.917	0.00	0.94	2.875	O					1.91
34.000	0.00	0.94	2.868	O					1.91
34.083	0.00	0.94	2.862	O					1.90
34.167	0.00	0.94	2.855	O					1.90
34.250	0.00	0.94	2.849	O					1.90
34.333	0.00	0.94	2.842	O					1.90
34.417	0.00	0.94	2.836	O					1.90
34.500	0.00	0.94	2.830	O					1.90
34.583	0.00	0.94	2.823	O					1.89
34.667	0.00	0.93	2.817	O					1.89
34.750	0.00	0.93	2.810	O					1.89
34.833	0.00	0.93	2.804	O					1.89
34.917	0.00	0.93	2.797	O					1.89
35.000	0.00	0.93	2.791	O					1.89
35.083	0.00	0.93	2.785	O					1.88
35.167	0.00	0.93	2.778	O					1.88
35.250	0.00	0.93	2.772	O					1.88
35.333	0.00	0.93	2.765	O					1.88
35.417	0.00	0.93	2.759	O					1.88
35.500	0.00	0.93	2.752	O					1.87
35.583	0.00	0.93	2.746	O					1.87
35.667	0.00	0.93	2.740	O					1.87
35.750	0.00	0.93	2.733	O					1.87
35.833	0.00	0.93	2.727	O					1.87
35.917	0.00	0.93	2.720	O					1.86
36.000	0.00	0.93	2.714	O					1.86
36.083	0.00	0.93	2.708	O					1.86
36.167	0.00	0.93	2.701	O					1.86
36.250	0.00	0.92	2.695	O					1.86
36.333	0.00	0.92	2.689	O					1.86
36.417	0.00	0.92	2.682	O					1.85
36.500	0.00	0.92	2.676	O					1.85
36.583	0.00	0.92	2.670	O					1.85
36.667	0.00	0.92	2.663	O					1.85
36.750	0.00	0.92	2.657	O					1.85
36.833	0.00	0.92	2.650	O					1.84

36.917	0.00	0.92	2.644	O					1.84
37.000	0.00	0.92	2.638	O					1.84
37.083	0.00	0.92	2.631	O					1.84
37.167	0.00	0.92	2.625	O					1.84
37.250	0.00	0.92	2.619	O					1.83
37.333	0.00	0.92	2.612	O					1.83
37.417	0.00	0.92	2.606	O					1.83
37.500	0.00	0.92	2.600	O					1.83
37.583	0.00	0.92	2.594	O					1.83
37.667	0.00	0.92	2.587	O					1.83
37.750	0.00	0.92	2.581	O					1.82
37.833	0.00	0.91	2.575	O					1.82
37.917	0.00	0.91	2.568	O					1.82
38.000	0.00	0.91	2.562	O					1.82
38.083	0.00	0.91	2.556	O					1.82
38.167	0.00	0.91	2.549	O					1.81
38.250	0.00	0.91	2.543	O					1.81
38.333	0.00	0.91	2.537	O					1.81
38.417	0.00	0.91	2.531	O					1.81
38.500	0.00	0.91	2.524	O					1.81
38.583	0.00	0.91	2.518	O					1.81
38.667	0.00	0.91	2.512	O					1.80
38.750	0.00	0.91	2.506	O					1.80
38.833	0.00	0.91	2.499	O					1.80
38.917	0.00	0.91	2.493	O					1.80
39.000	0.00	0.91	2.487	O					1.80
39.083	0.00	0.91	2.481	O					1.79
39.167	0.00	0.91	2.474	O					1.79
39.250	0.00	0.91	2.468	O					1.79
39.333	0.00	0.91	2.462	O					1.79
39.417	0.00	0.90	2.456	O					1.79
39.500	0.00	0.90	2.449	O					1.78
39.583	0.00	0.90	2.443	O					1.78
39.667	0.00	0.90	2.437	O					1.78
39.750	0.00	0.90	2.431	O					1.78
39.833	0.00	0.90	2.424	O					1.78
39.917	0.00	0.90	2.418	O					1.78
40.000	0.00	0.90	2.412	O					1.77
40.083	0.00	0.90	2.406	O					1.77
40.167	0.00	0.90	2.400	O					1.77
40.250	0.00	0.90	2.393	O					1.77
40.333	0.00	0.90	2.387	O					1.77
40.417	0.00	0.90	2.381	O					1.76
40.500	0.00	0.90	2.375	O					1.76
40.583	0.00	0.90	2.369	O					1.76
40.667	0.00	0.90	2.362	O					1.76
40.750	0.00	0.90	2.356	O					1.76
40.833	0.00	0.90	2.350	O					1.76
40.917	0.00	0.90	2.344	O					1.75
41.000	0.00	0.90	2.338	O					1.75
41.083	0.00	0.89	2.332	O					1.75
41.167	0.00	0.89	2.325	O					1.75
41.250	0.00	0.89	2.319	O					1.75
41.333	0.00	0.89	2.313	O					1.74
41.417	0.00	0.89	2.307	O					1.74
41.500	0.00	0.89	2.301	O					1.74
41.583	0.00	0.89	2.295	O					1.74
41.667	0.00	0.89	2.289	O					1.74
41.750	0.00	0.89	2.282	O					1.74
41.833	0.00	0.89	2.276	O					1.73
41.917	0.00	0.89	2.270	O					1.73
42.000	0.00	0.89	2.264	O					1.73
42.083	0.00	0.89	2.258	O					1.73
42.167	0.00	0.89	2.252	O					1.73
42.250	0.00	0.89	2.246	O					1.73
42.333	0.00	0.89	2.240	O					1.72
42.417	0.00	0.89	2.233	O					1.72
42.500	0.00	0.89	2.227	O					1.72
42.583	0.00	0.89	2.221	O					1.72
42.667	0.00	0.89	2.215	O					1.72
42.750	0.00	0.88	2.209	O					1.71
42.833	0.00	0.88	2.203	O					1.71
42.917	0.00	0.88	2.197	O					1.71
43.000	0.00	0.88	2.191	O					1.71
43.083	0.00	0.88	2.185	O					1.71

43.167	0.00	0.88	2.179	O					1.71
43.250	0.00	0.88	2.173	O					1.70
43.333	0.00	0.88	2.167	O					1.70
43.417	0.00	0.88	2.160	O					1.70
43.500	0.00	0.88	2.154	O					1.70
43.583	0.00	0.88	2.148	O					1.70
43.667	0.00	0.88	2.142	O					1.69
43.750	0.00	0.88	2.136	O					1.69
43.833	0.00	0.88	2.130	O					1.69
43.917	0.00	0.88	2.124	O					1.69
44.000	0.00	0.88	2.118	O					1.69
44.083	0.00	0.88	2.112	O					1.69
44.167	0.00	0.88	2.106	O					1.68
44.250	0.00	0.88	2.100	O					1.68
44.333	0.00	0.88	2.094	O					1.68
44.417	0.00	0.87	2.088	O					1.68
44.500	0.00	0.87	2.082	O					1.68
44.583	0.00	0.87	2.076	O					1.68
44.667	0.00	0.87	2.070	O					1.67
44.750	0.00	0.87	2.064	O					1.67
44.833	0.00	0.87	2.058	O					1.67
44.917	0.00	0.87	2.052	O					1.67
45.000	0.00	0.87	2.046	O					1.67
45.083	0.00	0.87	2.040	O					1.66
45.167	0.00	0.87	2.034	O					1.66
45.250	0.00	0.87	2.028	O					1.66
45.333	0.00	0.87	2.022	O					1.66
45.417	0.00	0.87	2.016	O					1.66
45.500	0.00	0.87	2.010	O					1.66
45.583	0.00	0.87	2.004	O					1.65
45.667	0.00	0.87	1.998	O					1.65
45.750	0.00	0.87	1.992	O					1.65
45.833	0.00	0.87	1.986	O					1.65
45.917	0.00	0.87	1.980	O					1.65
46.000	0.00	0.87	1.974	O					1.65
46.083	0.00	0.86	1.968	O					1.64
46.167	0.00	0.86	1.962	O					1.64
46.250	0.00	0.86	1.956	O					1.64
46.333	0.00	0.86	1.950	O					1.64
46.417	0.00	0.86	1.944	O					1.64
46.500	0.00	0.86	1.938	O					1.64
46.583	0.00	0.86	1.932	O					1.63
46.667	0.00	0.86	1.927	O					1.63
46.750	0.00	0.86	1.921	O					1.63
46.833	0.00	0.86	1.915	O					1.63
46.917	0.00	0.86	1.909	O					1.63
47.000	0.00	0.86	1.903	O					1.62
47.083	0.00	0.86	1.897	O					1.62
47.167	0.00	0.86	1.891	O					1.62
47.250	0.00	0.86	1.885	O					1.62
47.333	0.00	0.86	1.879	O					1.62
47.417	0.00	0.86	1.873	O					1.62
47.500	0.00	0.86	1.867	O					1.61
47.583	0.00	0.86	1.862	O					1.61
47.667	0.00	0.86	1.856	O					1.61
47.750	0.00	0.85	1.850	O					1.61
47.833	0.00	0.85	1.844	O					1.61
47.917	0.00	0.85	1.838	O					1.61
48.000	0.00	0.85	1.832	O					1.60
48.083	0.00	0.85	1.826	O					1.60
48.167	0.00	0.85	1.820	O					1.60
48.250	0.00	0.85	1.814	O					1.60
48.333	0.00	0.85	1.809	O					1.60
48.417	0.00	0.85	1.803	O					1.60
48.500	0.00	0.85	1.797	O					1.59
48.583	0.00	0.85	1.791	O					1.59
48.667	0.00	0.85	1.785	O					1.59
48.750	0.00	0.85	1.779	O					1.59
48.833	0.00	0.85	1.773	O					1.59
48.917	0.00	0.85	1.768	O					1.58
49.000	0.00	0.85	1.762	O					1.58
49.083	0.00	0.85	1.756	O					1.58
49.167	0.00	0.85	1.750	O					1.58
49.250	0.00	0.85	1.744	O					1.58
49.333	0.00	0.85	1.738	O					1.58

49.417	0.00	0.85	1.733	O	|	|	|	1.57
49.500	0.00	0.84	1.727	O	|	|	|	1.57
49.583	0.00	0.84	1.721	O	|	|	|	1.57
49.667	0.00	0.84	1.715	O	|	|	|	1.57
49.750	0.00	0.84	1.709	O	|	|	|	1.57
49.833	0.00	0.84	1.704	O	|	|	|	1.57
49.917	0.00	0.84	1.698	O	|	|	|	1.56
50.000	0.00	0.84	1.692	O	|	|	|	1.56
50.083	0.00	0.84	1.686	O	|	|	|	1.56
50.167	0.00	0.84	1.680	O	|	|	|	1.56
50.250	0.00	0.84	1.675	O	|	|	|	1.56
50.333	0.00	0.84	1.669	O	|	|	|	1.56
50.417	0.00	0.84	1.663	O	|	|	|	1.55
50.500	0.00	0.84	1.657	O	|	|	|	1.55
50.583	0.00	0.84	1.652	O	|	|	|	1.55
50.667	0.00	0.84	1.646	O	|	|	|	1.55
50.750	0.00	0.84	1.640	O	|	|	|	1.55
50.833	0.00	0.84	1.634	O	|	|	|	1.55
50.917	0.00	0.84	1.628	O	|	|	|	1.54
51.000	0.00	0.84	1.623	O	|	|	|	1.54
51.083	0.00	0.84	1.617	O	|	|	|	1.54
51.167	0.00	0.84	1.611	O	|	|	|	1.54
51.250	0.00	0.83	1.605	O	|	|	|	1.54
51.333	0.00	0.83	1.600	O	|	|	|	1.54
51.417	0.00	0.83	1.594	O	|	|	|	1.53
51.500	0.00	0.83	1.588	O	|	|	|	1.53
51.583	0.00	0.83	1.582	O	|	|	|	1.53
51.667	0.00	0.83	1.577	O	|	|	|	1.53
51.750	0.00	0.83	1.571	O	|	|	|	1.53
51.833	0.00	0.83	1.565	O	|	|	|	1.53
51.917	0.00	0.83	1.560	O	|	|	|	1.52
52.000	0.00	0.83	1.554	O	|	|	|	1.52
52.083	0.00	0.83	1.548	O	|	|	|	1.52
52.167	0.00	0.83	1.542	O	|	|	|	1.52
52.250	0.00	0.83	1.537	O	|	|	|	1.52
52.333	0.00	0.83	1.531	O	|	|	|	1.52
52.417	0.00	0.83	1.525	O	|	|	|	1.51
52.500	0.00	0.83	1.520	O	|	|	|	1.51
52.583	0.00	0.83	1.514	O	|	|	|	1.51
52.667	0.00	0.83	1.508	O	|	|	|	1.51
52.750	0.00	0.83	1.502	O	|	|	|	1.51
52.833	0.00	0.83	1.497	O	|	|	|	1.51
52.917	0.00	0.83	1.491	O	|	|	|	1.50
53.000	0.00	0.82	1.485	O	|	|	|	1.50
53.083	0.00	0.82	1.480	O	|	|	|	1.50
53.167	0.00	0.82	1.474	O	|	|	|	1.50
53.250	0.00	0.82	1.468	O	|	|	|	1.50
53.333	0.00	0.82	1.463	O	|	|	|	1.49
53.417	0.00	0.82	1.457	O	|	|	|	1.49
53.500	0.00	0.82	1.451	O	|	|	|	1.49
53.583	0.00	0.82	1.446	O	|	|	|	1.48
53.667	0.00	0.82	1.440	O	|	|	|	1.48
53.750	0.00	0.82	1.435	O	|	|	|	1.48
53.833	0.00	0.82	1.429	O	|	|	|	1.48
53.917	0.00	0.82	1.423	O	|	|	|	1.47
54.000	0.00	0.81	1.418	O	|	|	|	1.47
54.083	0.00	0.81	1.412	O	|	|	|	1.47
54.167	0.00	0.81	1.407	O	|	|	|	1.47
54.250	0.00	0.81	1.401	O	|	|	|	1.46
54.333	0.00	0.81	1.395	O	|	|	|	1.46
54.417	0.00	0.81	1.390	O	|	|	|	1.46
54.500	0.00	0.81	1.384	O	|	|	|	1.46
54.583	0.00	0.81	1.379	O	|	|	|	1.45
54.667	0.00	0.81	1.373	O	|	|	|	1.45
54.750	0.00	0.81	1.367	O	|	|	|	1.45
54.833	0.00	0.81	1.362	O	|	|	|	1.44
54.917	0.00	0.80	1.356	O	|	|	|	1.44
55.000	0.00	0.80	1.351	O	|	|	|	1.44
55.083	0.00	0.80	1.345	O	|	|	|	1.44
55.167	0.00	0.80	1.340	O	|	|	|	1.43
55.250	0.00	0.80	1.334	O	|	|	|	1.43
55.333	0.00	0.80	1.329	O	|	|	|	1.43
55.417	0.00	0.80	1.323	O	|	|	|	1.43
55.500	0.00	0.80	1.318	O	|	|	|	1.42
55.583	0.00	0.80	1.312	O	|	|	|	1.42

55.667	0.00	0.80	1.307	O	|	|	|	|	1.42
55.750	0.00	0.80	1.301	O	|	|	|	|	1.42
55.833	0.00	0.79	1.296	O	|	|	|	|	1.41
55.917	0.00	0.79	1.290	O	|	|	|	|	1.41
56.000	0.00	0.79	1.285	O	|	|	|	|	1.41
56.083	0.00	0.79	1.279	O	|	|	|	|	1.41
56.167	0.00	0.79	1.274	O	|	|	|	|	1.40
56.250	0.00	0.79	1.269	O	|	|	|	|	1.40
56.333	0.00	0.79	1.263	O	|	|	|	|	1.40
56.417	0.00	0.79	1.258	O	|	|	|	|	1.39
56.500	0.00	0.79	1.252	O	|	|	|	|	1.39
56.583	0.00	0.79	1.247	O	|	|	|	|	1.39
56.667	0.00	0.79	1.241	O	|	|	|	|	1.39
56.750	0.00	0.78	1.236	O	|	|	|	|	1.38
56.833	0.00	0.78	1.231	O	|	|	|	|	1.38
56.917	0.00	0.78	1.225	O	|	|	|	|	1.38
57.000	0.00	0.78	1.220	O	|	|	|	|	1.38
57.083	0.00	0.78	1.214	O	|	|	|	|	1.37
57.167	0.00	0.78	1.209	O	|	|	|	|	1.37
57.250	0.00	0.78	1.204	O	|	|	|	|	1.37
57.333	0.00	0.78	1.198	O	|	|	|	|	1.37
57.417	0.00	0.78	1.193	O	|	|	|	|	1.36
57.500	0.00	0.78	1.188	O	|	|	|	|	1.36
57.583	0.00	0.78	1.182	O	|	|	|	|	1.36
57.667	0.00	0.78	1.177	O	|	|	|	|	1.36
57.750	0.00	0.77	1.172	O	|	|	|	|	1.35
57.833	0.00	0.77	1.166	O	|	|	|	|	1.35
57.917	0.00	0.77	1.161	O	|	|	|	|	1.35
58.000	0.00	0.77	1.156	O	|	|	|	|	1.35
58.083	0.00	0.77	1.150	O	|	|	|	|	1.34
58.167	0.00	0.77	1.145	O	|	|	|	|	1.34
58.250	0.00	0.77	1.140	O	|	|	|	|	1.34
58.333	0.00	0.77	1.134	O	|	|	|	|	1.34
58.417	0.00	0.77	1.129	O	|	|	|	|	1.33
58.500	0.00	0.77	1.124	O	|	|	|	|	1.33
58.583	0.00	0.77	1.119	O	|	|	|	|	1.33
58.667	0.00	0.76	1.113	O	|	|	|	|	1.33
58.750	0.00	0.76	1.108	O	|	|	|	|	1.32
58.833	0.00	0.76	1.103	O	|	|	|	|	1.32
58.917	0.00	0.76	1.098	O	|	|	|	|	1.32
59.000	0.00	0.76	1.092	O	|	|	|	|	1.32
59.083	0.00	0.76	1.087	O	|	|	|	|	1.31
59.167	0.00	0.76	1.082	O	|	|	|	|	1.31
59.250	0.00	0.76	1.077	O	|	|	|	|	1.31
59.333	0.00	0.76	1.071	O	|	|	|	|	1.31
59.417	0.00	0.76	1.066	O	|	|	|	|	1.30
59.500	0.00	0.76	1.061	O	|	|	|	|	1.30
59.583	0.00	0.76	1.056	O	|	|	|	|	1.30
59.667	0.00	0.75	1.051	O	|	|	|	|	1.30
59.750	0.00	0.75	1.045	O	|	|	|	|	1.29
59.833	0.00	0.75	1.040	O	|	|	|	|	1.29
59.917	0.00	0.75	1.035	O	|	|	|	|	1.29
60.000	0.00	0.75	1.030	O	|	|	|	|	1.29
60.083	0.00	0.75	1.025	O	|	|	|	|	1.28
60.167	0.00	0.75	1.019	O	|	|	|	|	1.28
60.250	0.00	0.75	1.014	O	|	|	|	|	1.28
60.333	0.00	0.75	1.009	O	|	|	|	|	1.28
60.417	0.00	0.75	1.004	O	|	|	|	|	1.27
60.500	0.00	0.75	0.999	O	|	|	|	|	1.27
60.583	0.00	0.75	0.994	O	|	|	|	|	1.27
60.667	0.00	0.74	0.989	O	|	|	|	|	1.27
60.750	0.00	0.74	0.983	O	|	|	|	|	1.26
60.833	0.00	0.74	0.978	O	|	|	|	|	1.26
60.917	0.00	0.74	0.973	O	|	|	|	|	1.26
61.000	0.00	0.74	0.968	O	|	|	|	|	1.26
61.083	0.00	0.74	0.963	O	|	|	|	|	1.25
61.167	0.00	0.74	0.958	O	|	|	|	|	1.25
61.250	0.00	0.74	0.953	O	|	|	|	|	1.25
61.333	0.00	0.74	0.948	O	|	|	|	|	1.25
61.417	0.00	0.74	0.943	O	|	|	|	|	1.24
61.500	0.00	0.74	0.938	O	|	|	|	|	1.24
61.583	0.00	0.74	0.932	O	|	|	|	|	1.24
61.667	0.00	0.73	0.927	O	|	|	|	|	1.24
61.750	0.00	0.73	0.922	O	|	|	|	|	1.23
61.833	0.00	0.73	0.917	O	|	|	|	|	1.23

61.917	0.00	0.73	0.912	O	|	|	|	|	1.23
62.000	0.00	0.73	0.907	O	|	|	|	|	1.23
62.083	0.00	0.73	0.902	O	|	|	|	|	1.23
62.167	0.00	0.73	0.897	O	|	|	|	|	1.22
62.250	0.00	0.73	0.892	O	|	|	|	|	1.22
62.333	0.00	0.73	0.887	O	|	|	|	|	1.22
62.417	0.00	0.73	0.882	O	|	|	|	|	1.22
62.500	0.00	0.73	0.877	O	|	|	|	|	1.21
62.583	0.00	0.73	0.872	O	|	|	|	|	1.21
62.667	0.00	0.72	0.867	O	|	|	|	|	1.21
62.750	0.00	0.72	0.862	O	|	|	|	|	1.21
62.833	0.00	0.72	0.857	O	|	|	|	|	1.20
62.917	0.00	0.72	0.852	O	|	|	|	|	1.20
63.000	0.00	0.72	0.847	O	|	|	|	|	1.20
63.083	0.00	0.72	0.842	O	|	|	|	|	1.20
63.167	0.00	0.72	0.837	O	|	|	|	|	1.19
63.250	0.00	0.72	0.832	O	|	|	|	|	1.19
63.333	0.00	0.72	0.827	O	|	|	|	|	1.19
63.417	0.00	0.72	0.822	O	|	|	|	|	1.19
63.500	0.00	0.72	0.817	O	|	|	|	|	1.18
63.583	0.00	0.72	0.813	O	|	|	|	|	1.18
63.667	0.00	0.72	0.808	O	|	|	|	|	1.18
63.750	0.00	0.71	0.803	O	|	|	|	|	1.18
63.833	0.00	0.71	0.798	O	|	|	|	|	1.18
63.917	0.00	0.71	0.793	O	|	|	|	|	1.17
64.000	0.00	0.71	0.788	O	|	|	|	|	1.17
64.083	0.00	0.71	0.783	O	|	|	|	|	1.17
64.167	0.00	0.71	0.778	O	|	|	|	|	1.17
64.250	0.00	0.71	0.773	O	|	|	|	|	1.16
64.333	0.00	0.71	0.768	O	|	|	|	|	1.16
64.417	0.00	0.71	0.764	O	|	|	|	|	1.16
64.500	0.00	0.71	0.759	O	|	|	|	|	1.16
64.583	0.00	0.71	0.754	O	|	|	|	|	1.15
64.667	0.00	0.71	0.749	O	|	|	|	|	1.15
64.750	0.00	0.70	0.744	O	|	|	|	|	1.15
64.833	0.00	0.70	0.739	O	|	|	|	|	1.15
64.917	0.00	0.70	0.734	O	|	|	|	|	1.15
65.000	0.00	0.70	0.729	O	|	|	|	|	1.14
65.083	0.00	0.70	0.725	O	|	|	|	|	1.14
65.167	0.00	0.70	0.720	O	|	|	|	|	1.14
65.250	0.00	0.70	0.715	O	|	|	|	|	1.14
65.333	0.00	0.70	0.710	O	|	|	|	|	1.13
65.417	0.00	0.70	0.705	O	|	|	|	|	1.13
65.500	0.00	0.70	0.701	O	|	|	|	|	1.13
65.583	0.00	0.70	0.696	O	|	|	|	|	1.13
65.667	0.00	0.70	0.691	O	|	|	|	|	1.12
65.750	0.00	0.70	0.686	O	|	|	|	|	1.12
65.833	0.00	0.69	0.681	O	|	|	|	|	1.12
65.917	0.00	0.69	0.677	O	|	|	|	|	1.12
66.000	0.00	0.69	0.672	O	|	|	|	|	1.12
66.083	0.00	0.69	0.667	O	|	|	|	|	1.11
66.167	0.00	0.69	0.662	O	|	|	|	|	1.11
66.250	0.00	0.69	0.658	O	|	|	|	|	1.11
66.333	0.00	0.69	0.653	O	|	|	|	|	1.11
66.417	0.00	0.69	0.648	O	|	|	|	|	1.10
66.500	0.00	0.69	0.643	O	|	|	|	|	1.10
66.583	0.00	0.69	0.639	O	|	|	|	|	1.10
66.667	0.00	0.69	0.634	O	|	|	|	|	1.10
66.750	0.00	0.69	0.629	O	|	|	|	|	1.09
66.833	0.00	0.69	0.624	O	|	|	|	|	1.09
66.917	0.00	0.68	0.620	O	|	|	|	|	1.09
67.000	0.00	0.68	0.615	O	|	|	|	|	1.09
67.083	0.00	0.68	0.610	O	|	|	|	|	1.09
67.167	0.00	0.68	0.605	O	|	|	|	|	1.08
67.250	0.00	0.68	0.601	O	|	|	|	|	1.08
67.333	0.00	0.68	0.596	O	|	|	|	|	1.08
67.417	0.00	0.68	0.591	O	|	|	|	|	1.08
67.500	0.00	0.68	0.587	O	|	|	|	|	1.07
67.583	0.00	0.68	0.582	O	|	|	|	|	1.07
67.667	0.00	0.68	0.577	O	|	|	|	|	1.07
67.750	0.00	0.68	0.573	O	|	|	|	|	1.07
67.833	0.00	0.68	0.568	O	|	|	|	|	1.07
67.917	0.00	0.68	0.563	O	|	|	|	|	1.06
68.000	0.00	0.67	0.559	O	|	|	|	|	1.06
68.083	0.00	0.67	0.554	O	|	|	|	|	1.06

68.167	0.00	0.67	0.549	O	|	|	|	|	1.06
68.250	0.00	0.67	0.545	O	|	|	|	|	1.05
68.333	0.00	0.67	0.540	O	|	|	|	|	1.05
68.417	0.00	0.67	0.536	O	|	|	|	|	1.05
68.500	0.00	0.67	0.531	O	|	|	|	|	1.05
68.583	0.00	0.67	0.526	O	|	|	|	|	1.05
68.667	0.00	0.67	0.522	O	|	|	|	|	1.04
68.750	0.00	0.67	0.517	O	|	|	|	|	1.04
68.833	0.00	0.67	0.513	O	|	|	|	|	1.04
68.917	0.00	0.67	0.508	O	|	|	|	|	1.04
69.000	0.00	0.67	0.503	O	|	|	|	|	1.03
69.083	0.00	0.67	0.499	O	|	|	|	|	1.03
69.167	0.00	0.66	0.494	O	|	|	|	|	1.03
69.250	0.00	0.66	0.490	O	|	|	|	|	1.03
69.333	0.00	0.66	0.485	O	|	|	|	|	1.03
69.417	0.00	0.66	0.480	O	|	|	|	|	1.02
69.500	0.00	0.66	0.476	O	|	|	|	|	1.02
69.583	0.00	0.66	0.471	O	|	|	|	|	1.02
69.667	0.00	0.66	0.467	O	|	|	|	|	1.02
69.750	0.00	0.66	0.462	O	|	|	|	|	1.02
69.833	0.00	0.66	0.458	O	|	|	|	|	1.01
69.917	0.00	0.66	0.453	O	|	|	|	|	1.01
70.000	0.00	0.66	0.449	O	|	|	|	|	1.01
70.083	0.00	0.66	0.444	O	|	|	|	|	1.01
70.167	0.00	0.66	0.440	O	|	|	|	|	1.00
70.250	0.00	0.65	0.435	O	|	|	|	|	1.00
70.333	0.00	0.65	0.431	O	|	|	|	|	1.00
70.417	0.00	0.65	0.426	O	|	|	|	|	0.99
70.500	0.00	0.65	0.422	O	|	|	|	|	0.99
70.583	0.00	0.65	0.417	O	|	|	|	|	0.98
70.667	0.00	0.64	0.413	O	|	|	|	|	0.98
70.750	0.00	0.64	0.408	O	|	|	|	|	0.97
70.833	0.00	0.64	0.404	O	|	|	|	|	0.97
70.917	0.00	0.64	0.400	O	|	|	|	|	0.96
71.000	0.00	0.63	0.395	O	|	|	|	|	0.95
71.083	0.00	0.63	0.391	O	|	|	|	|	0.95
71.167	0.00	0.63	0.387	O	|	|	|	|	0.94
71.250	0.00	0.62	0.382	O	|	|	|	|	0.94
71.333	0.00	0.62	0.378	O	|	|	|	|	0.93
71.417	0.00	0.62	0.374	O	|	|	|	|	0.93
71.500	0.00	0.62	0.369	O	|	|	|	|	0.92
71.583	0.00	0.61	0.365	O	|	|	|	|	0.91
71.667	0.00	0.61	0.361	O	|	|	|	|	0.91
71.750	0.00	0.61	0.357	O	|	|	|	|	0.90
71.833	0.00	0.61	0.353	O	|	|	|	|	0.90
71.917	0.00	0.60	0.348	O	|	|	|	|	0.89
72.000	0.00	0.60	0.344	O	|	|	|	|	0.89
72.083	0.00	0.60	0.340	O	|	|	|	|	0.88
72.167	0.00	0.60	0.336	O	|	|	|	|	0.88
72.250	0.00	0.59	0.332	O	|	|	|	|	0.87
72.333	0.00	0.59	0.328	O	|	|	|	|	0.86
72.417	0.00	0.59	0.324	O	|	|	|	|	0.86
72.500	0.00	0.59	0.320	O	|	|	|	|	0.85
72.583	0.00	0.58	0.316	O	|	|	|	|	0.85
72.667	0.00	0.58	0.312	O	|	|	|	|	0.84
72.750	0.00	0.58	0.308	O	|	|	|	|	0.84
72.833	0.00	0.58	0.304	O	|	|	|	|	0.83
72.917	0.00	0.57	0.300	O	|	|	|	|	0.83
73.000	0.00	0.57	0.296	O	|	|	|	|	0.82
73.083	0.00	0.57	0.292	O	|	|	|	|	0.82
73.167	0.00	0.57	0.288	O	|	|	|	|	0.81
73.250	0.00	0.56	0.284	O	|	|	|	|	0.81
73.333	0.00	0.56	0.280	O	|	|	|	|	0.80
73.417	0.00	0.56	0.276	O	|	|	|	|	0.80
73.500	0.00	0.56	0.273	O	|	|	|	|	0.79
73.583	0.00	0.55	0.269	O	|	|	|	|	0.79
73.667	0.00	0.55	0.265	O	|	|	|	|	0.78
73.750	0.00	0.55	0.261	O	|	|	|	|	0.78
73.833	0.00	0.55	0.257	O	|	|	|	|	0.77
73.917	0.00	0.54	0.254	O	|	|	|	|	0.77
74.000	0.00	0.54	0.250	O	|	|	|	|	0.76
74.083	0.00	0.54	0.246	O	|	|	|	|	0.76
74.167	0.00	0.54	0.242	O	|	|	|	|	0.75
74.250	0.00	0.54	0.239	O	|	|	|	|	0.75
74.333	0.00	0.53	0.235	O	|	|	|	|	0.74

74.417	0.00	0.53	0.231	O	|	|	|	|	0.74
74.500	0.00	0.53	0.228	O	|	|	|	|	0.73
74.583	0.00	0.53	0.224	O	|	|	|	|	0.73
74.667	0.00	0.52	0.220	O	|	|	|	|	0.72
74.750	0.00	0.52	0.217	O	|	|	|	|	0.72
74.833	0.00	0.52	0.213	O	|	|	|	|	0.71
74.917	0.00	0.52	0.210	O	|	|	|	|	0.71
75.000	0.00	0.52	0.206	O	|	|	|	|	0.70
75.083	0.00	0.51	0.203	O	|	|	|	|	0.70
75.167	0.00	0.51	0.199	O	|	|	|	|	0.69
75.250	0.00	0.51	0.195	O	|	|	|	|	0.69
75.333	0.00	0.51	0.192	O	|	|	|	|	0.68
75.417	0.00	0.50	0.189	O	|	|	|	|	0.68
75.500	0.00	0.50	0.185	O	|	|	|	|	0.68
75.583	0.00	0.50	0.182	O	|	|	|	|	0.67
75.667	0.00	0.50	0.178	O	|	|	|	|	0.67
75.750	0.00	0.50	0.175	O	|	|	|	|	0.66
75.833	0.00	0.49	0.171	O	|	|	|	|	0.66
75.917	0.00	0.49	0.168	O	|	|	|	|	0.65
76.000	0.00	0.49	0.165	O	|	|	|	|	0.65
76.083	0.00	0.49	0.161	O	|	|	|	|	0.64
76.167	0.00	0.49	0.158	O	|	|	|	|	0.64
76.250	0.00	0.48	0.154	O	|	|	|	|	0.63
76.333	0.00	0.48	0.151	O	|	|	|	|	0.63
76.417	0.00	0.48	0.148	O	|	|	|	|	0.63
76.500	0.00	0.48	0.145	O	|	|	|	|	0.62
76.583	0.00	0.48	0.141	O	|	|	|	|	0.62
76.667	0.00	0.47	0.138	O	|	|	|	|	0.61
76.750	0.00	0.47	0.135	O	|	|	|	|	0.61
76.833	0.00	0.47	0.131	O	|	|	|	|	0.60
76.917	0.00	0.47	0.128	O	|	|	|	|	0.60
77.000	0.00	0.47	0.125	O	|	|	|	|	0.60
77.083	0.00	0.46	0.122	O	|	|	|	|	0.59
77.167	0.00	0.46	0.119	O	|	|	|	|	0.59
77.250	0.00	0.46	0.116	O	|	|	|	|	0.58
77.333	0.00	0.46	0.112	O	|	|	|	|	0.58
77.417	0.00	0.46	0.109	O	|	|	|	|	0.57
77.500	0.00	0.45	0.106	O	|	|	|	|	0.57
77.583	0.00	0.45	0.103	O	|	|	|	|	0.57
77.667	0.00	0.45	0.100	O	|	|	|	|	0.56
77.750	0.00	0.45	0.097	O	|	|	|	|	0.56
77.833	0.00	0.45	0.094	O	|	|	|	|	0.55
77.917	0.00	0.44	0.091	O	|	|	|	|	0.55
78.000	0.00	0.44	0.088	O	|	|	|	|	0.55
78.083	0.00	0.44	0.085	O	|	|	|	|	0.54
78.167	0.00	0.44	0.081	O	|	|	|	|	0.54
78.250	0.00	0.44	0.078	O	|	|	|	|	0.53
78.333	0.00	0.43	0.075	O	|	|	|	|	0.53
78.417	0.00	0.43	0.072	O	|	|	|	|	0.53
78.500	0.00	0.43	0.070	O	|	|	|	|	0.52
78.583	0.00	0.43	0.067	O	|	|	|	|	0.52
78.667	0.00	0.43	0.064	O	|	|	|	|	0.51
78.750	0.00	0.43	0.061	O	|	|	|	|	0.51
78.833	0.00	0.42	0.058	O	|	|	|	|	0.51
78.917	0.00	0.42	0.055	O	|	|	|	|	0.50
79.000	0.00	0.41	0.052	O	|	|	|	|	0.49
79.083	0.00	0.39	0.049	O	|	|	|	|	0.47
79.167	0.00	0.37	0.047	O	|	|	|	|	0.45
79.250	0.00	0.35	0.044	O	|	|	|	|	0.43
79.333	0.00	0.33	0.042	O	|	|	|	|	0.41
79.417	0.00	0.31	0.039	O	|	|	|	|	0.40
79.500	0.00	0.30	0.037	O	|	|	|	|	0.38
79.583	0.00	0.28	0.035	O	|	|	|	|	0.36
79.667	0.00	0.27	0.034	O	|	|	|	|	0.35
79.750	0.00	0.25	0.032	O	|	|	|	|	0.34
79.833	0.00	0.24	0.030	O	|	|	|	|	0.32
79.917	0.00	0.23	0.028	O	|	|	|	|	0.31
80.000	0.00	0.21	0.027	O	|	|	|	|	0.30
80.083	0.00	0.20	0.025	O	|	|	|	|	0.29
80.167	0.00	0.19	0.024	O	|	|	|	|	0.28
80.250	0.00	0.18	0.023	O	|	|	|	|	0.27
80.333	0.00	0.17	0.022	O	|	|	|	|	0.26
80.417	0.00	0.16	0.020	O	|	|	|	|	0.25
80.500	0.00	0.15	0.019	O	|	|	|	|	0.24
80.583	0.00	0.15	0.018	O	|	|	|	|	0.23

80.667	0.00	0.14	0.017	O	|	|	|	|	0.23
80.750	0.00	0.13	0.016	O	|	|	|	|	0.22
80.833	0.00	0.12	0.015	O	|	|	|	|	0.21
80.917	0.00	0.12	0.015	O	|	|	|	|	0.21
81.000	0.00	0.11	0.014	O	|	|	|	|	0.20
81.083	0.00	0.11	0.013	O	|	|	|	|	0.19
81.167	0.00	0.10	0.012	O	|	|	|	|	0.19
81.250	0.00	0.09	0.012	O	|	|	|	|	0.18
81.333	0.00	0.09	0.011	O	|	|	|	|	0.18
81.417	0.00	0.09	0.010	O	|	|	|	|	0.17
81.500	0.00	0.08	0.010	O	|	|	|	|	0.17
81.583	0.00	0.08	0.009	O	|	|	|	|	0.16
81.667	0.00	0.07	0.009	O	|	|	|	|	0.16
81.750	0.00	0.07	0.008	O	|	|	|	|	0.16
81.833	0.00	0.06	0.008	O	|	|	|	|	0.15
81.917	0.00	0.06	0.007	O	|	|	|	|	0.15
82.000	0.00	0.06	0.007	O	|	|	|	|	0.15
82.083	0.00	0.06	0.007	O	|	|	|	|	0.14
82.167	0.00	0.05	0.006	O	|	|	|	|	0.14
82.250	0.00	0.05	0.006	O	|	|	|	|	0.14
82.333	0.00	0.05	0.006	O	|	|	|	|	0.14
82.417	0.00	0.04	0.005	O	|	|	|	|	0.13
82.500	0.00	0.04	0.005	O	|	|	|	|	0.13
82.583	0.00	0.04	0.005	O	|	|	|	|	0.13
82.667	0.00	0.04	0.004	O	|	|	|	|	0.13
82.750	0.00	0.04	0.004	O	|	|	|	|	0.12
82.833	0.00	0.03	0.004	O	|	|	|	|	0.12
82.917	0.00	0.03	0.004	O	|	|	|	|	0.12
83.000	0.00	0.03	0.004	O	|	|	|	|	0.12
83.083	0.00	0.03	0.003	O	|	|	|	|	0.12
83.167	0.00	0.03	0.003	O	|	|	|	|	0.12
83.250	0.00	0.03	0.003	O	|	|	|	|	0.12
83.333	0.00	0.02	0.003	O	|	|	|	|	0.11
83.417	0.00	0.02	0.003	O	|	|	|	|	0.11
83.500	0.00	0.02	0.002	O	|	|	|	|	0.11
83.583	0.00	0.02	0.002	O	|	|	|	|	0.11
83.667	0.00	0.02	0.002	O	|	|	|	|	0.11
83.750	0.00	0.02	0.002	O	|	|	|	|	0.11
83.833	0.00	0.02	0.002	O	|	|	|	|	0.11
83.917	0.00	0.02	0.002	O	|	|	|	|	0.11
84.000	0.00	0.02	0.002	O	|	|	|	|	0.11
84.083	0.00	0.01	0.002	O	|	|	|	|	0.10
84.167	0.00	0.01	0.002	O	|	|	|	|	0.10
84.250	0.00	0.01	0.001	O	|	|	|	|	0.10
84.333	0.00	0.01	0.001	O	|	|	|	|	0.10
84.417	0.00	0.01	0.001	O	|	|	|	|	0.10
84.500	0.00	0.01	0.001	O	|	|	|	|	0.10
84.583	0.00	0.01	0.001	O	|	|	|	|	0.10
84.667	0.00	0.01	0.001	O	|	|	|	|	0.10
84.750	0.00	0.01	0.001	O	|	|	|	|	0.10
84.833	0.00	0.01	0.001	O	|	|	|	|	0.09
84.917	0.00	0.01	0.001	O	|	|	|	|	0.08
85.000	0.00	0.01	0.001	O	|	|	|	|	0.08
85.083	0.00	0.01	0.001	O	|	|	|	|	0.07
85.167	0.00	0.01	0.001	O	|	|	|	|	0.07
85.250	0.00	0.01	0.001	O	|	|	|	|	0.06
85.333	0.00	0.01	0.001	O	|	|	|	|	0.06
85.417	0.00	0.01	0.001	O	|	|	|	|	0.05
85.500	0.00	0.01	0.001	O	|	|	|	|	0.05
85.583	0.00	0.00	0.000	O	|	|	|	|	0.05
85.667	0.00	0.00	0.000	O	|	|	|	|	0.04
85.750	0.00	0.00	0.000	O	|	|	|	|	0.04
85.833	0.00	0.00	0.000	O	|	|	|	|	0.04
85.917	0.00	0.00	0.000	O	|	|	|	|	0.04
86.000	0.00	0.00	0.000	O	|	|	|	|	0.03
86.083	0.00	0.00	0.000	O	|	|	|	|	0.03
86.167	0.00	0.00	0.000	O	|	|	|	|	0.03
86.250	0.00	0.00	0.000	O	|	|	|	|	0.03
86.333	0.00	0.00	0.000	O	|	|	|	|	0.03
86.417	0.00	0.00	0.000	O	|	|	|	|	0.02
86.500	0.00	0.00	0.000	O	|	|	|	|	0.02
86.583	0.00	0.00	0.000	O	|	|	|	|	0.02
86.667	0.00	0.00	0.000	O	|	|	|	|	0.02
86.750	0.00	0.00	0.000	O	|	|	|	|	0.02
86.833	0.00	0.00	0.000	O	|	|	|	|	0.02

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86.917    0.00    0.00      0.000  O       |       |       |       |     0.02
87.000    0.00    0.00      0.000  O       |       |       |       |     0.01
87.083    0.00    0.00      0.000  O       |       |       |       |     0.01
87.167    0.00    0.00      0.000  O       |       |       |       |     0.01
87.250    0.00    0.00      0.000  O       |       |       |       |     0.01
87.333    0.00    0.00      0.000  O       |       |       |       |     0.01
87.417    0.00    0.00      0.000  O       |       |       |       |     0.01
87.500    0.00    0.00      0.000  O       |       |       |       |     0.01

      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =  1050
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =       20.969 (CFS)
                  Total volume =      15.772 (Ac.Ft)
            Status of hydrographs being held in storage
                     Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ***********************************************************************

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BASIN ROUTING
DMA B
PROPOSED CONDITIONS
100-YEAR 1-HOUR

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2005
Study date: 10/28/14

14-0213 SHOPOFF
BASIN ROUTING
DMA B
100-YEAR 1-HOUR

Program License Serial Number 4010

********** HYDROGRAPH INFORMATION **********

From study/file name: BPROP1100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 19
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 204.924 (CFS)
Total volume = 6.162 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

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Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 19
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.100	0.001	0.010	0.001	0.001
0.500	0.053	0.421	0.052	0.054
1.000	0.430	0.654	0.428	0.432
1.500	1.478	0.824	1.475	1.481
1.900	2.842	0.937	2.839	2.845
2.000	3.240	0.964	3.237	3.243
2.400	4.909	5.372	4.891	4.927
2.500	5.335	6.288	5.313	5.357
3.000	7.513	19.930	7.444	7.582
3.100	7.959	22.013	7.883	8.035
3.500	9.773	35.542	9.651	9.895
4.000	12.116	58.286	11.915	12.317
4.500	14.544	85.412	14.250	14.838
5.000	17.059	116.189	16.659	17.459
5.500	19.662	150.189	19.145	20.179
6.000	22.356	187.115	21.712	23.000
6.200	23.460	202.653	22.762	24.158

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	51.2	102.46	153.69	204.92	Depth (Ft.)
0.083	3.73	0.10	0.012	O	|	|	|	|	0.19
0.167	19.69	0.44	0.091	O I	|	|	|	|	0.55
0.250	29.67	0.55	0.258	O I	|	|	|	|	0.77
0.333	34.88	0.66	0.476	O I	|	|	|	|	1.02
0.417	39.22	0.70	0.726	O I	|	|	|	|	1.14
0.500	43.99	0.75	1.008	O I	|	|	|	|	1.28
0.583	51.38	0.80	1.331	O I	|	|	|	|	1.43
0.667	59.51	0.84	1.707	O I	|	|	|	|	1.57
0.750	78.91	0.88	2.178	O I	|	|	|	|	1.71
0.833	133.73	0.94	2.904	O	I |	|	|	|	1.92
0.917	204.92	3.12	4.056	O	|	|	|	I	2.20
1.000	107.31	5.78	5.101	O	|	I	|	|	2.44
1.083	55.94	8.04	5.615	|O	I	|	|	|	2.56
1.167	19.87	9.30	5.816	|O I	|	|	|	|	2.61
1.250	7.39	9.49	5.846	|O	|	|	|	|	2.62
1.333	3.22	9.31	5.817	IO	|	|	|	|	2.61
1.417	1.06	9.01	5.769	IO	|	|	|	|	2.60
1.500	0.27	8.65	5.713	IO	|	|	|	|	2.59
1.583	0.05	8.30	5.656	IO	|	|	|	|	2.57
1.667	0.00	7.95	5.600	IO	|	|	|	|	2.56
1.750	0.00	7.61	5.546	IO	|	|	|	|	2.55
1.833	0.00	7.29	5.495	IO	|	|	|	|	2.54
1.917	0.00	6.98	5.446	IO	|	|	|	|	2.53
2.000	0.00	6.69	5.399	IO	|	|	|	|	2.51
2.083	0.00	6.40	5.354	IO	|	|	|	|	2.50
2.167	0.00	6.23	5.310	O	|	|	|	|	2.49
2.250	0.00	6.14	5.267	O	|	|	|	|	2.48
2.333	0.00	6.05	5.225	O	|	|	|	|	2.47
2.417	0.00	5.96	5.184	O	|	|	|	|	2.46
2.500	0.00	5.88	5.143	O	|	|	|	|	2.45
2.583	0.00	5.79	5.103	O	|	|	|	|	2.45
2.667	0.00	5.70	5.064	O	|	|	|	|	2.44
2.750	0.00	5.62	5.025	O	|	|	|	|	2.43
2.833	0.00	5.54	4.986	O	|	|	|	|	2.42
2.917	0.00	5.46	4.948	O	|	|	|	|	2.41
3.000	0.00	5.38	4.911	O	|	|	|	|	2.40
3.083	0.00	5.28	4.874	O	|	|	|	|	2.39
3.167	0.00	5.19	4.838	O	|	|	|	|	2.38
3.250	0.00	5.09	4.803	O	|	|	|	|	2.37
3.333	0.00	5.00	4.768	O	|	|	|	|	2.37
3.417	0.00	4.91	4.734	O	|	|	|	|	2.36
3.500	0.00	4.82	4.700	O	|	|	|	|	2.35
3.583	0.00	4.73	4.668	O	|	|	|	|	2.34
3.667	0.00	4.65	4.635	O	|	|	|	|	2.33
3.750	0.00	4.57	4.604	O	|	|	|	|	2.33
3.833	0.00	4.48	4.572	O	|	|	|	|	2.32
3.917	0.00	4.40	4.542	O	|	|	|	|	2.31
4.000	0.00	4.32	4.512	O	|	|	|	|	2.30
4.083	0.00	4.24	4.482	O	|	|	|	|	2.30
4.167	0.00	4.17	4.453	O	|	|	|	|	2.29
4.250	0.00	4.09	4.425	O	|	|	|	|	2.28
4.333	0.00	4.02	4.397	O	|	|	|	|	2.28
4.417	0.00	3.95	4.369	O	|	|	|	|	2.27
4.500	0.00	3.88	4.342	O	|	|	|	|	2.26
4.583	0.00	3.81	4.316	O	|	|	|	|	2.26
4.667	0.00	3.74	4.290	O	|	|	|	|	2.25
4.750	0.00	3.67	4.265	O	|	|	|	|	2.25
4.833	0.00	3.60	4.240	O	|	|	|	|	2.24
4.917	0.00	3.54	4.215	O	|	|	|	|	2.23
5.000	0.00	3.48	4.191	O	|	|	|	|	2.23
5.083	0.00	3.41	4.167	O	|	|	|	|	2.22
5.167	0.00	3.35	4.144	O	|	|	|	|	2.22
5.250	0.00	3.29	4.121	O	|	|	|	|	2.21
5.333	0.00	3.23	4.098	O	|	|	|	|	2.21
5.417	0.00	3.17	4.076	O	|	|	|	|	2.20
5.500	0.00	3.12	4.055	O	|	|	|	|	2.20
5.583	0.00	3.06	4.033	O	|	|	|	|	2.19

5.667	0.00	3.00	4.013	O	|	|	|	|	2.19
5.750	0.00	2.95	3.992	O	|	|	|	|	2.18
5.833	0.00	2.90	3.972	O	|	|	|	|	2.18
5.917	0.00	2.84	3.952	O	|	|	|	|	2.17
6.000	0.00	2.79	3.933	O	|	|	|	|	2.17
6.083	0.00	2.74	3.914	O	|	|	|	|	2.16
6.167	0.00	2.69	3.895	O	|	|	|	|	2.16
6.250	0.00	2.65	3.877	O	|	|	|	|	2.15
6.333	0.00	2.60	3.859	O	|	|	|	|	2.15
6.417	0.00	2.55	3.841	O	|	|	|	|	2.14
6.500	0.00	2.50	3.823	O	|	|	|	|	2.14
6.583	0.00	2.46	3.806	O	|	|	|	|	2.14
6.667	0.00	2.42	3.789	O	|	|	|	|	2.13
6.750	0.00	2.37	3.773	O	|	|	|	|	2.13
6.833	0.00	2.33	3.757	O	|	|	|	|	2.12
6.917	0.00	2.29	3.741	O	|	|	|	|	2.12
7.000	0.00	2.25	3.725	O	|	|	|	|	2.12
7.083	0.00	2.21	3.710	O	|	|	|	|	2.11
7.167	0.00	2.17	3.695	O	|	|	|	|	2.11
7.250	0.00	2.13	3.680	O	|	|	|	|	2.11
7.333	0.00	2.09	3.666	O	|	|	|	|	2.10
7.417	0.00	2.05	3.651	O	|	|	|	|	2.10
7.500	0.00	2.01	3.637	O	|	|	|	|	2.10
7.583	0.00	1.98	3.624	O	|	|	|	|	2.09
7.667	0.00	1.94	3.610	O	|	|	|	|	2.09
7.750	0.00	1.91	3.597	O	|	|	|	|	2.09
7.833	0.00	1.87	3.584	O	|	|	|	|	2.08
7.917	0.00	1.84	3.571	O	|	|	|	|	2.08
8.000	0.00	1.81	3.559	O	|	|	|	|	2.08
8.083	0.00	1.77	3.546	O	|	|	|	|	2.07
8.167	0.00	1.74	3.534	O	|	|	|	|	2.07
8.250	0.00	1.71	3.522	O	|	|	|	|	2.07
8.333	0.00	1.68	3.511	O	|	|	|	|	2.06
8.417	0.00	1.65	3.499	O	|	|	|	|	2.06
8.500	0.00	1.62	3.488	O	|	|	|	|	2.06
8.583	0.00	1.59	3.477	O	|	|	|	|	2.06
8.667	0.00	1.56	3.466	O	|	|	|	|	2.05
8.750	0.00	1.53	3.455	O	|	|	|	|	2.05
8.833	0.00	1.51	3.445	O	|	|	|	|	2.05
8.917	0.00	1.48	3.435	O	|	|	|	|	2.05
9.000	0.00	1.45	3.425	O	|	|	|	|	2.04
9.083	0.00	1.43	3.415	O	|	|	|	|	2.04
9.167	0.00	1.40	3.405	O	|	|	|	|	2.04
9.250	0.00	1.37	3.395	O	|	|	|	|	2.04
9.333	0.00	1.35	3.386	O	|	|	|	|	2.03
9.417	0.00	1.33	3.377	O	|	|	|	|	2.03
9.500	0.00	1.30	3.368	O	|	|	|	|	2.03
9.583	0.00	1.28	3.359	O	|	|	|	|	2.03
9.667	0.00	1.25	3.350	O	|	|	|	|	2.03
9.750	0.00	1.23	3.342	O	|	|	|	|	2.02
9.833	0.00	1.21	3.333	O	|	|	|	|	2.02
9.917	0.00	1.19	3.325	O	|	|	|	|	2.02
10.000	0.00	1.17	3.317	O	|	|	|	|	2.02
10.083	0.00	1.15	3.309	O	|	|	|	|	2.02
10.167	0.00	1.13	3.301	O	|	|	|	|	2.01
10.250	0.00	1.10	3.293	O	|	|	|	|	2.01
10.333	0.00	1.08	3.286	O	|	|	|	|	2.01
10.417	0.00	1.07	3.278	O	|	|	|	|	2.01
10.500	0.00	1.05	3.271	O	|	|	|	|	2.01
10.583	0.00	1.03	3.264	O	|	|	|	|	2.01
10.667	0.00	1.01	3.257	O	|	|	|	|	2.00
10.750	0.00	0.99	3.250	O	|	|	|	|	2.00
10.833	0.00	0.97	3.243	O	|	|	|	|	2.00
10.917	0.00	0.96	3.237	O	|	|	|	|	2.00
11.000	0.00	0.96	3.230	O	|	|	|	|	2.00
11.083	0.00	0.96	3.223	O	|	|	|	|	2.00
11.167	0.00	0.96	3.217	O	|	|	|	|	1.99
11.250	0.00	0.96	3.210	O	|	|	|	|	1.99
11.333	0.00	0.96	3.203	O	|	|	|	|	1.99
11.417	0.00	0.96	3.197	O	|	|	|	|	1.99
11.500	0.00	0.96	3.190	O	|	|	|	|	1.99
11.583	0.00	0.96	3.184	O	|	|	|	|	1.99
11.667	0.00	0.96	3.177	O	|	|	|	|	1.98
11.750	0.00	0.96	3.170	O	|	|	|	|	1.98
11.833	0.00	0.96	3.164	O	|	|	|	|	1.98

11.917	0.00	0.96	3.157	O	|	|	|	|	1.98
12.000	0.00	0.96	3.151	O	|	|	|	|	1.98
12.083	0.00	0.96	3.144	O	|	|	|	|	1.98
12.167	0.00	0.96	3.137	O	|	|	|	|	1.97
12.250	0.00	0.96	3.131	O	|	|	|	|	1.97
12.333	0.00	0.96	3.124	O	|	|	|	|	1.97
12.417	0.00	0.96	3.118	O	|	|	|	|	1.97
12.500	0.00	0.96	3.111	O	|	|	|	|	1.97
12.583	0.00	0.95	3.104	O	|	|	|	|	1.97
12.667	0.00	0.95	3.098	O	|	|	|	|	1.96
12.750	0.00	0.95	3.091	O	|	|	|	|	1.96
12.833	0.00	0.95	3.085	O	|	|	|	|	1.96
12.917	0.00	0.95	3.078	O	|	|	|	|	1.96
13.000	0.00	0.95	3.072	O	|	|	|	|	1.96
13.083	0.00	0.95	3.065	O	|	|	|	|	1.96
13.167	0.00	0.95	3.059	O	|	|	|	|	1.95
13.250	0.00	0.95	3.052	O	|	|	|	|	1.95
13.333	0.00	0.95	3.045	O	|	|	|	|	1.95
13.417	0.00	0.95	3.039	O	|	|	|	|	1.95
13.500	0.00	0.95	3.032	O	|	|	|	|	1.95
13.583	0.00	0.95	3.026	O	|	|	|	|	1.95
13.667	0.00	0.95	3.019	O	|	|	|	|	1.94
13.750	0.00	0.95	3.013	O	|	|	|	|	1.94
13.833	0.00	0.95	3.006	O	|	|	|	|	1.94
13.917	0.00	0.95	3.000	O	|	|	|	|	1.94
14.000	0.00	0.95	2.993	O	|	|	|	|	1.94
14.083	0.00	0.95	2.987	O	|	|	|	|	1.94
14.167	0.00	0.95	2.980	O	|	|	|	|	1.93
14.250	0.00	0.95	2.974	O	|	|	|	|	1.93
14.333	0.00	0.95	2.967	O	|	|	|	|	1.93
14.417	0.00	0.95	2.961	O	|	|	|	|	1.93
14.500	0.00	0.94	2.954	O	|	|	|	|	1.93
14.583	0.00	0.94	2.948	O	|	|	|	|	1.93
14.667	0.00	0.94	2.941	O	|	|	|	|	1.92
14.750	0.00	0.94	2.935	O	|	|	|	|	1.92
14.833	0.00	0.94	2.928	O	|	|	|	|	1.92
14.917	0.00	0.94	2.922	O	|	|	|	|	1.92
15.000	0.00	0.94	2.915	O	|	|	|	|	1.92
15.083	0.00	0.94	2.909	O	|	|	|	|	1.92
15.167	0.00	0.94	2.902	O	|	|	|	|	1.92
15.250	0.00	0.94	2.896	O	|	|	|	|	1.91
15.333	0.00	0.94	2.889	O	|	|	|	|	1.91
15.417	0.00	0.94	2.883	O	|	|	|	|	1.91
15.500	0.00	0.94	2.876	O	|	|	|	|	1.91
15.583	0.00	0.94	2.870	O	|	|	|	|	1.91
15.667	0.00	0.94	2.863	O	|	|	|	|	1.91
15.750	0.00	0.94	2.857	O	|	|	|	|	1.90
15.833	0.00	0.94	2.850	O	|	|	|	|	1.90
15.917	0.00	0.94	2.844	O	|	|	|	|	1.90
16.000	0.00	0.94	2.837	O	|	|	|	|	1.90
16.083	0.00	0.94	2.831	O	|	|	|	|	1.90
16.167	0.00	0.94	2.825	O	|	|	|	|	1.89
16.250	0.00	0.94	2.818	O	|	|	|	|	1.89
16.333	0.00	0.93	2.812	O	|	|	|	|	1.89
16.417	0.00	0.93	2.805	O	|	|	|	|	1.89
16.500	0.00	0.93	2.799	O	|	|	|	|	1.89
16.583	0.00	0.93	2.792	O	|	|	|	|	1.89
16.667	0.00	0.93	2.786	O	|	|	|	|	1.88
16.750	0.00	0.93	2.780	O	|	|	|	|	1.88
16.833	0.00	0.93	2.773	O	|	|	|	|	1.88
16.917	0.00	0.93	2.767	O	|	|	|	|	1.88
17.000	0.00	0.93	2.760	O	|	|	|	|	1.88
17.083	0.00	0.93	2.754	O	|	|	|	|	1.87
17.167	0.00	0.93	2.748	O	|	|	|	|	1.87
17.250	0.00	0.93	2.741	O	|	|	|	|	1.87
17.333	0.00	0.93	2.735	O	|	|	|	|	1.87
17.417	0.00	0.93	2.728	O	|	|	|	|	1.87
17.500	0.00	0.93	2.722	O	|	|	|	|	1.86
17.583	0.00	0.93	2.716	O	|	|	|	|	1.86
17.667	0.00	0.93	2.709	O	|	|	|	|	1.86
17.750	0.00	0.93	2.703	O	|	|	|	|	1.86
17.833	0.00	0.92	2.696	O	|	|	|	|	1.86
17.917	0.00	0.92	2.690	O	|	|	|	|	1.86
18.000	0.00	0.92	2.684	O	|	|	|	|	1.85
18.083	0.00	0.92	2.677	O	|	|	|	|	1.85

18.167	0.00	0.92	2.671	O	|	|	|	|	1.85
18.250	0.00	0.92	2.665	O	|	|	|	|	1.85
18.333	0.00	0.92	2.658	O	|	|	|	|	1.85
18.417	0.00	0.92	2.652	O	|	|	|	|	1.84
18.500	0.00	0.92	2.646	O	|	|	|	|	1.84
18.583	0.00	0.92	2.639	O	|	|	|	|	1.84
18.667	0.00	0.92	2.633	O	|	|	|	|	1.84
18.750	0.00	0.92	2.627	O	|	|	|	|	1.84
18.833	0.00	0.92	2.620	O	|	|	|	|	1.83
18.917	0.00	0.92	2.614	O	|	|	|	|	1.83
19.000	0.00	0.92	2.608	O	|	|	|	|	1.83
19.083	0.00	0.92	2.601	O	|	|	|	|	1.83
19.167	0.00	0.92	2.595	O	|	|	|	|	1.83
19.250	0.00	0.92	2.589	O	|	|	|	|	1.83
19.333	0.00	0.92	2.582	O	|	|	|	|	1.82
19.417	0.00	0.91	2.576	O	|	|	|	|	1.82
19.500	0.00	0.91	2.570	O	|	|	|	|	1.82
19.583	0.00	0.91	2.563	O	|	|	|	|	1.82
19.667	0.00	0.91	2.557	O	|	|	|	|	1.82
19.750	0.00	0.91	2.551	O	|	|	|	|	1.81
19.833	0.00	0.91	2.545	O	|	|	|	|	1.81
19.917	0.00	0.91	2.538	O	|	|	|	|	1.81
20.000	0.00	0.91	2.532	O	|	|	|	|	1.81
20.083	0.00	0.91	2.526	O	|	|	|	|	1.81
20.167	0.00	0.91	2.519	O	|	|	|	|	1.81
20.250	0.00	0.91	2.513	O	|	|	|	|	1.80
20.333	0.00	0.91	2.507	O	|	|	|	|	1.80
20.417	0.00	0.91	2.501	O	|	|	|	|	1.80
20.500	0.00	0.91	2.494	O	|	|	|	|	1.80
20.583	0.00	0.91	2.488	O	|	|	|	|	1.80
20.667	0.00	0.91	2.482	O	|	|	|	|	1.79
20.750	0.00	0.91	2.476	O	|	|	|	|	1.79
20.833	0.00	0.91	2.469	O	|	|	|	|	1.79
20.917	0.00	0.91	2.463	O	|	|	|	|	1.79
21.000	0.00	0.91	2.457	O	|	|	|	|	1.79
21.083	0.00	0.90	2.451	O	|	|	|	|	1.79
21.167	0.00	0.90	2.445	O	|	|	|	|	1.78
21.250	0.00	0.90	2.438	O	|	|	|	|	1.78
21.333	0.00	0.90	2.432	O	|	|	|	|	1.78
21.417	0.00	0.90	2.426	O	|	|	|	|	1.78
21.500	0.00	0.90	2.420	O	|	|	|	|	1.78
21.583	0.00	0.90	2.413	O	|	|	|	|	1.77
21.667	0.00	0.90	2.407	O	|	|	|	|	1.77
21.750	0.00	0.90	2.401	O	|	|	|	|	1.77
21.833	0.00	0.90	2.395	O	|	|	|	|	1.77
21.917	0.00	0.90	2.389	O	|	|	|	|	1.77
22.000	0.00	0.90	2.382	O	|	|	|	|	1.77
22.083	0.00	0.90	2.376	O	|	|	|	|	1.76
22.167	0.00	0.90	2.370	O	|	|	|	|	1.76
22.250	0.00	0.90	2.364	O	|	|	|	|	1.76
22.333	0.00	0.90	2.358	O	|	|	|	|	1.76
22.417	0.00	0.90	2.352	O	|	|	|	|	1.76
22.500	0.00	0.90	2.345	O	|	|	|	|	1.75
22.583	0.00	0.90	2.339	O	|	|	|	|	1.75
22.667	0.00	0.89	2.333	O	|	|	|	|	1.75
22.750	0.00	0.89	2.327	O	|	|	|	|	1.75
22.833	0.00	0.89	2.321	O	|	|	|	|	1.75
22.917	0.00	0.89	2.315	O	|	|	|	|	1.75
23.000	0.00	0.89	2.308	O	|	|	|	|	1.74
23.083	0.00	0.89	2.302	O	|	|	|	|	1.74
23.167	0.00	0.89	2.296	O	|	|	|	|	1.74
23.250	0.00	0.89	2.290	O	|	|	|	|	1.74
23.333	0.00	0.89	2.284	O	|	|	|	|	1.74
23.417	0.00	0.89	2.278	O	|	|	|	|	1.73
23.500	0.00	0.89	2.272	O	|	|	|	|	1.73
23.583	0.00	0.89	2.265	O	|	|	|	|	1.73
23.667	0.00	0.89	2.259	O	|	|	|	|	1.73
23.750	0.00	0.89	2.253	O	|	|	|	|	1.73
23.833	0.00	0.89	2.247	O	|	|	|	|	1.73
23.917	0.00	0.89	2.241	O	|	|	|	|	1.72
24.000	0.00	0.89	2.235	O	|	|	|	|	1.72
24.083	0.00	0.89	2.229	O	|	|	|	|	1.72
24.167	0.00	0.89	2.223	O	|	|	|	|	1.72
24.250	0.00	0.89	2.217	O	|	|	|	|	1.72
24.333	0.00	0.88	2.210	O	|	|	|	|	1.71

24.417	0.00	0.88	2.204	O	|	|	|	|	1.71
24.500	0.00	0.88	2.198	O	|	|	|	|	1.71
24.583	0.00	0.88	2.192	O	|	|	|	|	1.71
24.667	0.00	0.88	2.186	O	|	|	|	|	1.71
24.750	0.00	0.88	2.180	O	|	|	|	|	1.71
24.833	0.00	0.88	2.174	O	|	|	|	|	1.70
24.917	0.00	0.88	2.168	O	|	|	|	|	1.70
25.000	0.00	0.88	2.162	O	|	|	|	|	1.70
25.083	0.00	0.88	2.156	O	|	|	|	|	1.70
25.167	0.00	0.88	2.150	O	|	|	|	|	1.70
25.250	0.00	0.88	2.144	O	|	|	|	|	1.70
25.333	0.00	0.88	2.138	O	|	|	|	|	1.69
25.417	0.00	0.88	2.132	O	|	|	|	|	1.69
25.500	0.00	0.88	2.125	O	|	|	|	|	1.69
25.583	0.00	0.88	2.119	O	|	|	|	|	1.69
25.667	0.00	0.88	2.113	O	|	|	|	|	1.69
25.750	0.00	0.88	2.107	O	|	|	|	|	1.68
25.833	0.00	0.88	2.101	O	|	|	|	|	1.68
25.917	0.00	0.88	2.095	O	|	|	|	|	1.68
26.000	0.00	0.87	2.089	O	|	|	|	|	1.68
26.083	0.00	0.87	2.083	O	|	|	|	|	1.68
26.167	0.00	0.87	2.077	O	|	|	|	|	1.68
26.250	0.00	0.87	2.071	O	|	|	|	|	1.67
26.333	0.00	0.87	2.065	O	|	|	|	|	1.67
26.417	0.00	0.87	2.059	O	|	|	|	|	1.67
26.500	0.00	0.87	2.053	O	|	|	|	|	1.67
26.583	0.00	0.87	2.047	O	|	|	|	|	1.67
26.667	0.00	0.87	2.041	O	|	|	|	|	1.67
26.750	0.00	0.87	2.035	O	|	|	|	|	1.66
26.833	0.00	0.87	2.029	O	|	|	|	|	1.66
26.917	0.00	0.87	2.023	O	|	|	|	|	1.66
27.000	0.00	0.87	2.017	O	|	|	|	|	1.66
27.083	0.00	0.87	2.011	O	|	|	|	|	1.66
27.167	0.00	0.87	2.005	O	|	|	|	|	1.65
27.250	0.00	0.87	1.999	O	|	|	|	|	1.65
27.333	0.00	0.87	1.993	O	|	|	|	|	1.65
27.417	0.00	0.87	1.987	O	|	|	|	|	1.65
27.500	0.00	0.87	1.981	O	|	|	|	|	1.65
27.583	0.00	0.87	1.975	O	|	|	|	|	1.65
27.667	0.00	0.86	1.969	O	|	|	|	|	1.64
27.750	0.00	0.86	1.964	O	|	|	|	|	1.64
27.833	0.00	0.86	1.958	O	|	|	|	|	1.64
27.917	0.00	0.86	1.952	O	|	|	|	|	1.64
28.000	0.00	0.86	1.946	O	|	|	|	|	1.64
28.083	0.00	0.86	1.940	O	|	|	|	|	1.64
28.167	0.00	0.86	1.934	O	|	|	|	|	1.63
28.250	0.00	0.86	1.928	O	|	|	|	|	1.63
28.333	0.00	0.86	1.922	O	|	|	|	|	1.63
28.417	0.00	0.86	1.916	O	|	|	|	|	1.63
28.500	0.00	0.86	1.910	O	|	|	|	|	1.63
28.583	0.00	0.86	1.904	O	|	|	|	|	1.62
28.667	0.00	0.86	1.898	O	|	|	|	|	1.62
28.750	0.00	0.86	1.892	O	|	|	|	|	1.62
28.833	0.00	0.86	1.886	O	|	|	|	|	1.62
28.917	0.00	0.86	1.881	O	|	|	|	|	1.62
29.000	0.00	0.86	1.875	O	|	|	|	|	1.62
29.083	0.00	0.86	1.869	O	|	|	|	|	1.61
29.167	0.00	0.86	1.863	O	|	|	|	|	1.61
29.250	0.00	0.86	1.857	O	|	|	|	|	1.61
29.333	0.00	0.85	1.851	O	|	|	|	|	1.61
29.417	0.00	0.85	1.845	O	|	|	|	|	1.61
29.500	0.00	0.85	1.839	O	|	|	|	|	1.61
29.583	0.00	0.85	1.833	O	|	|	|	|	1.60
29.667	0.00	0.85	1.828	O	|	|	|	|	1.60
29.750	0.00	0.85	1.822	O	|	|	|	|	1.60
29.833	0.00	0.85	1.816	O	|	|	|	|	1.60
29.917	0.00	0.85	1.810	O	|	|	|	|	1.60
30.000	0.00	0.85	1.804	O	|	|	|	|	1.60
30.083	0.00	0.85	1.798	O	|	|	|	|	1.59
30.167	0.00	0.85	1.792	O	|	|	|	|	1.59
30.250	0.00	0.85	1.787	O	|	|	|	|	1.59
30.333	0.00	0.85	1.781	O	|	|	|	|	1.59
30.417	0.00	0.85	1.775	O	|	|	|	|	1.59
30.500	0.00	0.85	1.769	O	|	|	|	|	1.59
30.583	0.00	0.85	1.763	O	|	|	|	|	1.58

30.667	0.00	0.85	1.757	O	|	|	|	1.58
30.750	0.00	0.85	1.751	O	|	|	|	1.58
30.833	0.00	0.85	1.746	O	|	|	|	1.58
30.917	0.00	0.85	1.740	O	|	|	|	1.58
31.000	0.00	0.85	1.734	O	|	|	|	1.58
31.083	0.00	0.84	1.728	O	|	|	|	1.57
31.167	0.00	0.84	1.722	O	|	|	|	1.57
31.250	0.00	0.84	1.717	O	|	|	|	1.57
31.333	0.00	0.84	1.711	O	|	|	|	1.57
31.417	0.00	0.84	1.705	O	|	|	|	1.57
31.500	0.00	0.84	1.699	O	|	|	|	1.56
31.583	0.00	0.84	1.693	O	|	|	|	1.56
31.667	0.00	0.84	1.688	O	|	|	|	1.56
31.750	0.00	0.84	1.682	O	|	|	|	1.56
31.833	0.00	0.84	1.676	O	|	|	|	1.56
31.917	0.00	0.84	1.670	O	|	|	|	1.56
32.000	0.00	0.84	1.664	O	|	|	|	1.55
32.083	0.00	0.84	1.659	O	|	|	|	1.55
32.167	0.00	0.84	1.653	O	|	|	|	1.55
32.250	0.00	0.84	1.647	O	|	|	|	1.55
32.333	0.00	0.84	1.641	O	|	|	|	1.55
32.417	0.00	0.84	1.636	O	|	|	|	1.55
32.500	0.00	0.84	1.630	O	|	|	|	1.54
32.583	0.00	0.84	1.624	O	|	|	|	1.54
32.667	0.00	0.84	1.618	O	|	|	|	1.54
32.750	0.00	0.84	1.612	O	|	|	|	1.54
32.833	0.00	0.83	1.607	O	|	|	|	1.54
32.917	0.00	0.83	1.601	O	|	|	|	1.54
33.000	0.00	0.83	1.595	O	|	|	|	1.53
33.083	0.00	0.83	1.589	O	|	|	|	1.53
33.167	0.00	0.83	1.584	O	|	|	|	1.53
33.250	0.00	0.83	1.578	O	|	|	|	1.53
33.333	0.00	0.83	1.572	O	|	|	|	1.53
33.417	0.00	0.83	1.567	O	|	|	|	1.53
33.500	0.00	0.83	1.561	O	|	|	|	1.52
33.583	0.00	0.83	1.555	O	|	|	|	1.52
33.667	0.00	0.83	1.549	O	|	|	|	1.52
33.750	0.00	0.83	1.544	O	|	|	|	1.52
33.833	0.00	0.83	1.538	O	|	|	|	1.52
33.917	0.00	0.83	1.532	O	|	|	|	1.52
34.000	0.00	0.83	1.527	O	|	|	|	1.51
34.083	0.00	0.83	1.521	O	|	|	|	1.51
34.167	0.00	0.83	1.515	O	|	|	|	1.51
34.250	0.00	0.83	1.509	O	|	|	|	1.51
34.333	0.00	0.83	1.504	O	|	|	|	1.51
34.417	0.00	0.83	1.498	O	|	|	|	1.51
34.500	0.00	0.83	1.492	O	|	|	|	1.50
34.583	0.00	0.82	1.487	O	|	|	|	1.50
34.667	0.00	0.82	1.481	O	|	|	|	1.50
34.750	0.00	0.82	1.475	O	|	|	|	1.50
34.833	0.00	0.82	1.470	O	|	|	|	1.50
34.917	0.00	0.82	1.464	O	|	|	|	1.49
35.000	0.00	0.82	1.458	O	|	|	|	1.49
35.083	0.00	0.82	1.453	O	|	|	|	1.49
35.167	0.00	0.82	1.447	O	|	|	|	1.49
35.250	0.00	0.82	1.441	O	|	|	|	1.48
35.333	0.00	0.82	1.436	O	|	|	|	1.48
35.417	0.00	0.82	1.430	O	|	|	|	1.48
35.500	0.00	0.82	1.425	O	|	|	|	1.47
35.583	0.00	0.81	1.419	O	|	|	|	1.47
35.667	0.00	0.81	1.413	O	|	|	|	1.47
35.750	0.00	0.81	1.408	O	|	|	|	1.47
35.833	0.00	0.81	1.402	O	|	|	|	1.46
35.917	0.00	0.81	1.397	O	|	|	|	1.46
36.000	0.00	0.81	1.391	O	|	|	|	1.46
36.083	0.00	0.81	1.385	O	|	|	|	1.46
36.167	0.00	0.81	1.380	O	|	|	|	1.45
36.250	0.00	0.81	1.374	O	|	|	|	1.45
36.333	0.00	0.81	1.369	O	|	|	|	1.45
36.417	0.00	0.81	1.363	O	|	|	|	1.45
36.500	0.00	0.80	1.358	O	|	|	|	1.44
36.583	0.00	0.80	1.352	O	|	|	|	1.44
36.667	0.00	0.80	1.347	O	|	|	|	1.44
36.750	0.00	0.80	1.341	O	|	|	|	1.43
36.833	0.00	0.80	1.336	O	|	|	|	1.43

36.917	0.00	0.80	1.330	O	|	|	|	|	1.43
37.000	0.00	0.80	1.325	O	|	|	|	|	1.43
37.083	0.00	0.80	1.319	O	|	|	|	|	1.42
37.167	0.00	0.80	1.314	O	|	|	|	|	1.42
37.250	0.00	0.80	1.308	O	|	|	|	|	1.42
37.333	0.00	0.80	1.303	O	|	|	|	|	1.42
37.417	0.00	0.79	1.297	O	|	|	|	|	1.41
37.500	0.00	0.79	1.292	O	|	|	|	|	1.41
37.583	0.00	0.79	1.286	O	|	|	|	|	1.41
37.667	0.00	0.79	1.281	O	|	|	|	|	1.41
37.750	0.00	0.79	1.275	O	|	|	|	|	1.40
37.833	0.00	0.79	1.270	O	|	|	|	|	1.40
37.917	0.00	0.79	1.264	O	|	|	|	|	1.40
38.000	0.00	0.79	1.259	O	|	|	|	|	1.40
38.083	0.00	0.79	1.253	O	|	|	|	|	1.39
38.167	0.00	0.79	1.248	O	|	|	|	|	1.39
38.250	0.00	0.79	1.243	O	|	|	|	|	1.39
38.333	0.00	0.78	1.237	O	|	|	|	|	1.39
38.417	0.00	0.78	1.232	O	|	|	|	|	1.38
38.500	0.00	0.78	1.226	O	|	|	|	|	1.38
38.583	0.00	0.78	1.221	O	|	|	|	|	1.38
38.667	0.00	0.78	1.216	O	|	|	|	|	1.37
38.750	0.00	0.78	1.210	O	|	|	|	|	1.37
38.833	0.00	0.78	1.205	O	|	|	|	|	1.37
38.917	0.00	0.78	1.200	O	|	|	|	|	1.37
39.000	0.00	0.78	1.194	O	|	|	|	|	1.36
39.083	0.00	0.78	1.189	O	|	|	|	|	1.36
39.167	0.00	0.78	1.183	O	|	|	|	|	1.36
39.250	0.00	0.78	1.178	O	|	|	|	|	1.36
39.333	0.00	0.77	1.173	O	|	|	|	|	1.35
39.417	0.00	0.77	1.167	O	|	|	|	|	1.35
39.500	0.00	0.77	1.162	O	|	|	|	|	1.35
39.583	0.00	0.77	1.157	O	|	|	|	|	1.35
39.667	0.00	0.77	1.152	O	|	|	|	|	1.34
39.750	0.00	0.77	1.146	O	|	|	|	|	1.34
39.833	0.00	0.77	1.141	O	|	|	|	|	1.34
39.917	0.00	0.77	1.136	O	|	|	|	|	1.34
40.000	0.00	0.77	1.130	O	|	|	|	|	1.33
40.083	0.00	0.77	1.125	O	|	|	|	|	1.33
40.167	0.00	0.77	1.120	O	|	|	|	|	1.33
40.250	0.00	0.77	1.114	O	|	|	|	|	1.33
40.333	0.00	0.76	1.109	O	|	|	|	|	1.32
40.417	0.00	0.76	1.104	O	|	|	|	|	1.32
40.500	0.00	0.76	1.099	O	|	|	|	|	1.32
40.583	0.00	0.76	1.093	O	|	|	|	|	1.32
40.667	0.00	0.76	1.088	O	|	|	|	|	1.31
40.750	0.00	0.76	1.083	O	|	|	|	|	1.31
40.833	0.00	0.76	1.078	O	|	|	|	|	1.31
40.917	0.00	0.76	1.073	O	|	|	|	|	1.31
41.000	0.00	0.76	1.067	O	|	|	|	|	1.30
41.083	0.00	0.76	1.062	O	|	|	|	|	1.30
41.167	0.00	0.76	1.057	O	|	|	|	|	1.30
41.250	0.00	0.75	1.052	O	|	|	|	|	1.30
41.333	0.00	0.75	1.046	O	|	|	|	|	1.29
41.417	0.00	0.75	1.041	O	|	|	|	|	1.29
41.500	0.00	0.75	1.036	O	|	|	|	|	1.29
41.583	0.00	0.75	1.031	O	|	|	|	|	1.29
41.667	0.00	0.75	1.026	O	|	|	|	|	1.28
41.750	0.00	0.75	1.021	O	|	|	|	|	1.28
41.833	0.00	0.75	1.015	O	|	|	|	|	1.28
41.917	0.00	0.75	1.010	O	|	|	|	|	1.28
42.000	0.00	0.75	1.005	O	|	|	|	|	1.27
42.083	0.00	0.75	1.000	O	|	|	|	|	1.27
42.167	0.00	0.75	0.995	O	|	|	|	|	1.27
42.250	0.00	0.74	0.990	O	|	|	|	|	1.27
42.333	0.00	0.74	0.985	O	|	|	|	|	1.26
42.417	0.00	0.74	0.979	O	|	|	|	|	1.26
42.500	0.00	0.74	0.974	O	|	|	|	|	1.26
42.583	0.00	0.74	0.969	O	|	|	|	|	1.26
42.667	0.00	0.74	0.964	O	|	|	|	|	1.25
42.750	0.00	0.74	0.959	O	|	|	|	|	1.25
42.833	0.00	0.74	0.954	O	|	|	|	|	1.25
42.917	0.00	0.74	0.949	O	|	|	|	|	1.25
43.000	0.00	0.74	0.944	O	|	|	|	|	1.25
43.083	0.00	0.74	0.939	O	|	|	|	|	1.24

43.167	0.00	0.74	0.934	O					1.24
43.250	0.00	0.73	0.929	O					1.24
43.333	0.00	0.73	0.924	O					1.24
43.417	0.00	0.73	0.918	O					1.23
43.500	0.00	0.73	0.913	O					1.23
43.583	0.00	0.73	0.908	O					1.23
43.667	0.00	0.73	0.903	O					1.23
43.750	0.00	0.73	0.898	O					1.22
43.833	0.00	0.73	0.893	O					1.22
43.917	0.00	0.73	0.888	O					1.22
44.000	0.00	0.73	0.883	O					1.22
44.083	0.00	0.73	0.878	O					1.21
44.167	0.00	0.73	0.873	O					1.21
44.250	0.00	0.73	0.868	O					1.21
44.333	0.00	0.72	0.863	O					1.21
44.417	0.00	0.72	0.858	O					1.20
44.500	0.00	0.72	0.853	O					1.20
44.583	0.00	0.72	0.848	O					1.20
44.667	0.00	0.72	0.843	O					1.20
44.750	0.00	0.72	0.838	O					1.19
44.833	0.00	0.72	0.833	O					1.19
44.917	0.00	0.72	0.828	O					1.19
45.000	0.00	0.72	0.824	O					1.19
45.083	0.00	0.72	0.819	O					1.19
45.167	0.00	0.72	0.814	O					1.18
45.250	0.00	0.72	0.809	O					1.18
45.333	0.00	0.71	0.804	O					1.18
45.417	0.00	0.71	0.799	O					1.18
45.500	0.00	0.71	0.794	O					1.17
45.583	0.00	0.71	0.789	O					1.17
45.667	0.00	0.71	0.784	O					1.17
45.750	0.00	0.71	0.779	O					1.17
45.833	0.00	0.71	0.774	O					1.16
45.917	0.00	0.71	0.769	O					1.16
46.000	0.00	0.71	0.765	O					1.16
46.083	0.00	0.71	0.760	O					1.16
46.167	0.00	0.71	0.755	O					1.15
46.250	0.00	0.71	0.750	O					1.15
46.333	0.00	0.71	0.745	O					1.15
46.417	0.00	0.70	0.740	O					1.15
46.500	0.00	0.70	0.735	O					1.15
46.583	0.00	0.70	0.731	O					1.14
46.667	0.00	0.70	0.726	O					1.14
46.750	0.00	0.70	0.721	O					1.14
46.833	0.00	0.70	0.716	O					1.14
46.917	0.00	0.70	0.711	O					1.13
47.000	0.00	0.70	0.706	O					1.13
47.083	0.00	0.70	0.702	O					1.13
47.167	0.00	0.70	0.697	O					1.13
47.250	0.00	0.70	0.692	O					1.13
47.333	0.00	0.70	0.687	O					1.12
47.417	0.00	0.69	0.682	O					1.12
47.500	0.00	0.69	0.678	O					1.12
47.583	0.00	0.69	0.673	O					1.12
47.667	0.00	0.69	0.668	O					1.11
47.750	0.00	0.69	0.663	O					1.11
47.833	0.00	0.69	0.659	O					1.11
47.917	0.00	0.69	0.654	O					1.11
48.000	0.00	0.69	0.649	O					1.10
48.083	0.00	0.69	0.644	O					1.10
48.167	0.00	0.69	0.640	O					1.10
48.250	0.00	0.69	0.635	O					1.10
48.333	0.00	0.69	0.630	O					1.10
48.417	0.00	0.69	0.625	O					1.09
48.500	0.00	0.68	0.621	O					1.09
48.583	0.00	0.68	0.616	O					1.09
48.667	0.00	0.68	0.611	O					1.09
48.750	0.00	0.68	0.607	O					1.08
48.833	0.00	0.68	0.602	O					1.08
48.917	0.00	0.68	0.597	O					1.08
49.000	0.00	0.68	0.592	O					1.08
49.083	0.00	0.68	0.588	O					1.08
49.167	0.00	0.68	0.583	O					1.07
49.250	0.00	0.68	0.578	O					1.07
49.333	0.00	0.68	0.574	O					1.07

49.417	0.00	0.68	0.569	O	|	|	|	|	1.07
49.500	0.00	0.68	0.564	O	|	|	|	|	1.06
49.583	0.00	0.68	0.560	O	|	|	|	|	1.06
49.667	0.00	0.67	0.555	O	|	|	|	|	1.06
49.750	0.00	0.67	0.551	O	|	|	|	|	1.06
49.833	0.00	0.67	0.546	O	|	|	|	|	1.06
49.917	0.00	0.67	0.541	O	|	|	|	|	1.05
50.000	0.00	0.67	0.537	O	|	|	|	|	1.05
50.083	0.00	0.67	0.532	O	|	|	|	|	1.05
50.167	0.00	0.67	0.527	O	|	|	|	|	1.05
50.250	0.00	0.67	0.523	O	|	|	|	|	1.04
50.333	0.00	0.67	0.518	O	|	|	|	|	1.04
50.417	0.00	0.67	0.514	O	|	|	|	|	1.04
50.500	0.00	0.67	0.509	O	|	|	|	|	1.04
50.583	0.00	0.67	0.504	O	|	|	|	|	1.04
50.667	0.00	0.67	0.500	O	|	|	|	|	1.03
50.750	0.00	0.66	0.495	O	|	|	|	|	1.03
50.833	0.00	0.66	0.491	O	|	|	|	|	1.03
50.917	0.00	0.66	0.486	O	|	|	|	|	1.03
51.000	0.00	0.66	0.482	O	|	|	|	|	1.02
51.083	0.00	0.66	0.477	O	|	|	|	|	1.02
51.167	0.00	0.66	0.472	O	|	|	|	|	1.02
51.250	0.00	0.66	0.468	O	|	|	|	|	1.02
51.333	0.00	0.66	0.463	O	|	|	|	|	1.02
51.417	0.00	0.66	0.459	O	|	|	|	|	1.01
51.500	0.00	0.66	0.454	O	|	|	|	|	1.01
51.583	0.00	0.66	0.450	O	|	|	|	|	1.01
51.667	0.00	0.66	0.445	O	|	|	|	|	1.01
51.750	0.00	0.66	0.441	O	|	|	|	|	1.01
51.833	0.00	0.65	0.436	O	|	|	|	|	1.00
51.917	0.00	0.65	0.432	O	|	|	|	|	1.00
52.000	0.00	0.65	0.427	O	|	|	|	|	1.00
52.083	0.00	0.65	0.423	O	|	|	|	|	0.99
52.167	0.00	0.65	0.418	O	|	|	|	|	0.98
52.250	0.00	0.64	0.414	O	|	|	|	|	0.98
52.333	0.00	0.64	0.409	O	|	|	|	|	0.97
52.417	0.00	0.64	0.405	O	|	|	|	|	0.97
52.500	0.00	0.64	0.401	O	|	|	|	|	0.96
52.583	0.00	0.63	0.396	O	|	|	|	|	0.96
52.667	0.00	0.63	0.392	O	|	|	|	|	0.95
52.750	0.00	0.63	0.387	O	|	|	|	|	0.94
52.833	0.00	0.63	0.383	O	|	|	|	|	0.94
52.917	0.00	0.62	0.379	O	|	|	|	|	0.93
53.000	0.00	0.62	0.375	O	|	|	|	|	0.93
53.083	0.00	0.62	0.370	O	|	|	|	|	0.92
53.167	0.00	0.61	0.366	O	|	|	|	|	0.92
53.250	0.00	0.61	0.362	O	|	|	|	|	0.91
53.333	0.00	0.61	0.358	O	|	|	|	|	0.90
53.417	0.00	0.61	0.353	O	|	|	|	|	0.90
53.500	0.00	0.60	0.349	O	|	|	|	|	0.89
53.583	0.00	0.60	0.345	O	|	|	|	|	0.89
53.667	0.00	0.60	0.341	O	|	|	|	|	0.88
53.750	0.00	0.60	0.337	O	|	|	|	|	0.88
53.833	0.00	0.59	0.333	O	|	|	|	|	0.87
53.917	0.00	0.59	0.329	O	|	|	|	|	0.87
54.000	0.00	0.59	0.325	O	|	|	|	|	0.86
54.083	0.00	0.59	0.321	O	|	|	|	|	0.85
54.167	0.00	0.58	0.317	O	|	|	|	|	0.85
54.250	0.00	0.58	0.313	O	|	|	|	|	0.84
54.333	0.00	0.58	0.309	O	|	|	|	|	0.84
54.417	0.00	0.58	0.305	O	|	|	|	|	0.83
54.500	0.00	0.57	0.301	O	|	|	|	|	0.83
54.583	0.00	0.57	0.297	O	|	|	|	|	0.82
54.667	0.00	0.57	0.293	O	|	|	|	|	0.82
54.750	0.00	0.57	0.289	O	|	|	|	|	0.81
54.833	0.00	0.56	0.285	O	|	|	|	|	0.81
54.917	0.00	0.56	0.281	O	|	|	|	|	0.80
55.000	0.00	0.56	0.277	O	|	|	|	|	0.80
55.083	0.00	0.56	0.273	O	|	|	|	|	0.79
55.167	0.00	0.55	0.270	O	|	|	|	|	0.79
55.250	0.00	0.55	0.266	O	|	|	|	|	0.78
55.333	0.00	0.55	0.262	O	|	|	|	|	0.78
55.417	0.00	0.55	0.258	O	|	|	|	|	0.77
55.500	0.00	0.55	0.254	O	|	|	|	|	0.77
55.583	0.00	0.54	0.251	O	|	|	|	|	0.76

55.667	0.00	0.54	0.247	O	|	|	|	|	0.76
55.750	0.00	0.54	0.243	O	|	|	|	|	0.75
55.833	0.00	0.54	0.239	O	|	|	|	|	0.75
55.917	0.00	0.53	0.236	O	|	|	|	|	0.74
56.000	0.00	0.53	0.232	O	|	|	|	|	0.74
56.083	0.00	0.53	0.228	O	|	|	|	|	0.73
56.167	0.00	0.53	0.225	O	|	|	|	|	0.73
56.250	0.00	0.52	0.221	O	|	|	|	|	0.72
56.333	0.00	0.52	0.218	O	|	|	|	|	0.72
56.417	0.00	0.52	0.214	O	|	|	|	|	0.71
56.500	0.00	0.52	0.210	O	|	|	|	|	0.71
56.583	0.00	0.52	0.207	O	|	|	|	|	0.70
56.667	0.00	0.51	0.203	O	|	|	|	|	0.70
56.750	0.00	0.51	0.200	O	|	|	|	|	0.69
56.833	0.00	0.51	0.196	O	|	|	|	|	0.69
56.917	0.00	0.51	0.193	O	|	|	|	|	0.69
57.000	0.00	0.51	0.189	O	|	|	|	|	0.68
57.083	0.00	0.50	0.186	O	|	|	|	|	0.68
57.167	0.00	0.50	0.182	O	|	|	|	|	0.67
57.250	0.00	0.50	0.179	O	|	|	|	|	0.67
57.333	0.00	0.50	0.175	O	|	|	|	|	0.66
57.417	0.00	0.49	0.172	O	|	|	|	|	0.66
57.500	0.00	0.49	0.169	O	|	|	|	|	0.65
57.583	0.00	0.49	0.165	O	|	|	|	|	0.65
57.667	0.00	0.49	0.162	O	|	|	|	|	0.64
57.750	0.00	0.49	0.159	O	|	|	|	|	0.64
57.833	0.00	0.48	0.155	O	|	|	|	|	0.64
57.917	0.00	0.48	0.152	O	|	|	|	|	0.63
58.000	0.00	0.48	0.149	O	|	|	|	|	0.63
58.083	0.00	0.48	0.145	O	|	|	|	|	0.62
58.167	0.00	0.48	0.142	O	|	|	|	|	0.62
58.250	0.00	0.47	0.139	O	|	|	|	|	0.61
58.333	0.00	0.47	0.135	O	|	|	|	|	0.61
58.417	0.00	0.47	0.132	O	|	|	|	|	0.61
58.500	0.00	0.47	0.129	O	|	|	|	|	0.60
58.583	0.00	0.47	0.126	O	|	|	|	|	0.60
58.667	0.00	0.46	0.123	O	|	|	|	|	0.59
58.750	0.00	0.46	0.119	O	|	|	|	|	0.59
58.833	0.00	0.46	0.116	O	|	|	|	|	0.58
58.917	0.00	0.46	0.113	O	|	|	|	|	0.58
59.000	0.00	0.46	0.110	O	|	|	|	|	0.58
59.083	0.00	0.45	0.107	O	|	|	|	|	0.57
59.167	0.00	0.45	0.104	O	|	|	|	|	0.57
59.250	0.00	0.45	0.101	O	|	|	|	|	0.56
59.333	0.00	0.45	0.097	O	|	|	|	|	0.56
59.417	0.00	0.45	0.094	O	|	|	|	|	0.55
59.500	0.00	0.44	0.091	O	|	|	|	|	0.55
59.583	0.00	0.44	0.088	O	|	|	|	|	0.55
59.667	0.00	0.44	0.085	O	|	|	|	|	0.54
59.750	0.00	0.44	0.082	O	|	|	|	|	0.54
59.833	0.00	0.44	0.079	O	|	|	|	|	0.53
59.917	0.00	0.44	0.076	O	|	|	|	|	0.53
60.000	0.00	0.43	0.073	O	|	|	|	|	0.53
60.083	0.00	0.43	0.070	O	|	|	|	|	0.52
60.167	0.00	0.43	0.067	O	|	|	|	|	0.52
60.250	0.00	0.43	0.064	O	|	|	|	|	0.51
60.333	0.00	0.43	0.061	O	|	|	|	|	0.51
60.417	0.00	0.42	0.058	O	|	|	|	|	0.51
60.500	0.00	0.42	0.055	O	|	|	|	|	0.50
60.583	0.00	0.42	0.053	O	|	|	|	|	0.50
60.667	0.00	0.40	0.050	O	|	|	|	|	0.48
60.750	0.00	0.37	0.047	O	|	|	|	|	0.45
60.833	0.00	0.35	0.045	O	|	|	|	|	0.44
60.917	0.00	0.34	0.042	O	|	|	|	|	0.42
61.000	0.00	0.32	0.040	O	|	|	|	|	0.40
61.083	0.00	0.30	0.038	O	|	|	|	|	0.38
61.167	0.00	0.29	0.036	O	|	|	|	|	0.37
61.250	0.00	0.27	0.034	O	|	|	|	|	0.35
61.333	0.00	0.26	0.032	O	|	|	|	|	0.34
61.417	0.00	0.24	0.030	O	|	|	|	|	0.33
61.500	0.00	0.23	0.029	O	|	|	|	|	0.31
61.583	0.00	0.22	0.027	O	|	|	|	|	0.30
61.667	0.00	0.21	0.026	O	|	|	|	|	0.29
61.750	0.00	0.19	0.024	O	|	|	|	|	0.28
61.833	0.00	0.18	0.023	O	|	|	|	|	0.27

61.917	0.00	0.17	0.022	O	|	|	|	|	0.26
62.000	0.00	0.17	0.021	O	|	|	|	|	0.25
62.083	0.00	0.16	0.020	O	|	|	|	|	0.24
62.167	0.00	0.15	0.019	O	|	|	|	|	0.23
62.250	0.00	0.14	0.018	O	|	|	|	|	0.23
62.333	0.00	0.13	0.017	O	|	|	|	|	0.22
62.417	0.00	0.13	0.016	O	|	|	|	|	0.21
62.500	0.00	0.12	0.015	O	|	|	|	|	0.21
62.583	0.00	0.11	0.014	O	|	|	|	|	0.20
62.667	0.00	0.11	0.013	O	|	|	|	|	0.19
62.750	0.00	0.10	0.013	O	|	|	|	|	0.19
62.833	0.00	0.10	0.012	O	|	|	|	|	0.18
62.917	0.00	0.09	0.011	O	|	|	|	|	0.18
63.000	0.00	0.09	0.011	O	|	|	|	|	0.17
63.083	0.00	0.08	0.010	O	|	|	|	|	0.17
63.167	0.00	0.08	0.010	O	|	|	|	|	0.17
63.250	0.00	0.07	0.009	O	|	|	|	|	0.16
63.333	0.00	0.07	0.008	O	|	|	|	|	0.16
63.417	0.00	0.07	0.008	O	|	|	|	|	0.15
63.500	0.00	0.06	0.008	O	|	|	|	|	0.15
63.583	0.00	0.06	0.007	O	|	|	|	|	0.15
63.667	0.00	0.06	0.007	O	|	|	|	|	0.14
63.750	0.00	0.05	0.006	O	|	|	|	|	0.14
63.833	0.00	0.05	0.006	O	|	|	|	|	0.14
63.917	0.00	0.05	0.006	O	|	|	|	|	0.14
64.000	0.00	0.04	0.005	O	|	|	|	|	0.13
64.083	0.00	0.04	0.005	O	|	|	|	|	0.13
64.167	0.00	0.04	0.005	O	|	|	|	|	0.13
64.250	0.00	0.04	0.005	O	|	|	|	|	0.13
64.333	0.00	0.04	0.004	O	|	|	|	|	0.13
64.417	0.00	0.03	0.004	O	|	|	|	|	0.12
64.500	0.00	0.03	0.004	O	|	|	|	|	0.12
64.583	0.00	0.03	0.004	O	|	|	|	|	0.12
64.667	0.00	0.03	0.003	O	|	|	|	|	0.12
64.750	0.00	0.03	0.003	O	|	|	|	|	0.12
64.833	0.00	0.03	0.003	O	|	|	|	|	0.12
64.917	0.00	0.02	0.003	O	|	|	|	|	0.11
65.000	0.00	0.02	0.003	O	|	|	|	|	0.11
65.083	0.00	0.02	0.003	O	|	|	|	|	0.11
65.167	0.00	0.02	0.002	O	|	|	|	|	0.11
65.250	0.00	0.02	0.002	O	|	|	|	|	0.11
65.333	0.00	0.02	0.002	O	|	|	|	|	0.11
65.417	0.00	0.02	0.002	O	|	|	|	|	0.11
65.500	0.00	0.02	0.002	O	|	|	|	|	0.11
65.583	0.00	0.02	0.002	O	|	|	|	|	0.11
65.667	0.00	0.02	0.002	O	|	|	|	|	0.10
65.750	0.00	0.01	0.002	O	|	|	|	|	0.10
65.833	0.00	0.01	0.001	O	|	|	|	|	0.10
65.917	0.00	0.01	0.001	O	|	|	|	|	0.10
66.000	0.00	0.01	0.001	O	|	|	|	|	0.10
66.083	0.00	0.01	0.001	O	|	|	|	|	0.10
66.167	0.00	0.01	0.001	O	|	|	|	|	0.10
66.250	0.00	0.01	0.001	O	|	|	|	|	0.10
66.333	0.00	0.01	0.001	O	|	|	|	|	0.10
66.417	0.00	0.01	0.001	O	|	|	|	|	0.09
66.500	0.00	0.01	0.001	O	|	|	|	|	0.08
66.583	0.00	0.01	0.001	O	|	|	|	|	0.08
66.667	0.00	0.01	0.001	O	|	|	|	|	0.07
66.750	0.00	0.01	0.001	O	|	|	|	|	0.07
66.833	0.00	0.01	0.001	O	|	|	|	|	0.06
66.917	0.00	0.01	0.001	O	|	|	|	|	0.06
67.000	0.00	0.01	0.001	O	|	|	|	|	0.06
67.083	0.00	0.01	0.001	O	|	|	|	|	0.05
67.167	0.00	0.00	0.000	O	|	|	|	|	0.05
67.250	0.00	0.00	0.000	O	|	|	|	|	0.05
67.333	0.00	0.00	0.000	O	|	|	|	|	0.04
67.417	0.00	0.00	0.000	O	|	|	|	|	0.04
67.500	0.00	0.00	0.000	O	|	|	|	|	0.04
67.583	0.00	0.00	0.000	O	|	|	|	|	0.03
67.667	0.00	0.00	0.000	O	|	|	|	|	0.03
67.750	0.00	0.00	0.000	O	|	|	|	|	0.03
67.833	0.00	0.00	0.000	O	|	|	|	|	0.03
67.917	0.00	0.00	0.000	O	|	|	|	|	0.03
68.000	0.00	0.00	0.000	O	|	|	|	|	0.02
68.083	0.00	0.00	0.000	O	|	|	|	|	0.02

68.167	0.00	0.00	0.000	O	|	|	|	|	0.02
68.250	0.00	0.00	0.000	O	|	|	|	|	0.02
68.333	0.00	0.00	0.000	O	|	|	|	|	0.02
68.417	0.00	0.00	0.000	O	|	|	|	|	0.02
68.500	0.00	0.00	0.000	O	|	|	|	|	0.02
68.583	0.00	0.00	0.000	O	|	|	|	|	0.02
68.667	0.00	0.00	0.000	O	|	|	|	|	0.01
68.750	0.00	0.00	0.000	O	|	|	|	|	0.01
68.833	0.00	0.00	0.000	O	|	|	|	|	0.01
68.917	0.00	0.00	0.000	O	|	|	|	|	0.01
69.000	0.00	0.00	0.000	O	|	|	|	|	0.01
69.083	0.00	0.00	0.000	O	|	|	|	|	0.01

**********HYDROGRAPH DATA**********

Number of intervals = 829
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 9.486 (CFS)
Total volume = 6.162 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

BASIN ROUTING
DMA B
PROPOSED CONDITIONS
100-YEAR 3-HOUR

FLOOD HYDROGRAPH ROUTING PROGRAM
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Study date: 10/22/14

14-0213 SHOPOFF
BASIN ROUTING
DMA B
100-YEAR 3-HOUR

Program License Serial Number 4010

********** HYDROGRAPH INFORMATION **********

From study/file name: BPROP3100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 43
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 114.975 (CFS)
Total volume = 9.895 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 43
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.100	0.001	0.010	0.001	0.001
0.500	0.053	0.421	0.052	0.054
1.000	0.430	0.654	0.428	0.432
1.500	1.478	0.824	1.475	1.481
1.900	2.842	0.937	2.839	2.845
2.000	3.240	0.964	3.237	3.243
2.400	4.909	5.372	4.891	4.927
2.500	5.335	6.288	5.313	5.357
3.000	7.513	19.930	7.444	7.582
3.100	7.959	22.013	7.883	8.035
3.500	9.773	35.542	9.651	9.895
4.000	12.116	58.286	11.915	12.317
4.500	14.544	85.412	14.250	14.838
5.000	17.059	116.189	16.659	17.459
5.500	19.662	150.189	19.145	20.179
6.000	22.356	187.115	21.712	23.000
6.200	23.460	202.653	22.762	24.158

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	28.7	57.49	86.23	114.97	Depth (Ft.)
0.083	2.25	0.06	0.008	O					0.15
0.167	11.17	0.41	0.052	O I					0.49
0.250	13.71	0.47	0.135	O I					0.61
0.333	14.03	0.53	0.227	O I					0.73
0.417	17.43	0.59	0.331	O I					0.87
0.500	19.21	0.66	0.453	O I					1.01
0.583	21.72	0.68	0.590	O I					1.08
0.667	20.77	0.70	0.731	O I					1.14
0.750	22.97	0.73	0.877	O I					1.21
0.833	22.98	0.75	1.030	O I					1.29
0.917	20.81	0.77	1.175	O I					1.36
1.000	21.37	0.80	1.315	O I					1.42
1.083	24.03	0.82	1.466	O I					1.49
1.167	28.24	0.84	1.640	O I					1.55
1.250	29.69	0.85	1.834	O I					1.60
1.333	29.80	0.87	2.033	O I					1.66
1.417	29.56	0.89	2.231	O I					1.72
1.500	34.65	0.90	2.446	O I					1.78
1.583	36.47	0.92	2.685	O I					1.85
1.667	35.42	0.94	2.926	O I					1.92
1.750	38.91	0.96	3.175	O I					1.98
1.833	44.49	1.53	3.454	O I					2.05
1.917	44.36	2.30	3.747	O I					2.12
2.000	43.02	3.05	4.029	O I					2.19
2.083	43.57	3.77	4.304	O I					2.25
2.167	47.04	4.52	4.587	O I					2.32
2.250	59.11	5.39	4.919	O I					2.40
2.333	66.34	6.24	5.311	O I					2.49
2.417	64.13	8.63	5.709	O I					2.59
2.500	91.85	11.56	6.176	O I					2.69
2.583	106.98	15.27	6.769	O I					2.83
2.667	114.97	19.31	7.414	O I					2.98
2.750	90.04	22.15	7.977	O I					3.10
2.833	49.27	24.53	8.296	O I					3.17
2.917	33.65	25.38	8.410	O I					3.20
3.000	24.85	25.57	8.436	O I					3.21
3.083	11.32	25.19	8.386	O I					3.19
3.167	4.26	24.32	8.269	O I					3.17
3.250	1.47	23.25	8.125	O I					3.14
3.333	0.51	22.13	7.975	O I					3.10
3.417	0.21	21.40	7.828	O I					3.07
3.500	0.06	20.73	7.684	O I					3.04
3.583	0.01	20.07	7.543	O I					3.01
3.667	0.00	19.27	7.408	O I					2.98
3.750	0.00	18.46	7.278	O I					2.95
3.833	0.00	17.68	7.154	O I					2.92
3.917	0.00	16.93	7.034	O I					2.89
4.000	0.00	16.22	6.920	O I					2.86
4.083	0.00	15.53	6.811	O I					2.84
4.167	0.00	14.88	6.706	O I					2.81
4.250	0.00	14.25	6.606	O I					2.79
4.333	0.00	13.65	6.510	O I					2.77
4.417	0.00	13.07	6.418	O I					2.75
4.500	0.00	12.52	6.330	O I					2.73
4.583	0.00	11.99	6.245	O I					2.71
4.667	0.00	11.48	6.165	O I					2.69
4.750	0.00	11.00	6.087	O I					2.67
4.833	0.00	10.53	6.013	O I					2.66
4.917	0.00	10.09	5.942	O I					2.64
5.000	0.00	9.66	5.874	O I					2.62
5.083	0.00	9.26	5.809	O I					2.61
5.167	0.00	8.86	5.746	O I					2.59
5.250	0.00	8.49	5.687	O I					2.58
5.333	0.00	8.13	5.629	O I					2.57
5.417	0.00	7.79	5.575	O I					2.55
5.500	0.00	7.46	5.522	O I					2.54
5.583	0.00	7.14	5.472	O I					2.53

5.667	0.00	6.84	5.424	IO					2.52
5.750	0.00	6.55	5.377	IO					2.51
5.833	0.00	6.28	5.333	IO					2.50
5.917	0.00	6.19	5.290	IO					2.49
6.000	0.00	6.10	5.248	IO					2.48
6.083	0.00	6.01	5.206	IO					2.47
6.167	0.00	5.92	5.165	IO					2.46
6.250	0.00	5.84	5.125	IO					2.45
6.333	0.00	5.75	5.085	IO					2.44
6.417	0.00	5.67	5.045	IO					2.43
6.500	0.00	5.58	5.007	IO					2.42
6.583	0.00	5.50	4.969	IO					2.41
6.667	0.00	5.42	4.931	IO					2.41
6.750	0.00	5.33	4.894	IO					2.40
6.833	0.00	5.24	4.858	IO					2.39
6.917	0.00	5.14	4.822	IO					2.38
7.000	0.00	5.05	4.787	IO					2.37
7.083	0.00	4.96	4.752	IO					2.36
7.167	0.00	4.87	4.718	IO					2.35
7.250	0.00	4.78	4.685	IO					2.35
7.333	0.00	4.69	4.653	IO					2.34
7.417	0.00	4.61	4.621	IO					2.33
7.500	0.00	4.53	4.589	IO					2.32
7.583	0.00	4.45	4.558	IO					2.32
7.667	0.00	4.37	4.528	IO					2.31
7.750	0.00	4.29	4.498	IO					2.30
7.833	0.00	4.21	4.469	IO					2.29
7.917	0.00	4.13	4.440	IO					2.29
8.000	0.00	4.06	4.412	IO					2.28
8.083	0.00	3.99	4.384	IO					2.27
8.167	0.00	3.91	4.357	IO					2.27
8.250	0.00	3.84	4.330	IO					2.26
8.333	0.00	3.77	4.304	IO					2.25
8.417	0.00	3.71	4.278	IO					2.25
8.500	0.00	3.64	4.253	IO					2.24
8.583	0.00	3.57	4.228	O					2.24
8.667	0.00	3.51	4.204	O					2.23
8.750	0.00	3.45	4.180	O					2.23
8.833	0.00	3.38	4.156	O					2.22
8.917	0.00	3.32	4.133	O					2.21
9.000	0.00	3.26	4.110	O					2.21
9.083	0.00	3.20	4.088	O					2.20
9.167	0.00	3.15	4.066	O					2.20
9.250	0.00	3.09	4.045	O					2.19
9.333	0.00	3.03	4.024	O					2.19
9.417	0.00	2.98	4.003	O					2.18
9.500	0.00	2.93	3.983	O					2.18
9.583	0.00	2.87	3.963	O					2.17
9.667	0.00	2.82	3.943	O					2.17
9.750	0.00	2.77	3.924	O					2.16
9.833	0.00	2.72	3.905	O					2.16
9.917	0.00	2.67	3.886	O					2.15
10.000	0.00	2.62	3.868	O					2.15
10.083	0.00	2.58	3.850	O					2.15
10.167	0.00	2.53	3.833	O					2.14
10.250	0.00	2.48	3.815	O					2.14
10.333	0.00	2.44	3.798	O					2.13
10.417	0.00	2.40	3.782	O					2.13
10.500	0.00	2.35	3.765	O					2.13
10.583	0.00	2.31	3.749	O					2.12
10.667	0.00	2.27	3.734	O					2.12
10.750	0.00	2.23	3.718	O					2.11
10.833	0.00	2.19	3.703	O					2.11
10.917	0.00	2.15	3.688	O					2.11
11.000	0.00	2.11	3.673	O					2.10
11.083	0.00	2.07	3.659	O					2.10
11.167	0.00	2.03	3.645	O					2.10
11.250	0.00	2.00	3.631	O					2.09
11.333	0.00	1.96	3.617	O					2.09
11.417	0.00	1.93	3.604	O					2.09
11.500	0.00	1.89	3.591	O					2.08
11.583	0.00	1.86	3.578	O					2.08
11.667	0.00	1.82	3.565	O					2.08
11.750	0.00	1.79	3.553	O					2.07
11.833	0.00	1.76	3.541	O					2.07

11.917	0.00	1.73	3.529	O	|	|	|	|	2.07
12.000	0.00	1.70	3.517	O	|	|	|	|	2.07
12.083	0.00	1.66	3.505	O	|	|	|	|	2.06
12.167	0.00	1.63	3.494	O	|	|	|	|	2.06
12.250	0.00	1.61	3.483	O	|	|	|	|	2.06
12.333	0.00	1.58	3.472	O	|	|	|	|	2.06
12.417	0.00	1.55	3.461	O	|	|	|	|	2.05
12.500	0.00	1.52	3.450	O	|	|	|	|	2.05
12.583	0.00	1.49	3.440	O	|	|	|	|	2.05
12.667	0.00	1.47	3.430	O	|	|	|	|	2.05
12.750	0.00	1.44	3.420	O	|	|	|	|	2.04
12.833	0.00	1.41	3.410	O	|	|	|	|	2.04
12.917	0.00	1.39	3.400	O	|	|	|	|	2.04
13.000	0.00	1.36	3.391	O	|	|	|	|	2.04
13.083	0.00	1.34	3.382	O	|	|	|	|	2.03
13.167	0.00	1.31	3.373	O	|	|	|	|	2.03
13.250	0.00	1.29	3.364	O	|	|	|	|	2.03
13.333	0.00	1.27	3.355	O	|	|	|	|	2.03
13.417	0.00	1.24	3.346	O	|	|	|	|	2.03
13.500	0.00	1.22	3.338	O	|	|	|	|	2.02
13.583	0.00	1.20	3.329	O	|	|	|	|	2.02
13.667	0.00	1.18	3.321	O	|	|	|	|	2.02
13.750	0.00	1.16	3.313	O	|	|	|	|	2.02
13.833	0.00	1.14	3.305	O	|	|	|	|	2.02
13.917	0.00	1.12	3.297	O	|	|	|	|	2.01
14.000	0.00	1.10	3.290	O	|	|	|	|	2.01
14.083	0.00	1.08	3.282	O	|	|	|	|	2.01
14.167	0.00	1.06	3.275	O	|	|	|	|	2.01
14.250	0.00	1.04	3.268	O	|	|	|	|	2.01
14.333	0.00	1.02	3.261	O	|	|	|	|	2.00
14.417	0.00	1.00	3.254	O	|	|	|	|	2.00
14.500	0.00	0.98	3.247	O	|	|	|	|	2.00
14.583	0.00	0.96	3.240	O	|	|	|	|	2.00
14.667	0.00	0.96	3.234	O	|	|	|	|	2.00
14.750	0.00	0.96	3.227	O	|	|	|	|	2.00
14.833	0.00	0.96	3.220	O	|	|	|	|	2.00
14.917	0.00	0.96	3.214	O	|	|	|	|	1.99
15.000	0.00	0.96	3.207	O	|	|	|	|	1.99
15.083	0.00	0.96	3.200	O	|	|	|	|	1.99
15.167	0.00	0.96	3.194	O	|	|	|	|	1.99
15.250	0.00	0.96	3.187	O	|	|	|	|	1.99
15.333	0.00	0.96	3.181	O	|	|	|	|	1.99
15.417	0.00	0.96	3.174	O	|	|	|	|	1.98
15.500	0.00	0.96	3.167	O	|	|	|	|	1.98
15.583	0.00	0.96	3.161	O	|	|	|	|	1.98
15.667	0.00	0.96	3.154	O	|	|	|	|	1.98
15.750	0.00	0.96	3.148	O	|	|	|	|	1.98
15.833	0.00	0.96	3.141	O	|	|	|	|	1.98
15.917	0.00	0.96	3.134	O	|	|	|	|	1.97
16.000	0.00	0.96	3.128	O	|	|	|	|	1.97
16.083	0.00	0.96	3.121	O	|	|	|	|	1.97
16.167	0.00	0.96	3.115	O	|	|	|	|	1.97
16.250	0.00	0.96	3.108	O	|	|	|	|	1.97
16.333	0.00	0.95	3.101	O	|	|	|	|	1.97
16.417	0.00	0.95	3.095	O	|	|	|	|	1.96
16.500	0.00	0.95	3.088	O	|	|	|	|	1.96
16.583	0.00	0.95	3.082	O	|	|	|	|	1.96
16.667	0.00	0.95	3.075	O	|	|	|	|	1.96
16.750	0.00	0.95	3.069	O	|	|	|	|	1.96
16.833	0.00	0.95	3.062	O	|	|	|	|	1.96
16.917	0.00	0.95	3.056	O	|	|	|	|	1.95
17.000	0.00	0.95	3.049	O	|	|	|	|	1.95
17.083	0.00	0.95	3.042	O	|	|	|	|	1.95
17.167	0.00	0.95	3.036	O	|	|	|	|	1.95
17.250	0.00	0.95	3.029	O	|	|	|	|	1.95
17.333	0.00	0.95	3.023	O	|	|	|	|	1.95
17.417	0.00	0.95	3.016	O	|	|	|	|	1.94
17.500	0.00	0.95	3.010	O	|	|	|	|	1.94
17.583	0.00	0.95	3.003	O	|	|	|	|	1.94
17.667	0.00	0.95	2.997	O	|	|	|	|	1.94
17.750	0.00	0.95	2.990	O	|	|	|	|	1.94
17.833	0.00	0.95	2.984	O	|	|	|	|	1.94
17.917	0.00	0.95	2.977	O	|	|	|	|	1.93
18.000	0.00	0.95	2.971	O	|	|	|	|	1.93
18.083	0.00	0.95	2.964	O	|	|	|	|	1.93

18.167	0.00	0.94	2.958	O	|	|	|	|	1.93
18.250	0.00	0.94	2.951	O	|	|	|	|	1.93
18.333	0.00	0.94	2.945	O	|	|	|	|	1.93
18.417	0.00	0.94	2.938	O	|	|	|	|	1.92
18.500	0.00	0.94	2.932	O	|	|	|	|	1.92
18.583	0.00	0.94	2.925	O	|	|	|	|	1.92
18.667	0.00	0.94	2.919	O	|	|	|	|	1.92
18.750	0.00	0.94	2.912	O	|	|	|	|	1.92
18.833	0.00	0.94	2.906	O	|	|	|	|	1.92
18.917	0.00	0.94	2.899	O	|	|	|	|	1.91
19.000	0.00	0.94	2.893	O	|	|	|	|	1.91
19.083	0.00	0.94	2.886	O	|	|	|	|	1.91
19.167	0.00	0.94	2.880	O	|	|	|	|	1.91
19.250	0.00	0.94	2.873	O	|	|	|	|	1.91
19.333	0.00	0.94	2.867	O	|	|	|	|	1.91
19.417	0.00	0.94	2.860	O	|	|	|	|	1.90
19.500	0.00	0.94	2.854	O	|	|	|	|	1.90
19.583	0.00	0.94	2.847	O	|	|	|	|	1.90
19.667	0.00	0.94	2.841	O	|	|	|	|	1.90
19.750	0.00	0.94	2.834	O	|	|	|	|	1.90
19.833	0.00	0.94	2.828	O	|	|	|	|	1.90
19.917	0.00	0.94	2.822	O	|	|	|	|	1.89
20.000	0.00	0.93	2.815	O	|	|	|	|	1.89
20.083	0.00	0.93	2.809	O	|	|	|	|	1.89
20.167	0.00	0.93	2.802	O	|	|	|	|	1.89
20.250	0.00	0.93	2.796	O	|	|	|	|	1.89
20.333	0.00	0.93	2.789	O	|	|	|	|	1.88
20.417	0.00	0.93	2.783	O	|	|	|	|	1.88
20.500	0.00	0.93	2.777	O	|	|	|	|	1.88
20.583	0.00	0.93	2.770	O	|	|	|	|	1.88
20.667	0.00	0.93	2.764	O	|	|	|	|	1.88
20.750	0.00	0.93	2.757	O	|	|	|	|	1.88
20.833	0.00	0.93	2.751	O	|	|	|	|	1.87
20.917	0.00	0.93	2.745	O	|	|	|	|	1.87
21.000	0.00	0.93	2.738	O	|	|	|	|	1.87
21.083	0.00	0.93	2.732	O	|	|	|	|	1.87
21.167	0.00	0.93	2.725	O	|	|	|	|	1.87
21.250	0.00	0.93	2.719	O	|	|	|	|	1.86
21.333	0.00	0.93	2.713	O	|	|	|	|	1.86
21.417	0.00	0.93	2.706	O	|	|	|	|	1.86
21.500	0.00	0.93	2.700	O	|	|	|	|	1.86
21.583	0.00	0.92	2.693	O	|	|	|	|	1.86
21.667	0.00	0.92	2.687	O	|	|	|	|	1.85
21.750	0.00	0.92	2.681	O	|	|	|	|	1.85
21.833	0.00	0.92	2.674	O	|	|	|	|	1.85
21.917	0.00	0.92	2.668	O	|	|	|	|	1.85
22.000	0.00	0.92	2.662	O	|	|	|	|	1.85
22.083	0.00	0.92	2.655	O	|	|	|	|	1.85
22.167	0.00	0.92	2.649	O	|	|	|	|	1.84
22.250	0.00	0.92	2.643	O	|	|	|	|	1.84
22.333	0.00	0.92	2.636	O	|	|	|	|	1.84
22.417	0.00	0.92	2.630	O	|	|	|	|	1.84
22.500	0.00	0.92	2.624	O	|	|	|	|	1.84
22.583	0.00	0.92	2.617	O	|	|	|	|	1.83
22.667	0.00	0.92	2.611	O	|	|	|	|	1.83
22.750	0.00	0.92	2.605	O	|	|	|	|	1.83
22.833	0.00	0.92	2.598	O	|	|	|	|	1.83
22.917	0.00	0.92	2.592	O	|	|	|	|	1.83
23.000	0.00	0.92	2.586	O	|	|	|	|	1.82
23.083	0.00	0.92	2.579	O	|	|	|	|	1.82
23.167	0.00	0.91	2.573	O	|	|	|	|	1.82
23.250	0.00	0.91	2.567	O	|	|	|	|	1.82
23.333	0.00	0.91	2.561	O	|	|	|	|	1.82
23.417	0.00	0.91	2.554	O	|	|	|	|	1.82
23.500	0.00	0.91	2.548	O	|	|	|	|	1.81
23.583	0.00	0.91	2.542	O	|	|	|	|	1.81
23.667	0.00	0.91	2.535	O	|	|	|	|	1.81
23.750	0.00	0.91	2.529	O	|	|	|	|	1.81
23.833	0.00	0.91	2.523	O	|	|	|	|	1.81
23.917	0.00	0.91	2.517	O	|	|	|	|	1.80
24.000	0.00	0.91	2.510	O	|	|	|	|	1.80
24.083	0.00	0.91	2.504	O	|	|	|	|	1.80
24.167	0.00	0.91	2.498	O	|	|	|	|	1.80
24.250	0.00	0.91	2.492	O	|	|	|	|	1.80
24.333	0.00	0.91	2.485	O	|	|	|	|	1.80

24.417	0.00	0.91	2.479	O	|	|	|	|	1.79
24.500	0.00	0.91	2.473	O	|	|	|	|	1.79
24.583	0.00	0.91	2.467	O	|	|	|	|	1.79
24.667	0.00	0.91	2.460	O	|	|	|	|	1.79
24.750	0.00	0.90	2.454	O	|	|	|	|	1.79
24.833	0.00	0.90	2.448	O	|	|	|	|	1.78
24.917	0.00	0.90	2.442	O	|	|	|	|	1.78
25.000	0.00	0.90	2.435	O	|	|	|	|	1.78
25.083	0.00	0.90	2.429	O	|	|	|	|	1.78
25.167	0.00	0.90	2.423	O	|	|	|	|	1.78
25.250	0.00	0.90	2.417	O	|	|	|	|	1.78
25.333	0.00	0.90	2.411	O	|	|	|	|	1.77
25.417	0.00	0.90	2.404	O	|	|	|	|	1.77
25.500	0.00	0.90	2.398	O	|	|	|	|	1.77
25.583	0.00	0.90	2.392	O	|	|	|	|	1.77
25.667	0.00	0.90	2.386	O	|	|	|	|	1.77
25.750	0.00	0.90	2.380	O	|	|	|	|	1.76
25.833	0.00	0.90	2.373	O	|	|	|	|	1.76
25.917	0.00	0.90	2.367	O	|	|	|	|	1.76
26.000	0.00	0.90	2.361	O	|	|	|	|	1.76
26.083	0.00	0.90	2.355	O	|	|	|	|	1.76
26.167	0.00	0.90	2.349	O	|	|	|	|	1.76
26.250	0.00	0.90	2.342	O	|	|	|	|	1.75
26.333	0.00	0.90	2.336	O	|	|	|	|	1.75
26.417	0.00	0.89	2.330	O	|	|	|	|	1.75
26.500	0.00	0.89	2.324	O	|	|	|	|	1.75
26.583	0.00	0.89	2.318	O	|	|	|	|	1.75
26.667	0.00	0.89	2.312	O	|	|	|	|	1.74
26.750	0.00	0.89	2.306	O	|	|	|	|	1.74
26.833	0.00	0.89	2.299	O	|	|	|	|	1.74
26.917	0.00	0.89	2.293	O	|	|	|	|	1.74
27.000	0.00	0.89	2.287	O	|	|	|	|	1.74
27.083	0.00	0.89	2.281	O	|	|	|	|	1.74
27.167	0.00	0.89	2.275	O	|	|	|	|	1.73
27.250	0.00	0.89	2.269	O	|	|	|	|	1.73
27.333	0.00	0.89	2.263	O	|	|	|	|	1.73
27.417	0.00	0.89	2.256	O	|	|	|	|	1.73
27.500	0.00	0.89	2.250	O	|	|	|	|	1.73
27.583	0.00	0.89	2.244	O	|	|	|	|	1.72
27.667	0.00	0.89	2.238	O	|	|	|	|	1.72
27.750	0.00	0.89	2.232	O	|	|	|	|	1.72
27.833	0.00	0.89	2.226	O	|	|	|	|	1.72
27.917	0.00	0.89	2.220	O	|	|	|	|	1.72
28.000	0.00	0.88	2.214	O	|	|	|	|	1.72
28.083	0.00	0.88	2.208	O	|	|	|	|	1.71
28.167	0.00	0.88	2.202	O	|	|	|	|	1.71
28.250	0.00	0.88	2.195	O	|	|	|	|	1.71
28.333	0.00	0.88	2.189	O	|	|	|	|	1.71
28.417	0.00	0.88	2.183	O	|	|	|	|	1.71
28.500	0.00	0.88	2.177	O	|	|	|	|	1.71
28.583	0.00	0.88	2.171	O	|	|	|	|	1.70
28.667	0.00	0.88	2.165	O	|	|	|	|	1.70
28.750	0.00	0.88	2.159	O	|	|	|	|	1.70
28.833	0.00	0.88	2.153	O	|	|	|	|	1.70
28.917	0.00	0.88	2.147	O	|	|	|	|	1.70
29.000	0.00	0.88	2.141	O	|	|	|	|	1.69
29.083	0.00	0.88	2.135	O	|	|	|	|	1.69
29.167	0.00	0.88	2.129	O	|	|	|	|	1.69
29.250	0.00	0.88	2.123	O	|	|	|	|	1.69
29.333	0.00	0.88	2.117	O	|	|	|	|	1.69
29.417	0.00	0.88	2.111	O	|	|	|	|	1.69
29.500	0.00	0.88	2.105	O	|	|	|	|	1.68
29.583	0.00	0.88	2.099	O	|	|	|	|	1.68
29.667	0.00	0.87	2.093	O	|	|	|	|	1.68
29.750	0.00	0.87	2.087	O	|	|	|	|	1.68
29.833	0.00	0.87	2.080	O	|	|	|	|	1.68
29.917	0.00	0.87	2.074	O	|	|	|	|	1.67
30.000	0.00	0.87	2.068	O	|	|	|	|	1.67
30.083	0.00	0.87	2.062	O	|	|	|	|	1.67
30.167	0.00	0.87	2.056	O	|	|	|	|	1.67
30.250	0.00	0.87	2.050	O	|	|	|	|	1.67
30.333	0.00	0.87	2.044	O	|	|	|	|	1.67
30.417	0.00	0.87	2.038	O	|	|	|	|	1.66
30.500	0.00	0.87	2.032	O	|	|	|	|	1.66
30.583	0.00	0.87	2.026	O	|	|	|	|	1.66

30.667	0.00	0.87	2.020	O					1.66
30.750	0.00	0.87	2.014	O					1.66
30.833	0.00	0.87	2.009	O					1.66
30.917	0.00	0.87	2.003	O					1.65
31.000	0.00	0.87	1.997	O					1.65
31.083	0.00	0.87	1.991	O					1.65
31.167	0.00	0.87	1.985	O					1.65
31.250	0.00	0.87	1.979	O					1.65
31.333	0.00	0.86	1.973	O					1.65
31.417	0.00	0.86	1.967	O					1.64
31.500	0.00	0.86	1.961	O					1.64
31.583	0.00	0.86	1.955	O					1.64
31.667	0.00	0.86	1.949	O					1.64
31.750	0.00	0.86	1.943	O					1.64
31.833	0.00	0.86	1.937	O					1.63
31.917	0.00	0.86	1.931	O					1.63
32.000	0.00	0.86	1.925	O					1.63
32.083	0.00	0.86	1.919	O					1.63
32.167	0.00	0.86	1.913	O					1.63
32.250	0.00	0.86	1.907	O					1.63
32.333	0.00	0.86	1.901	O					1.62
32.417	0.00	0.86	1.896	O					1.62
32.500	0.00	0.86	1.890	O					1.62
32.583	0.00	0.86	1.884	O					1.62
32.667	0.00	0.86	1.878	O					1.62
32.750	0.00	0.86	1.872	O					1.62
32.833	0.00	0.86	1.866	O					1.61
32.917	0.00	0.86	1.860	O					1.61
33.000	0.00	0.86	1.854	O					1.61
33.083	0.00	0.85	1.848	O					1.61
33.167	0.00	0.85	1.842	O					1.61
33.250	0.00	0.85	1.837	O					1.61
33.333	0.00	0.85	1.831	O					1.60
33.417	0.00	0.85	1.825	O					1.60
33.500	0.00	0.85	1.819	O					1.60
33.583	0.00	0.85	1.813	O					1.60
33.667	0.00	0.85	1.807	O					1.60
33.750	0.00	0.85	1.801	O					1.59
33.833	0.00	0.85	1.796	O					1.59
33.917	0.00	0.85	1.790	O					1.59
34.000	0.00	0.85	1.784	O					1.59
34.083	0.00	0.85	1.778	O					1.59
34.167	0.00	0.85	1.772	O					1.59
34.250	0.00	0.85	1.766	O					1.58
34.333	0.00	0.85	1.760	O					1.58
34.417	0.00	0.85	1.755	O					1.58
34.500	0.00	0.85	1.749	O					1.58
34.583	0.00	0.85	1.743	O					1.58
34.667	0.00	0.85	1.737	O					1.58
34.750	0.00	0.84	1.731	O					1.57
34.833	0.00	0.84	1.725	O					1.57
34.917	0.00	0.84	1.720	O					1.57
35.000	0.00	0.84	1.714	O					1.57
35.083	0.00	0.84	1.708	O					1.57
35.167	0.00	0.84	1.702	O					1.57
35.250	0.00	0.84	1.696	O					1.56
35.333	0.00	0.84	1.691	O					1.56
35.417	0.00	0.84	1.685	O					1.56
35.500	0.00	0.84	1.679	O					1.56
35.583	0.00	0.84	1.673	O					1.56
35.667	0.00	0.84	1.667	O					1.56
35.750	0.00	0.84	1.662	O					1.55
35.833	0.00	0.84	1.656	O					1.55
35.917	0.00	0.84	1.650	O					1.55
36.000	0.00	0.84	1.644	O					1.55
36.083	0.00	0.84	1.639	O					1.55
36.167	0.00	0.84	1.633	O					1.55
36.250	0.00	0.84	1.627	O					1.54
36.333	0.00	0.84	1.621	O					1.54
36.417	0.00	0.84	1.616	O					1.54
36.500	0.00	0.83	1.610	O					1.54
36.583	0.00	0.83	1.604	O					1.54
36.667	0.00	0.83	1.598	O					1.54
36.750	0.00	0.83	1.593	O					1.53
36.833	0.00	0.83	1.587	O					1.53

36.917	0.00	0.83	1.581	O	|	|	|	1.53
37.000	0.00	0.83	1.575	O	|	|	|	1.53
37.083	0.00	0.83	1.570	O	|	|	|	1.53
37.167	0.00	0.83	1.564	O	|	|	|	1.53
37.250	0.00	0.83	1.558	O	|	|	|	1.52
37.333	0.00	0.83	1.552	O	|	|	|	1.52
37.417	0.00	0.83	1.547	O	|	|	|	1.52
37.500	0.00	0.83	1.541	O	|	|	|	1.52
37.583	0.00	0.83	1.535	O	|	|	|	1.52
37.667	0.00	0.83	1.530	O	|	|	|	1.52
37.750	0.00	0.83	1.524	O	|	|	|	1.51
37.833	0.00	0.83	1.518	O	|	|	|	1.51
37.917	0.00	0.83	1.513	O	|	|	|	1.51
38.000	0.00	0.83	1.507	O	|	|	|	1.51
38.083	0.00	0.83	1.501	O	|	|	|	1.51
38.167	0.00	0.83	1.495	O	|	|	|	1.51
38.250	0.00	0.82	1.490	O	|	|	|	1.50
38.333	0.00	0.82	1.484	O	|	|	|	1.50
38.417	0.00	0.82	1.478	O	|	|	|	1.50
38.500	0.00	0.82	1.473	O	|	|	|	1.50
38.583	0.00	0.82	1.467	O	|	|	|	1.49
38.667	0.00	0.82	1.461	O	|	|	|	1.49
38.750	0.00	0.82	1.456	O	|	|	|	1.49
38.833	0.00	0.82	1.450	O	|	|	|	1.49
38.917	0.00	0.82	1.444	O	|	|	|	1.48
39.000	0.00	0.82	1.439	O	|	|	|	1.48
39.083	0.00	0.82	1.433	O	|	|	|	1.48
39.167	0.00	0.82	1.428	O	|	|	|	1.48
39.250	0.00	0.81	1.422	O	|	|	|	1.47
39.333	0.00	0.81	1.416	O	|	|	|	1.47
39.417	0.00	0.81	1.411	O	|	|	|	1.47
39.500	0.00	0.81	1.405	O	|	|	|	1.47
39.583	0.00	0.81	1.400	O	|	|	|	1.46
39.667	0.00	0.81	1.394	O	|	|	|	1.46
39.750	0.00	0.81	1.388	O	|	|	|	1.46
39.833	0.00	0.81	1.383	O	|	|	|	1.45
39.917	0.00	0.81	1.377	O	|	|	|	1.45
40.000	0.00	0.81	1.372	O	|	|	|	1.45
40.083	0.00	0.81	1.366	O	|	|	|	1.45
40.167	0.00	0.80	1.361	O	|	|	|	1.44
40.250	0.00	0.80	1.355	O	|	|	|	1.44
40.333	0.00	0.80	1.350	O	|	|	|	1.44
40.417	0.00	0.80	1.344	O	|	|	|	1.44
40.500	0.00	0.80	1.339	O	|	|	|	1.43
40.583	0.00	0.80	1.333	O	|	|	|	1.43
40.667	0.00	0.80	1.327	O	|	|	|	1.43
40.750	0.00	0.80	1.322	O	|	|	|	1.43
40.833	0.00	0.80	1.316	O	|	|	|	1.42
40.917	0.00	0.80	1.311	O	|	|	|	1.42
41.000	0.00	0.80	1.306	O	|	|	|	1.42
41.083	0.00	0.80	1.300	O	|	|	|	1.42
41.167	0.00	0.79	1.295	O	|	|	|	1.41
41.250	0.00	0.79	1.289	O	|	|	|	1.41
41.333	0.00	0.79	1.284	O	|	|	|	1.41
41.417	0.00	0.79	1.278	O	|	|	|	1.40
41.500	0.00	0.79	1.273	O	|	|	|	1.40
41.583	0.00	0.79	1.267	O	|	|	|	1.40
41.667	0.00	0.79	1.262	O	|	|	|	1.40
41.750	0.00	0.79	1.256	O	|	|	|	1.39
41.833	0.00	0.79	1.251	O	|	|	|	1.39
41.917	0.00	0.79	1.246	O	|	|	|	1.39
42.000	0.00	0.79	1.240	O	|	|	|	1.39
42.083	0.00	0.78	1.235	O	|	|	|	1.38
42.167	0.00	0.78	1.229	O	|	|	|	1.38
42.250	0.00	0.78	1.224	O	|	|	|	1.38
42.333	0.00	0.78	1.219	O	|	|	|	1.38
42.417	0.00	0.78	1.213	O	|	|	|	1.37
42.500	0.00	0.78	1.208	O	|	|	|	1.37
42.583	0.00	0.78	1.202	O	|	|	|	1.37
42.667	0.00	0.78	1.197	O	|	|	|	1.37
42.750	0.00	0.78	1.192	O	|	|	|	1.36
42.833	0.00	0.78	1.186	O	|	|	|	1.36
42.917	0.00	0.78	1.181	O	|	|	|	1.36
43.000	0.00	0.77	1.176	O	|	|	|	1.36
43.083	0.00	0.77	1.170	O	|	|	|	1.35

43.167	0.00	0.77	1.165	O	|	|	|	1.35
43.250	0.00	0.77	1.160	O	|	|	|	1.35
43.333	0.00	0.77	1.154	O	|	|	|	1.35
43.417	0.00	0.77	1.149	O	|	|	|	1.34
43.500	0.00	0.77	1.144	O	|	|	|	1.34
43.583	0.00	0.77	1.138	O	|	|	|	1.34
43.667	0.00	0.77	1.133	O	|	|	|	1.34
43.750	0.00	0.77	1.128	O	|	|	|	1.33
43.833	0.00	0.77	1.123	O	|	|	|	1.33
43.917	0.00	0.77	1.117	O	|	|	|	1.33
44.000	0.00	0.76	1.112	O	|	|	|	1.33
44.083	0.00	0.76	1.107	O	|	|	|	1.32
44.167	0.00	0.76	1.102	O	|	|	|	1.32
44.250	0.00	0.76	1.096	O	|	|	|	1.32
44.333	0.00	0.76	1.091	O	|	|	|	1.32
44.417	0.00	0.76	1.086	O	|	|	|	1.31
44.500	0.00	0.76	1.081	O	|	|	|	1.31
44.583	0.00	0.76	1.075	O	|	|	|	1.31
44.667	0.00	0.76	1.070	O	|	|	|	1.31
44.750	0.00	0.76	1.065	O	|	|	|	1.30
44.833	0.00	0.76	1.060	O	|	|	|	1.30
44.917	0.00	0.76	1.054	O	|	|	|	1.30
45.000	0.00	0.75	1.049	O	|	|	|	1.30
45.083	0.00	0.75	1.044	O	|	|	|	1.29
45.167	0.00	0.75	1.039	O	|	|	|	1.29
45.250	0.00	0.75	1.034	O	|	|	|	1.29
45.333	0.00	0.75	1.029	O	|	|	|	1.29
45.417	0.00	0.75	1.023	O	|	|	|	1.28
45.500	0.00	0.75	1.018	O	|	|	|	1.28
45.583	0.00	0.75	1.013	O	|	|	|	1.28
45.667	0.00	0.75	1.008	O	|	|	|	1.28
45.750	0.00	0.75	1.003	O	|	|	|	1.27
45.833	0.00	0.75	0.998	O	|	|	|	1.27
45.917	0.00	0.75	0.992	O	|	|	|	1.27
46.000	0.00	0.74	0.987	O	|	|	|	1.27
46.083	0.00	0.74	0.982	O	|	|	|	1.26
46.167	0.00	0.74	0.977	O	|	|	|	1.26
46.250	0.00	0.74	0.972	O	|	|	|	1.26
46.333	0.00	0.74	0.967	O	|	|	|	1.26
46.417	0.00	0.74	0.962	O	|	|	|	1.25
46.500	0.00	0.74	0.957	O	|	|	|	1.25
46.583	0.00	0.74	0.952	O	|	|	|	1.25
46.667	0.00	0.74	0.947	O	|	|	|	1.25
46.750	0.00	0.74	0.941	O	|	|	|	1.24
46.833	0.00	0.74	0.936	O	|	|	|	1.24
46.917	0.00	0.74	0.931	O	|	|	|	1.24
47.000	0.00	0.73	0.926	O	|	|	|	1.24
47.083	0.00	0.73	0.921	O	|	|	|	1.23
47.167	0.00	0.73	0.916	O	|	|	|	1.23
47.250	0.00	0.73	0.911	O	|	|	|	1.23
47.333	0.00	0.73	0.906	O	|	|	|	1.23
47.417	0.00	0.73	0.901	O	|	|	|	1.22
47.500	0.00	0.73	0.896	O	|	|	|	1.22
47.583	0.00	0.73	0.891	O	|	|	|	1.22
47.667	0.00	0.73	0.886	O	|	|	|	1.22
47.750	0.00	0.73	0.881	O	|	|	|	1.22
47.833	0.00	0.73	0.876	O	|	|	|	1.21
47.917	0.00	0.73	0.871	O	|	|	|	1.21
48.000	0.00	0.72	0.866	O	|	|	|	1.21
48.083	0.00	0.72	0.861	O	|	|	|	1.21
48.167	0.00	0.72	0.856	O	|	|	|	1.20
48.250	0.00	0.72	0.851	O	|	|	|	1.20
48.333	0.00	0.72	0.846	O	|	|	|	1.20
48.417	0.00	0.72	0.841	O	|	|	|	1.20
48.500	0.00	0.72	0.836	O	|	|	|	1.19
48.583	0.00	0.72	0.831	O	|	|	|	1.19
48.667	0.00	0.72	0.826	O	|	|	|	1.19
48.750	0.00	0.72	0.821	O	|	|	|	1.19
48.833	0.00	0.72	0.816	O	|	|	|	1.18
48.917	0.00	0.72	0.811	O	|	|	|	1.18
49.000	0.00	0.72	0.806	O	|	|	|	1.18
49.083	0.00	0.71	0.802	O	|	|	|	1.18
49.167	0.00	0.71	0.797	O	|	|	|	1.17
49.250	0.00	0.71	0.792	O	|	|	|	1.17
49.333	0.00	0.71	0.787	O	|	|	|	1.17

49.417	0.00	0.71	0.782	O	|	|	|	1.17
49.500	0.00	0.71	0.777	O	|	|	|	1.17
49.583	0.00	0.71	0.772	O	|	|	|	1.16
49.667	0.00	0.71	0.767	O	|	|	|	1.16
49.750	0.00	0.71	0.762	O	|	|	|	1.16
49.833	0.00	0.71	0.757	O	|	|	|	1.16
49.917	0.00	0.71	0.753	O	|	|	|	1.15
50.000	0.00	0.71	0.748	O	|	|	|	1.15
50.083	0.00	0.70	0.743	O	|	|	|	1.15
50.167	0.00	0.70	0.738	O	|	|	|	1.15
50.250	0.00	0.70	0.733	O	|	|	|	1.14
50.333	0.00	0.70	0.728	O	|	|	|	1.14
50.417	0.00	0.70	0.724	O	|	|	|	1.14
50.500	0.00	0.70	0.719	O	|	|	|	1.14
50.583	0.00	0.70	0.714	O	|	|	|	1.14
50.667	0.00	0.70	0.709	O	|	|	|	1.13
50.750	0.00	0.70	0.704	O	|	|	|	1.13
50.833	0.00	0.70	0.699	O	|	|	|	1.13
50.917	0.00	0.70	0.695	O	|	|	|	1.13
51.000	0.00	0.70	0.690	O	|	|	|	1.12
51.083	0.00	0.70	0.685	O	|	|	|	1.12
51.167	0.00	0.69	0.680	O	|	|	|	1.12
51.250	0.00	0.69	0.675	O	|	|	|	1.12
51.333	0.00	0.69	0.671	O	|	|	|	1.11
51.417	0.00	0.69	0.666	O	|	|	|	1.11
51.500	0.00	0.69	0.661	O	|	|	|	1.11
51.583	0.00	0.69	0.656	O	|	|	|	1.11
51.667	0.00	0.69	0.652	O	|	|	|	1.11
51.750	0.00	0.69	0.647	O	|	|	|	1.10
51.833	0.00	0.69	0.642	O	|	|	|	1.10
51.917	0.00	0.69	0.637	O	|	|	|	1.10
52.000	0.00	0.69	0.633	O	|	|	|	1.10
52.083	0.00	0.69	0.628	O	|	|	|	1.09
52.167	0.00	0.69	0.623	O	|	|	|	1.09
52.250	0.00	0.68	0.619	O	|	|	|	1.09
52.333	0.00	0.68	0.614	O	|	|	|	1.09
52.417	0.00	0.68	0.609	O	|	|	|	1.09
52.500	0.00	0.68	0.604	O	|	|	|	1.08
52.583	0.00	0.68	0.600	O	|	|	|	1.08
52.667	0.00	0.68	0.595	O	|	|	|	1.08
52.750	0.00	0.68	0.590	O	|	|	|	1.08
52.833	0.00	0.68	0.586	O	|	|	|	1.07
52.917	0.00	0.68	0.581	O	|	|	|	1.07
53.000	0.00	0.68	0.576	O	|	|	|	1.07
53.083	0.00	0.68	0.572	O	|	|	|	1.07
53.167	0.00	0.68	0.567	O	|	|	|	1.07
53.250	0.00	0.68	0.562	O	|	|	|	1.06
53.333	0.00	0.67	0.558	O	|	|	|	1.06
53.417	0.00	0.67	0.553	O	|	|	|	1.06
53.500	0.00	0.67	0.548	O	|	|	|	1.06
53.583	0.00	0.67	0.544	O	|	|	|	1.05
53.667	0.00	0.67	0.539	O	|	|	|	1.05
53.750	0.00	0.67	0.534	O	|	|	|	1.05
53.833	0.00	0.67	0.530	O	|	|	|	1.05
53.917	0.00	0.67	0.525	O	|	|	|	1.05
54.000	0.00	0.67	0.521	O	|	|	|	1.04
54.083	0.00	0.67	0.516	O	|	|	|	1.04
54.167	0.00	0.67	0.511	O	|	|	|	1.04
54.250	0.00	0.67	0.507	O	|	|	|	1.04
54.333	0.00	0.67	0.502	O	|	|	|	1.03
54.417	0.00	0.66	0.498	O	|	|	|	1.03
54.500	0.00	0.66	0.493	O	|	|	|	1.03
54.583	0.00	0.66	0.489	O	|	|	|	1.03
54.667	0.00	0.66	0.484	O	|	|	|	1.03
54.750	0.00	0.66	0.479	O	|	|	|	1.02
54.833	0.00	0.66	0.475	O	|	|	|	1.02
54.917	0.00	0.66	0.470	O	|	|	|	1.02
55.000	0.00	0.66	0.466	O	|	|	|	1.02
55.083	0.00	0.66	0.461	O	|	|	|	1.01
55.167	0.00	0.66	0.457	O	|	|	|	1.01
55.250	0.00	0.66	0.452	O	|	|	|	1.01
55.333	0.00	0.66	0.448	O	|	|	|	1.01
55.417	0.00	0.66	0.443	O	|	|	|	1.01
55.500	0.00	0.66	0.439	O	|	|	|	1.00
55.583	0.00	0.65	0.434	O	|	|	|	1.00

55.667	0.00	0.65	0.430	O	|	|	|	1.00
55.750	0.00	0.65	0.425	O	|	|	|	0.99
55.833	0.00	0.65	0.421	O	|	|	|	0.99
55.917	0.00	0.65	0.416	O	|	|	|	0.98
56.000	0.00	0.64	0.412	O	|	|	|	0.98
56.083	0.00	0.64	0.407	O	|	|	|	0.97
56.167	0.00	0.64	0.403	O	|	|	|	0.96
56.250	0.00	0.63	0.399	O	|	|	|	0.96
56.333	0.00	0.63	0.394	O	|	|	|	0.95
56.417	0.00	0.63	0.390	O	|	|	|	0.95
56.500	0.00	0.63	0.385	O	|	|	|	0.94
56.583	0.00	0.62	0.381	O	|	|	|	0.94
56.667	0.00	0.62	0.377	O	|	|	|	0.93
56.750	0.00	0.62	0.373	O	|	|	|	0.92
56.833	0.00	0.62	0.368	O	|	|	|	0.92
56.917	0.00	0.61	0.364	O	|	|	|	0.91
57.000	0.00	0.61	0.360	O	|	|	|	0.91
57.083	0.00	0.61	0.356	O	|	|	|	0.90
57.167	0.00	0.61	0.352	O	|	|	|	0.90
57.250	0.00	0.60	0.347	O	|	|	|	0.89
57.333	0.00	0.60	0.343	O	|	|	|	0.88
57.417	0.00	0.60	0.339	O	|	|	|	0.88
57.500	0.00	0.60	0.335	O	|	|	|	0.87
57.583	0.00	0.59	0.331	O	|	|	|	0.87
57.667	0.00	0.59	0.327	O	|	|	|	0.86
57.750	0.00	0.59	0.323	O	|	|	|	0.86
57.833	0.00	0.59	0.319	O	|	|	|	0.85
57.917	0.00	0.58	0.315	O	|	|	|	0.85
58.000	0.00	0.58	0.311	O	|	|	|	0.84
58.083	0.00	0.58	0.307	O	|	|	|	0.84
58.167	0.00	0.58	0.303	O	|	|	|	0.83
58.250	0.00	0.57	0.299	O	|	|	|	0.83
58.333	0.00	0.57	0.295	O	|	|	|	0.82
58.417	0.00	0.57	0.291	O	|	|	|	0.82
58.500	0.00	0.57	0.287	O	|	|	|	0.81
58.583	0.00	0.56	0.283	O	|	|	|	0.81
58.667	0.00	0.56	0.279	O	|	|	|	0.80
58.750	0.00	0.56	0.275	O	|	|	|	0.80
58.833	0.00	0.56	0.272	O	|	|	|	0.79
58.917	0.00	0.55	0.268	O	|	|	|	0.78
59.000	0.00	0.55	0.264	O	|	|	|	0.78
59.083	0.00	0.55	0.260	O	|	|	|	0.77
59.167	0.00	0.55	0.256	O	|	|	|	0.77
59.250	0.00	0.54	0.253	O	|	|	|	0.76
59.333	0.00	0.54	0.249	O	|	|	|	0.76
59.417	0.00	0.54	0.245	O	|	|	|	0.75
59.500	0.00	0.54	0.241	O	|	|	|	0.75
59.583	0.00	0.54	0.238	O	|	|	|	0.75
59.667	0.00	0.53	0.234	O	|	|	|	0.74
59.750	0.00	0.53	0.230	O	|	|	|	0.74
59.833	0.00	0.53	0.227	O	|	|	|	0.73
59.917	0.00	0.53	0.223	O	|	|	|	0.73
60.000	0.00	0.52	0.220	O	|	|	|	0.72
60.083	0.00	0.52	0.216	O	|	|	|	0.72
60.167	0.00	0.52	0.212	O	|	|	|	0.71
60.250	0.00	0.52	0.209	O	|	|	|	0.71
60.333	0.00	0.52	0.205	O	|	|	|	0.70
60.417	0.00	0.51	0.202	O	|	|	|	0.70
60.500	0.00	0.51	0.198	O	|	|	|	0.69
60.583	0.00	0.51	0.195	O	|	|	|	0.69
60.667	0.00	0.51	0.191	O	|	|	|	0.68
60.750	0.00	0.50	0.188	O	|	|	|	0.68
60.833	0.00	0.50	0.184	O	|	|	|	0.67
60.917	0.00	0.50	0.181	O	|	|	|	0.67
61.000	0.00	0.50	0.177	O	|	|	|	0.66
61.083	0.00	0.50	0.174	O	|	|	|	0.66
61.167	0.00	0.49	0.171	O	|	|	|	0.66
61.250	0.00	0.49	0.167	O	|	|	|	0.65
61.333	0.00	0.49	0.164	O	|	|	|	0.65
61.417	0.00	0.49	0.160	O	|	|	|	0.64
61.500	0.00	0.49	0.157	O	|	|	|	0.64
61.583	0.00	0.48	0.154	O	|	|	|	0.63
61.667	0.00	0.48	0.150	O	|	|	|	0.63
61.750	0.00	0.48	0.147	O	|	|	|	0.62
61.833	0.00	0.48	0.144	O	|	|	|	0.62

61.917	0.00	0.48	0.140	O	|	|	|	|	0.62
62.000	0.00	0.47	0.137	O	|	|	|	|	0.61
62.083	0.00	0.47	0.134	O	|	|	|	|	0.61
62.167	0.00	0.47	0.131	O	|	|	|	|	0.60
62.250	0.00	0.47	0.128	O	|	|	|	|	0.60
62.333	0.00	0.47	0.124	O	|	|	|	|	0.59
62.417	0.00	0.46	0.121	O	|	|	|	|	0.59
62.500	0.00	0.46	0.118	O	|	|	|	|	0.59
62.583	0.00	0.46	0.115	O	|	|	|	|	0.58
62.667	0.00	0.46	0.112	O	|	|	|	|	0.58
62.750	0.00	0.46	0.108	O	|	|	|	|	0.57
62.833	0.00	0.45	0.105	O	|	|	|	|	0.57
62.917	0.00	0.45	0.102	O	|	|	|	|	0.57
63.000	0.00	0.45	0.099	O	|	|	|	|	0.56
63.083	0.00	0.45	0.096	O	|	|	|	|	0.56
63.167	0.00	0.45	0.093	O	|	|	|	|	0.55
63.250	0.00	0.44	0.090	O	|	|	|	|	0.55
63.333	0.00	0.44	0.087	O	|	|	|	|	0.54
63.417	0.00	0.44	0.084	O	|	|	|	|	0.54
63.500	0.00	0.44	0.081	O	|	|	|	|	0.54
63.583	0.00	0.44	0.078	O	|	|	|	|	0.53
63.667	0.00	0.43	0.075	O	|	|	|	|	0.53
63.750	0.00	0.43	0.072	O	|	|	|	|	0.52
63.833	0.00	0.43	0.069	O	|	|	|	|	0.52
63.917	0.00	0.43	0.066	O	|	|	|	|	0.52
64.000	0.00	0.43	0.063	O	|	|	|	|	0.51
64.083	0.00	0.43	0.060	O	|	|	|	|	0.51
64.167	0.00	0.42	0.057	O	|	|	|	|	0.51
64.250	0.00	0.42	0.054	O	|	|	|	|	0.50
64.333	0.00	0.41	0.051	O	|	|	|	|	0.49
64.417	0.00	0.39	0.049	O	|	|	|	|	0.47
64.500	0.00	0.37	0.046	O	|	|	|	|	0.45
64.583	0.00	0.35	0.044	O	|	|	|	|	0.43
64.667	0.00	0.33	0.041	O	|	|	|	|	0.41
64.750	0.00	0.31	0.039	O	|	|	|	|	0.39
64.833	0.00	0.29	0.037	O	|	|	|	|	0.38
64.917	0.00	0.28	0.035	O	|	|	|	|	0.36
65.000	0.00	0.26	0.033	O	|	|	|	|	0.35
65.083	0.00	0.25	0.031	O	|	|	|	|	0.33
65.167	0.00	0.24	0.030	O	|	|	|	|	0.32
65.250	0.00	0.22	0.028	O	|	|	|	|	0.31
65.333	0.00	0.21	0.027	O	|	|	|	|	0.30
65.417	0.00	0.20	0.025	O	|	|	|	|	0.29
65.500	0.00	0.19	0.024	O	|	|	|	|	0.28
65.583	0.00	0.18	0.023	O	|	|	|	|	0.27
65.667	0.00	0.17	0.021	O	|	|	|	|	0.26
65.750	0.00	0.16	0.020	O	|	|	|	|	0.25
65.833	0.00	0.15	0.019	O	|	|	|	|	0.24
65.917	0.00	0.14	0.018	O	|	|	|	|	0.23
66.000	0.00	0.14	0.017	O	|	|	|	|	0.22
66.083	0.00	0.13	0.016	O	|	|	|	|	0.22
66.167	0.00	0.12	0.015	O	|	|	|	|	0.21
66.250	0.00	0.12	0.014	O	|	|	|	|	0.20
66.333	0.00	0.11	0.014	O	|	|	|	|	0.20
66.417	0.00	0.10	0.013	O	|	|	|	|	0.19
66.500	0.00	0.10	0.012	O	|	|	|	|	0.19
66.583	0.00	0.09	0.012	O	|	|	|	|	0.18
66.667	0.00	0.09	0.011	O	|	|	|	|	0.18
66.750	0.00	0.08	0.010	O	|	|	|	|	0.17
66.833	0.00	0.08	0.010	O	|	|	|	|	0.17
66.917	0.00	0.08	0.009	O	|	|	|	|	0.16
67.000	0.00	0.07	0.009	O	|	|	|	|	0.16
67.083	0.00	0.07	0.008	O	|	|	|	|	0.16
67.167	0.00	0.06	0.008	O	|	|	|	|	0.15
67.250	0.00	0.06	0.007	O	|	|	|	|	0.15
67.333	0.00	0.06	0.007	O	|	|	|	|	0.15
67.417	0.00	0.05	0.007	O	|	|	|	|	0.14
67.500	0.00	0.05	0.006	O	|	|	|	|	0.14
67.583	0.00	0.05	0.006	O	|	|	|	|	0.14
67.667	0.00	0.05	0.006	O	|	|	|	|	0.14
67.750	0.00	0.04	0.005	O	|	|	|	|	0.13
67.833	0.00	0.04	0.005	O	|	|	|	|	0.13
67.917	0.00	0.04	0.005	O	|	|	|	|	0.13
68.000	0.00	0.04	0.004	O	|	|	|	|	0.13
68.083	0.00	0.04	0.004	O	|	|	|	|	0.12

68.167	0.00	0.03	0.004	O	|	|	|	|	0.12
68.250	0.00	0.03	0.004	O	|	|	|	|	0.12
68.333	0.00	0.03	0.004	O	|	|	|	|	0.12
68.417	0.00	0.03	0.003	O	|	|	|	|	0.12
68.500	0.00	0.03	0.003	O	|	|	|	|	0.12
68.583	0.00	0.03	0.003	O	|	|	|	|	0.11
68.667	0.00	0.02	0.003	O	|	|	|	|	0.11
68.750	0.00	0.02	0.003	O	|	|	|	|	0.11
68.833	0.00	0.02	0.002	O	|	|	|	|	0.11
68.917	0.00	0.02	0.002	O	|	|	|	|	0.11
69.000	0.00	0.02	0.002	O	|	|	|	|	0.11
69.083	0.00	0.02	0.002	O	|	|	|	|	0.11
69.167	0.00	0.02	0.002	O	|	|	|	|	0.11
69.250	0.00	0.02	0.002	O	|	|	|	|	0.11
69.333	0.00	0.02	0.002	O	|	|	|	|	0.11
69.417	0.00	0.01	0.002	O	|	|	|	|	0.10
69.500	0.00	0.01	0.001	O	|	|	|	|	0.10
69.583	0.00	0.01	0.001	O	|	|	|	|	0.10
69.667	0.00	0.01	0.001	O	|	|	|	|	0.10
69.750	0.00	0.01	0.001	O	|	|	|	|	0.10
69.833	0.00	0.01	0.001	O	|	|	|	|	0.10
69.917	0.00	0.01	0.001	O	|	|	|	|	0.10
70.000	0.00	0.01	0.001	O	|	|	|	|	0.10
70.083	0.00	0.01	0.001	O	|	|	|	|	0.09
70.167	0.00	0.01	0.001	O	|	|	|	|	0.09
70.250	0.00	0.01	0.001	O	|	|	|	|	0.08
70.333	0.00	0.01	0.001	O	|	|	|	|	0.08
70.417	0.00	0.01	0.001	O	|	|	|	|	0.07
70.500	0.00	0.01	0.001	O	|	|	|	|	0.07
70.583	0.00	0.01	0.001	O	|	|	|	|	0.06
70.667	0.00	0.01	0.001	O	|	|	|	|	0.06
70.750	0.00	0.01	0.001	O	|	|	|	|	0.05
70.833	0.00	0.01	0.001	O	|	|	|	|	0.05
70.917	0.00	0.00	0.000	O	|	|	|	|	0.05
71.000	0.00	0.00	0.000	O	|	|	|	|	0.04
71.083	0.00	0.00	0.000	O	|	|	|	|	0.04
71.167	0.00	0.00	0.000	O	|	|	|	|	0.04
71.250	0.00	0.00	0.000	O	|	|	|	|	0.04
71.333	0.00	0.00	0.000	O	|	|	|	|	0.03
71.417	0.00	0.00	0.000	O	|	|	|	|	0.03
71.500	0.00	0.00	0.000	O	|	|	|	|	0.03
71.583	0.00	0.00	0.000	O	|	|	|	|	0.03
71.667	0.00	0.00	0.000	O	|	|	|	|	0.03
71.750	0.00	0.00	0.000	O	|	|	|	|	0.02
71.833	0.00	0.00	0.000	O	|	|	|	|	0.02
71.917	0.00	0.00	0.000	O	|	|	|	|	0.02
72.000	0.00	0.00	0.000	O	|	|	|	|	0.02
72.083	0.00	0.00	0.000	O	|	|	|	|	0.02
72.167	0.00	0.00	0.000	O	|	|	|	|	0.02
72.250	0.00	0.00	0.000	O	|	|	|	|	0.02
72.333	0.00	0.00	0.000	O	|	|	|	|	0.01
72.417	0.00	0.00	0.000	O	|	|	|	|	0.01
72.500	0.00	0.00	0.000	O	|	|	|	|	0.01
72.583	0.00	0.00	0.000	O	|	|	|	|	0.01
72.667	0.00	0.00	0.000	O	|	|	|	|	0.01
72.750	0.00	0.00	0.000	O	|	|	|	|	0.01
72.833	0.00	0.00	0.000	O	|	|	|	|	0.01

**********HYDROGRAPH DATA**********

Number of intervals = 874
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 25.570 (CFS)
Total volume = 9.895 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

BASIN ROUTING
DMA B
PROPOSED CONDITIONS
100-YEAR 6-HOUR

FLOOD HYDROGRAPH ROUTING PROGRAM
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Study date: 10/22/14

14-0213 SHOPOFF
BASIN ROUTING
DMA B
100-YEAR 6-HOUR

Program License Serial Number 4010

********** HYDROGRAPH INFORMATION **********

From study/file name: BPROP6100.rte
**********HYDROGRAPH DATA**********
Number of intervals = 79
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 106.115 (CFS)
Total volume = 13.751 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 79
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.100	0.001	0.010	0.001	0.001
0.500	0.053	0.421	0.052	0.054
1.000	0.430	0.654	0.428	0.432
1.500	1.478	0.824	1.475	1.481
1.900	2.842	0.937	2.839	2.845
2.000	3.240	0.964	3.237	3.243
2.400	4.909	5.372	4.891	4.927
2.500	5.335	6.288	5.313	5.357
3.000	7.513	19.930	7.444	7.582
3.100	7.959	22.013	7.883	8.035
3.500	9.773	35.542	9.651	9.895
4.000	12.116	58.286	11.915	12.317
4.500	14.544	85.412	14.250	14.838
5.000	17.059	116.189	16.659	17.459
5.500	19.662	150.189	19.145	20.179
6.000	22.356	187.115	21.712	23.000
6.200	23.460	202.653	22.762	24.158

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	26.5	53.06	79.59	106.12	Depth (Ft.)
0.083	0.95	0.03	0.003	O					0.12
0.167	5.06	0.19	0.023	OI					0.27
0.250	7.63	0.43	0.065	O I					0.52
0.333	8.58	0.46	0.117	O I					0.59
0.417	8.93	0.50	0.174	O I					0.66
0.500	9.38	0.53	0.234	O I					0.74
0.583	10.75	0.57	0.299	O I					0.83
0.667	11.21	0.62	0.371	O I					0.92
0.750	11.39	0.66	0.444	O I					1.01
0.833	11.45	0.67	0.518	O I					1.04
0.917	11.47	0.68	0.593	O I					1.08
1.000	11.81	0.69	0.668	O I					1.11
1.083	13.12	0.71	0.749	O I					1.15
1.167	13.56	0.72	0.836	O I					1.19
1.250	13.74	0.73	0.925	O I					1.24
1.333	13.80	0.75	1.015	O I					1.28
1.417	13.82	0.76	1.105	O I					1.32
1.500	13.83	0.78	1.195	O I					1.36
1.583	13.84	0.79	1.285	O I					1.41
1.667	13.84	0.81	1.374	O I					1.45
1.750	13.84	0.82	1.464	O I					1.49
1.833	13.84	0.83	1.554	O I					1.52
1.917	13.84	0.84	1.643	O I					1.55
2.000	14.17	0.85	1.734	O I					1.58
2.083	15.14	0.85	1.829	O I					1.60
2.167	14.60	0.86	1.925	O I					1.63
2.250	15.65	0.87	2.024	O I					1.66
2.333	15.97	0.88	2.126	O I					1.69
2.417	16.11	0.89	2.231	O I					1.72
2.500	16.16	0.90	2.336	O I					1.75
2.583	16.17	0.90	2.441	O I					1.78
2.667	16.18	0.91	2.546	O I					1.81
2.750	16.52	0.92	2.652	O I					1.84
2.833	17.82	0.93	2.764	O I					1.88
2.917	18.26	0.94	2.882	O I					1.91
3.000	18.44	0.95	3.002	O I					1.94
3.083	18.50	0.96	3.123	O I					1.97
3.167	18.85	0.98	3.245	O I					2.00
3.250	20.17	1.31	3.371	O I					2.03
3.333	20.61	1.65	3.501	O I					2.06
3.417	21.12	2.00	3.632	O I					2.09
3.500	22.81	2.36	3.769	O I					2.13
3.583	24.91	2.75	3.915	O I					2.16
3.667	26.85	3.16	4.073	O I					2.20
3.750	27.85	3.60	4.238	O I					2.24
3.833	29.42	4.05	4.409	O I					2.28
3.917	30.28	4.52	4.585	O I					2.32
4.000	31.80	5.00	4.766	O I					2.37
4.083	32.65	5.46	4.952	O I					2.41
4.167	34.49	5.88	5.144	O I					2.46
4.250	36.64	6.36	5.347	O I					2.50
4.333	38.91	7.69	5.559	O I					2.55
4.417	41.24	9.06	5.777	O I					2.60
4.500	43.24	10.46	6.001	O I					2.65
4.583	44.28	11.86	6.225	O I					2.70
4.667	46.20	13.27	6.450	O I					2.76
4.750	48.37	14.71	6.680	O I					2.81
4.833	50.33	16.17	6.913	O I					2.86
4.917	51.35	17.64	7.147	O I					2.92
5.000	53.25	19.10	7.381	O I					2.97
5.083	56.74	20.44	7.623	O I					3.02
5.167	65.57	21.73	7.899	O I					3.09
5.250	75.54	24.01	8.227	O I					3.16
5.333	83.61	26.80	8.601	O I					3.24
5.417	91.72	29.85	9.009	O I					3.33
5.500	103.49	33.24	9.464	O I					3.43
5.583	106.12	37.20	9.943	O I					3.54

5.667	59.61	40.15	10.248	|	| O	|I	|	|	3.60
5.750	31.38	40.50	10.283	|	|I O	|	|	|	3.61
5.833	16.88	39.44	10.174	| I	| O	|	|	|	3.59
5.917	9.84	37.75	10.001	| I	| O	|	|	|	3.55
6.000	5.29	35.80	9.799	|I	| O	|	|	|	3.51
6.083	3.83	34.18	9.590	|I	| O	|	|	|	3.46
6.167	1.28	32.59	9.378	I	|O	|	|	|	3.41
6.250	0.48	31.00	9.165	I	|O	|	|	|	3.37
6.333	0.17	29.47	8.959	I	O	|	|	|	3.32
6.417	0.06	28.00	8.761	I	O	|	|	|	3.28
6.500	0.02	26.60	8.574	I	O	|	|	|	3.24
6.583	0.01	25.27	8.395	I	O|	|	|	|	3.20
6.667	0.00	24.00	8.226	I	O|	|	|	|	3.16
6.750	0.00	22.80	8.064	I	O |	|	|	|	3.12
6.833	0.00	21.79	7.911	I	O |	|	|	|	3.09
6.917	0.00	21.10	7.763	I	O |	|	|	|	3.06
7.000	0.00	20.43	7.620	I	O |	|	|	|	3.02
7.083	0.00	19.74	7.482	I	O |	|	|	|	2.99
7.167	0.00	18.90	7.349	I	O |	|	|	|	2.96
7.250	0.00	18.10	7.221	I	O |	|	|	|	2.93
7.333	0.00	17.34	7.099	I	O |	|	|	|	2.91
7.417	0.00	16.61	6.982	I	O |	|	|	|	2.88
7.500	0.00	15.91	6.871	I	O |	|	|	|	2.85
7.583	0.00	15.23	6.763	I	O |	|	|	|	2.83
7.667	0.00	14.59	6.661	I	O |	|	|	|	2.80
7.750	0.00	13.97	6.562	I	O |	|	|	|	2.78
7.833	0.00	13.38	6.468	I	O |	|	|	|	2.76
7.917	0.00	12.82	6.378	I	O |	|	|	|	2.74
8.000	0.00	12.28	6.291	I	O |	|	|	|	2.72
8.083	0.00	11.76	6.209	I	O |	|	|	|	2.70
8.167	0.00	11.26	6.129	I	O |	|	|	|	2.68
8.250	0.00	10.79	6.053	I	O |	|	|	|	2.66
8.333	0.00	10.33	5.981	I	O |	|	|	|	2.65
8.417	0.00	9.90	5.911	I	O |	|	|	|	2.63
8.500	0.00	9.48	5.844	I	O |	|	|	|	2.62
8.583	0.00	9.08	5.780	I	O |	|	|	|	2.60
8.667	0.00	8.69	5.719	I	O |	|	|	|	2.59
8.750	0.00	8.33	5.661	I	O |	|	|	|	2.57
8.833	0.00	7.98	5.604	I	O |	|	|	|	2.56
8.917	0.00	7.64	5.551	I	O |	|	|	|	2.55
9.000	0.00	7.32	5.499	I	O |	|	|	|	2.54
9.083	0.00	7.01	5.450	I	O |	|	|	|	2.53
9.167	0.00	6.71	5.403	I	O |	|	|	|	2.52
9.250	0.00	6.43	5.357	IO	|	|	|	|	2.51
9.333	0.00	6.24	5.314	IO	|	|	|	|	2.50
9.417	0.00	6.15	5.271	IO	|	|	|	|	2.48
9.500	0.00	6.06	5.229	IO	|	|	|	|	2.48
9.583	0.00	5.97	5.188	IO	|	|	|	|	2.47
9.667	0.00	5.88	5.147	IO	|	|	|	|	2.46
9.750	0.00	5.80	5.107	IO	|	|	|	|	2.45
9.833	0.00	5.71	5.067	IO	|	|	|	|	2.44
9.917	0.00	5.63	5.028	IO	|	|	|	|	2.43
10.000	0.00	5.54	4.989	IO	|	|	|	|	2.42
10.083	0.00	5.46	4.951	IO	|	|	|	|	2.41
10.167	0.00	5.38	4.914	IO	|	|	|	|	2.40
10.250	0.00	5.29	4.877	IO	|	|	|	|	2.39
10.333	0.00	5.19	4.841	IO	|	|	|	|	2.38
10.417	0.00	5.10	4.806	IO	|	|	|	|	2.38
10.500	0.00	5.01	4.771	IO	|	|	|	|	2.37
10.583	0.00	4.92	4.737	IO	|	|	|	|	2.36
10.667	0.00	4.83	4.703	IO	|	|	|	|	2.35
10.750	0.00	4.74	4.670	IO	|	|	|	|	2.34
10.833	0.00	4.66	4.638	IO	|	|	|	|	2.34
10.917	0.00	4.57	4.606	IO	|	|	|	|	2.33
11.000	0.00	4.49	4.575	IO	|	|	|	|	2.32
11.083	0.00	4.41	4.544	IO	|	|	|	|	2.31
11.167	0.00	4.33	4.514	IO	|	|	|	|	2.31
11.250	0.00	4.25	4.485	IO	|	|	|	|	2.30
11.333	0.00	4.17	4.456	IO	|	|	|	|	2.29
11.417	0.00	4.10	4.427	IO	|	|	|	|	2.28
11.500	0.00	4.03	4.399	IO	|	|	|	|	2.28
11.583	0.00	3.95	4.372	IO	|	|	|	|	2.27
11.667	0.00	3.88	4.345	IO	|	|	|	|	2.26
11.750	0.00	3.81	4.318	IO	|	|	|	|	2.26
11.833	0.00	3.74	4.292	IO	|	|	|	|	2.25

11.917	0.00	3.68	4.267	IO					2.25
12.000	0.00	3.61	4.242	IO					2.24
12.083	0.00	3.54	4.217	IO					2.23
12.167	0.00	3.48	4.193	IO					2.23
12.250	0.00	3.42	4.169	IO					2.22
12.333	0.00	3.36	4.146	IO					2.22
12.417	0.00	3.30	4.123	O					2.21
12.500	0.00	3.24	4.100	O					2.21
12.583	0.00	3.18	4.078	O					2.20
12.667	0.00	3.12	4.057	O					2.20
12.750	0.00	3.06	4.035	O					2.19
12.833	0.00	3.01	4.014	O					2.19
12.917	0.00	2.95	3.994	O					2.18
13.000	0.00	2.90	3.974	O					2.18
13.083	0.00	2.85	3.954	O					2.17
13.167	0.00	2.80	3.934	O					2.17
13.250	0.00	2.75	3.915	O					2.16
13.333	0.00	2.70	3.897	O					2.16
13.417	0.00	2.65	3.878	O					2.15
13.500	0.00	2.60	3.860	O					2.15
13.583	0.00	2.55	3.842	O					2.14
13.667	0.00	2.51	3.825	O					2.14
13.750	0.00	2.46	3.808	O					2.14
13.833	0.00	2.42	3.791	O					2.13
13.917	0.00	2.38	3.774	O					2.13
14.000	0.00	2.33	3.758	O					2.12
14.083	0.00	2.29	3.742	O					2.12
14.167	0.00	2.25	3.727	O					2.12
14.250	0.00	2.21	3.711	O					2.11
14.333	0.00	2.17	3.696	O					2.11
14.417	0.00	2.13	3.681	O					2.11
14.500	0.00	2.09	3.667	O					2.10
14.583	0.00	2.05	3.653	O					2.10
14.667	0.00	2.02	3.639	O					2.10
14.750	0.00	1.98	3.625	O					2.09
14.833	0.00	1.94	3.611	O					2.09
14.917	0.00	1.91	3.598	O					2.09
15.000	0.00	1.88	3.585	O					2.08
15.083	0.00	1.84	3.572	O					2.08
15.167	0.00	1.81	3.560	O					2.08
15.250	0.00	1.78	3.547	O					2.07
15.333	0.00	1.74	3.535	O					2.07
15.417	0.00	1.71	3.523	O					2.07
15.500	0.00	1.68	3.512	O					2.07
15.583	0.00	1.65	3.500	O					2.06
15.667	0.00	1.62	3.489	O					2.06
15.750	0.00	1.59	3.478	O					2.06
15.833	0.00	1.56	3.467	O					2.05
15.917	0.00	1.54	3.456	O					2.05
16.000	0.00	1.51	3.446	O					2.05
16.083	0.00	1.48	3.435	O					2.05
16.167	0.00	1.45	3.425	O					2.04
16.250	0.00	1.43	3.415	O					2.04
16.333	0.00	1.40	3.406	O					2.04
16.417	0.00	1.38	3.396	O					2.04
16.500	0.00	1.35	3.387	O					2.04
16.583	0.00	1.33	3.378	O					2.03
16.667	0.00	1.30	3.368	O					2.03
16.750	0.00	1.28	3.360	O					2.03
16.833	0.00	1.26	3.351	O					2.03
16.917	0.00	1.23	3.342	O					2.02
17.000	0.00	1.21	3.334	O					2.02
17.083	0.00	1.19	3.326	O					2.02
17.167	0.00	1.17	3.317	O					2.02
17.250	0.00	1.15	3.309	O					2.02
17.333	0.00	1.13	3.302	O					2.01
17.417	0.00	1.11	3.294	O					2.01
17.500	0.00	1.09	3.286	O					2.01
17.583	0.00	1.07	3.279	O					2.01
17.667	0.00	1.05	3.272	O					2.01
17.750	0.00	1.03	3.265	O					2.01
17.833	0.00	1.01	3.258	O					2.00
17.917	0.00	0.99	3.251	O					2.00
18.000	0.00	0.97	3.244	O					2.00
18.083	0.00	0.96	3.237	O					2.00

18.167	0.00	0.96	3.231	O	|	|	|	|	2.00
18.250	0.00	0.96	3.224	O	|	|	|	|	2.00
18.333	0.00	0.96	3.217	O	|	|	|	|	1.99
18.417	0.00	0.96	3.211	O	|	|	|	|	1.99
18.500	0.00	0.96	3.204	O	|	|	|	|	1.99
18.583	0.00	0.96	3.197	O	|	|	|	|	1.99
18.667	0.00	0.96	3.191	O	|	|	|	|	1.99
18.750	0.00	0.96	3.184	O	|	|	|	|	1.99
18.833	0.00	0.96	3.178	O	|	|	|	|	1.98
18.917	0.00	0.96	3.171	O	|	|	|	|	1.98
19.000	0.00	0.96	3.164	O	|	|	|	|	1.98
19.083	0.00	0.96	3.158	O	|	|	|	|	1.98
19.167	0.00	0.96	3.151	O	|	|	|	|	1.98
19.250	0.00	0.96	3.145	O	|	|	|	|	1.98
19.333	0.00	0.96	3.138	O	|	|	|	|	1.97
19.417	0.00	0.96	3.131	O	|	|	|	|	1.97
19.500	0.00	0.96	3.125	O	|	|	|	|	1.97
19.583	0.00	0.96	3.118	O	|	|	|	|	1.97
19.667	0.00	0.96	3.112	O	|	|	|	|	1.97
19.750	0.00	0.95	3.105	O	|	|	|	|	1.97
19.833	0.00	0.95	3.098	O	|	|	|	|	1.96
19.917	0.00	0.95	3.092	O	|	|	|	|	1.96
20.000	0.00	0.95	3.085	O	|	|	|	|	1.96
20.083	0.00	0.95	3.079	O	|	|	|	|	1.96
20.167	0.00	0.95	3.072	O	|	|	|	|	1.96
20.250	0.00	0.95	3.066	O	|	|	|	|	1.96
20.333	0.00	0.95	3.059	O	|	|	|	|	1.95
20.417	0.00	0.95	3.053	O	|	|	|	|	1.95
20.500	0.00	0.95	3.046	O	|	|	|	|	1.95
20.583	0.00	0.95	3.039	O	|	|	|	|	1.95
20.667	0.00	0.95	3.033	O	|	|	|	|	1.95
20.750	0.00	0.95	3.026	O	|	|	|	|	1.95
20.833	0.00	0.95	3.020	O	|	|	|	|	1.94
20.917	0.00	0.95	3.013	O	|	|	|	|	1.94
21.000	0.00	0.95	3.007	O	|	|	|	|	1.94
21.083	0.00	0.95	3.000	O	|	|	|	|	1.94
21.167	0.00	0.95	2.994	O	|	|	|	|	1.94
21.250	0.00	0.95	2.987	O	|	|	|	|	1.94
21.333	0.00	0.95	2.981	O	|	|	|	|	1.93
21.417	0.00	0.95	2.974	O	|	|	|	|	1.93
21.500	0.00	0.95	2.968	O	|	|	|	|	1.93
21.583	0.00	0.95	2.961	O	|	|	|	|	1.93
21.667	0.00	0.94	2.955	O	|	|	|	|	1.93
21.750	0.00	0.94	2.948	O	|	|	|	|	1.93
21.833	0.00	0.94	2.942	O	|	|	|	|	1.93
21.917	0.00	0.94	2.935	O	|	|	|	|	1.92
22.000	0.00	0.94	2.929	O	|	|	|	|	1.92
22.083	0.00	0.94	2.922	O	|	|	|	|	1.92
22.167	0.00	0.94	2.916	O	|	|	|	|	1.92
22.250	0.00	0.94	2.909	O	|	|	|	|	1.92
22.333	0.00	0.94	2.903	O	|	|	|	|	1.92
22.417	0.00	0.94	2.896	O	|	|	|	|	1.91
22.500	0.00	0.94	2.890	O	|	|	|	|	1.91
22.583	0.00	0.94	2.883	O	|	|	|	|	1.91
22.667	0.00	0.94	2.877	O	|	|	|	|	1.91
22.750	0.00	0.94	2.870	O	|	|	|	|	1.91
22.833	0.00	0.94	2.864	O	|	|	|	|	1.91
22.917	0.00	0.94	2.857	O	|	|	|	|	1.90
23.000	0.00	0.94	2.851	O	|	|	|	|	1.90
23.083	0.00	0.94	2.844	O	|	|	|	|	1.90
23.167	0.00	0.94	2.838	O	|	|	|	|	1.90
23.250	0.00	0.94	2.832	O	|	|	|	|	1.90
23.333	0.00	0.94	2.825	O	|	|	|	|	1.90
23.417	0.00	0.94	2.819	O	|	|	|	|	1.89
23.500	0.00	0.93	2.812	O	|	|	|	|	1.89
23.583	0.00	0.93	2.806	O	|	|	|	|	1.89
23.667	0.00	0.93	2.799	O	|	|	|	|	1.89
23.750	0.00	0.93	2.793	O	|	|	|	|	1.89
23.833	0.00	0.93	2.787	O	|	|	|	|	1.88
23.917	0.00	0.93	2.780	O	|	|	|	|	1.88
24.000	0.00	0.93	2.774	O	|	|	|	|	1.88
24.083	0.00	0.93	2.767	O	|	|	|	|	1.88
24.167	0.00	0.93	2.761	O	|	|	|	|	1.88
24.250	0.00	0.93	2.754	O	|	|	|	|	1.87
24.333	0.00	0.93	2.748	O	|	|	|	|	1.87

24.417	0.00	0.93	2.742	O	|	|	|	|	1.87
24.500	0.00	0.93	2.735	O	|	|	|	|	1.87
24.583	0.00	0.93	2.729	O	|	|	|	|	1.87
24.667	0.00	0.93	2.722	O	|	|	|	|	1.86
24.750	0.00	0.93	2.716	O	|	|	|	|	1.86
24.833	0.00	0.93	2.710	O	|	|	|	|	1.86
24.917	0.00	0.93	2.703	O	|	|	|	|	1.86
25.000	0.00	0.92	2.697	O	|	|	|	|	1.86
25.083	0.00	0.92	2.691	O	|	|	|	|	1.86
25.167	0.00	0.92	2.684	O	|	|	|	|	1.85
25.250	0.00	0.92	2.678	O	|	|	|	|	1.85
25.333	0.00	0.92	2.672	O	|	|	|	|	1.85
25.417	0.00	0.92	2.665	O	|	|	|	|	1.85
25.500	0.00	0.92	2.659	O	|	|	|	|	1.85
25.583	0.00	0.92	2.652	O	|	|	|	|	1.84
25.667	0.00	0.92	2.646	O	|	|	|	|	1.84
25.750	0.00	0.92	2.640	O	|	|	|	|	1.84
25.833	0.00	0.92	2.633	O	|	|	|	|	1.84
25.917	0.00	0.92	2.627	O	|	|	|	|	1.84
26.000	0.00	0.92	2.621	O	|	|	|	|	1.84
26.083	0.00	0.92	2.614	O	|	|	|	|	1.83
26.167	0.00	0.92	2.608	O	|	|	|	|	1.83
26.250	0.00	0.92	2.602	O	|	|	|	|	1.83
26.333	0.00	0.92	2.596	O	|	|	|	|	1.83
26.417	0.00	0.92	2.589	O	|	|	|	|	1.83
26.500	0.00	0.92	2.583	O	|	|	|	|	1.82
26.583	0.00	0.92	2.577	O	|	|	|	|	1.82
26.667	0.00	0.91	2.570	O	|	|	|	|	1.82
26.750	0.00	0.91	2.564	O	|	|	|	|	1.82
26.833	0.00	0.91	2.558	O	|	|	|	|	1.82
26.917	0.00	0.91	2.551	O	|	|	|	|	1.81
27.000	0.00	0.91	2.545	O	|	|	|	|	1.81
27.083	0.00	0.91	2.539	O	|	|	|	|	1.81
27.167	0.00	0.91	2.533	O	|	|	|	|	1.81
27.250	0.00	0.91	2.526	O	|	|	|	|	1.81
27.333	0.00	0.91	2.520	O	|	|	|	|	1.81
27.417	0.00	0.91	2.514	O	|	|	|	|	1.80
27.500	0.00	0.91	2.507	O	|	|	|	|	1.80
27.583	0.00	0.91	2.501	O	|	|	|	|	1.80
27.667	0.00	0.91	2.495	O	|	|	|	|	1.80
27.750	0.00	0.91	2.489	O	|	|	|	|	1.80
27.833	0.00	0.91	2.482	O	|	|	|	|	1.79
27.917	0.00	0.91	2.476	O	|	|	|	|	1.79
28.000	0.00	0.91	2.470	O	|	|	|	|	1.79
28.083	0.00	0.91	2.464	O	|	|	|	|	1.79
28.167	0.00	0.91	2.457	O	|	|	|	|	1.79
28.250	0.00	0.90	2.451	O	|	|	|	|	1.79
28.333	0.00	0.90	2.445	O	|	|	|	|	1.78
28.417	0.00	0.90	2.439	O	|	|	|	|	1.78
28.500	0.00	0.90	2.433	O	|	|	|	|	1.78
28.583	0.00	0.90	2.426	O	|	|	|	|	1.78
28.667	0.00	0.90	2.420	O	|	|	|	|	1.78
28.750	0.00	0.90	2.414	O	|	|	|	|	1.77
28.833	0.00	0.90	2.408	O	|	|	|	|	1.77
28.917	0.00	0.90	2.402	O	|	|	|	|	1.77
29.000	0.00	0.90	2.395	O	|	|	|	|	1.77
29.083	0.00	0.90	2.389	O	|	|	|	|	1.77
29.167	0.00	0.90	2.383	O	|	|	|	|	1.77
29.250	0.00	0.90	2.377	O	|	|	|	|	1.76
29.333	0.00	0.90	2.371	O	|	|	|	|	1.76
29.417	0.00	0.90	2.364	O	|	|	|	|	1.76
29.500	0.00	0.90	2.358	O	|	|	|	|	1.76
29.583	0.00	0.90	2.352	O	|	|	|	|	1.76
29.667	0.00	0.90	2.346	O	|	|	|	|	1.75
29.750	0.00	0.90	2.340	O	|	|	|	|	1.75
29.833	0.00	0.89	2.334	O	|	|	|	|	1.75
29.917	0.00	0.89	2.327	O	|	|	|	|	1.75
30.000	0.00	0.89	2.321	O	|	|	|	|	1.75
30.083	0.00	0.89	2.315	O	|	|	|	|	1.75
30.167	0.00	0.89	2.309	O	|	|	|	|	1.74
30.250	0.00	0.89	2.303	O	|	|	|	|	1.74
30.333	0.00	0.89	2.297	O	|	|	|	|	1.74
30.417	0.00	0.89	2.290	O	|	|	|	|	1.74
30.500	0.00	0.89	2.284	O	|	|	|	|	1.74
30.583	0.00	0.89	2.278	O	|	|	|	|	1.73

30.667	0.00	0.89	2.272	O	|	|	|	|	1.73
30.750	0.00	0.89	2.266	O	|	|	|	|	1.73
30.833	0.00	0.89	2.260	O	|	|	|	|	1.73
30.917	0.00	0.89	2.254	O	|	|	|	|	1.73
31.000	0.00	0.89	2.248	O	|	|	|	|	1.73
31.083	0.00	0.89	2.241	O	|	|	|	|	1.72
31.167	0.00	0.89	2.235	O	|	|	|	|	1.72
31.250	0.00	0.89	2.229	O	|	|	|	|	1.72
31.333	0.00	0.89	2.223	O	|	|	|	|	1.72
31.417	0.00	0.89	2.217	O	|	|	|	|	1.72
31.500	0.00	0.88	2.211	O	|	|	|	|	1.71
31.583	0.00	0.88	2.205	O	|	|	|	|	1.71
31.667	0.00	0.88	2.199	O	|	|	|	|	1.71
31.750	0.00	0.88	2.193	O	|	|	|	|	1.71
31.833	0.00	0.88	2.187	O	|	|	|	|	1.71
31.917	0.00	0.88	2.181	O	|	|	|	|	1.71
32.000	0.00	0.88	2.174	O	|	|	|	|	1.70
32.083	0.00	0.88	2.168	O	|	|	|	|	1.70
32.167	0.00	0.88	2.162	O	|	|	|	|	1.70
32.250	0.00	0.88	2.156	O	|	|	|	|	1.70
32.333	0.00	0.88	2.150	O	|	|	|	|	1.70
32.417	0.00	0.88	2.144	O	|	|	|	|	1.70
32.500	0.00	0.88	2.138	O	|	|	|	|	1.69
32.583	0.00	0.88	2.132	O	|	|	|	|	1.69
32.667	0.00	0.88	2.126	O	|	|	|	|	1.69
32.750	0.00	0.88	2.120	O	|	|	|	|	1.69
32.833	0.00	0.88	2.114	O	|	|	|	|	1.69
32.917	0.00	0.88	2.108	O	|	|	|	|	1.68
33.000	0.00	0.88	2.102	O	|	|	|	|	1.68
33.083	0.00	0.88	2.096	O	|	|	|	|	1.68
33.167	0.00	0.87	2.090	O	|	|	|	|	1.68
33.250	0.00	0.87	2.084	O	|	|	|	|	1.68
33.333	0.00	0.87	2.078	O	|	|	|	|	1.68
33.417	0.00	0.87	2.072	O	|	|	|	|	1.67
33.500	0.00	0.87	2.066	O	|	|	|	|	1.67
33.583	0.00	0.87	2.060	O	|	|	|	|	1.67
33.667	0.00	0.87	2.054	O	|	|	|	|	1.67
33.750	0.00	0.87	2.048	O	|	|	|	|	1.67
33.833	0.00	0.87	2.042	O	|	|	|	|	1.67
33.917	0.00	0.87	2.036	O	|	|	|	|	1.66
34.000	0.00	0.87	2.030	O	|	|	|	|	1.66
34.083	0.00	0.87	2.024	O	|	|	|	|	1.66
34.167	0.00	0.87	2.018	O	|	|	|	|	1.66
34.250	0.00	0.87	2.012	O	|	|	|	|	1.66
34.333	0.00	0.87	2.006	O	|	|	|	|	1.65
34.417	0.00	0.87	2.000	O	|	|	|	|	1.65
34.500	0.00	0.87	1.994	O	|	|	|	|	1.65
34.583	0.00	0.87	1.988	O	|	|	|	|	1.65
34.667	0.00	0.87	1.982	O	|	|	|	|	1.65
34.750	0.00	0.87	1.976	O	|	|	|	|	1.65
34.833	0.00	0.86	1.970	O	|	|	|	|	1.64
34.917	0.00	0.86	1.964	O	|	|	|	|	1.64
35.000	0.00	0.86	1.958	O	|	|	|	|	1.64
35.083	0.00	0.86	1.952	O	|	|	|	|	1.64
35.167	0.00	0.86	1.946	O	|	|	|	|	1.64
35.250	0.00	0.86	1.940	O	|	|	|	|	1.64
35.333	0.00	0.86	1.934	O	|	|	|	|	1.63
35.417	0.00	0.86	1.928	O	|	|	|	|	1.63
35.500	0.00	0.86	1.922	O	|	|	|	|	1.63
35.583	0.00	0.86	1.917	O	|	|	|	|	1.63
35.667	0.00	0.86	1.911	O	|	|	|	|	1.63
35.750	0.00	0.86	1.905	O	|	|	|	|	1.63
35.833	0.00	0.86	1.899	O	|	|	|	|	1.62
35.917	0.00	0.86	1.893	O	|	|	|	|	1.62
36.000	0.00	0.86	1.887	O	|	|	|	|	1.62
36.083	0.00	0.86	1.881	O	|	|	|	|	1.62
36.167	0.00	0.86	1.875	O	|	|	|	|	1.62
36.250	0.00	0.86	1.869	O	|	|	|	|	1.61
36.333	0.00	0.86	1.863	O	|	|	|	|	1.61
36.417	0.00	0.86	1.857	O	|	|	|	|	1.61
36.500	0.00	0.85	1.852	O	|	|	|	|	1.61
36.583	0.00	0.85	1.846	O	|	|	|	|	1.61
36.667	0.00	0.85	1.840	O	|	|	|	|	1.61
36.750	0.00	0.85	1.834	O	|	|	|	|	1.60
36.833	0.00	0.85	1.828	O	|	|	|	|	1.60

36.917	0.00	0.85	1.822	O				1.60
37.000	0.00	0.85	1.816	O				1.60
37.083	0.00	0.85	1.810	O				1.60
37.167	0.00	0.85	1.805	O				1.60
37.250	0.00	0.85	1.799	O				1.59
37.333	0.00	0.85	1.793	O				1.59
37.417	0.00	0.85	1.787	O				1.59
37.500	0.00	0.85	1.781	O				1.59
37.583	0.00	0.85	1.775	O				1.59
37.667	0.00	0.85	1.769	O				1.59
37.750	0.00	0.85	1.764	O				1.58
37.833	0.00	0.85	1.758	O				1.58
37.917	0.00	0.85	1.752	O				1.58
38.000	0.00	0.85	1.746	O				1.58
38.083	0.00	0.85	1.740	O				1.58
38.167	0.00	0.85	1.734	O				1.58
38.250	0.00	0.84	1.729	O				1.57
38.333	0.00	0.84	1.723	O				1.57
38.417	0.00	0.84	1.717	O				1.57
38.500	0.00	0.84	1.711	O				1.57
38.583	0.00	0.84	1.705	O				1.57
38.667	0.00	0.84	1.700	O				1.56
38.750	0.00	0.84	1.694	O				1.56
38.833	0.00	0.84	1.688	O				1.56
38.917	0.00	0.84	1.682	O				1.56
39.000	0.00	0.84	1.676	O				1.56
39.083	0.00	0.84	1.671	O				1.56
39.167	0.00	0.84	1.665	O				1.55
39.250	0.00	0.84	1.659	O				1.55
39.333	0.00	0.84	1.653	O				1.55
39.417	0.00	0.84	1.648	O				1.55
39.500	0.00	0.84	1.642	O				1.55
39.583	0.00	0.84	1.636	O				1.55
39.667	0.00	0.84	1.630	O				1.54
39.750	0.00	0.84	1.624	O				1.54
39.833	0.00	0.84	1.619	O				1.54
39.917	0.00	0.84	1.613	O				1.54
40.000	0.00	0.83	1.607	O				1.54
40.083	0.00	0.83	1.601	O				1.54
40.167	0.00	0.83	1.596	O				1.53
40.250	0.00	0.83	1.590	O				1.53
40.333	0.00	0.83	1.584	O				1.53
40.417	0.00	0.83	1.579	O				1.53
40.500	0.00	0.83	1.573	O				1.53
40.583	0.00	0.83	1.567	O				1.53
40.667	0.00	0.83	1.561	O				1.52
40.750	0.00	0.83	1.556	O				1.52
40.833	0.00	0.83	1.550	O				1.52
40.917	0.00	0.83	1.544	O				1.52
41.000	0.00	0.83	1.538	O				1.52
41.083	0.00	0.83	1.533	O				1.52
41.167	0.00	0.83	1.527	O				1.51
41.250	0.00	0.83	1.521	O				1.51
41.333	0.00	0.83	1.516	O				1.51
41.417	0.00	0.83	1.510	O				1.51
41.500	0.00	0.83	1.504	O				1.51
41.583	0.00	0.83	1.499	O				1.51
41.667	0.00	0.83	1.493	O				1.50
41.750	0.00	0.82	1.487	O				1.50
41.833	0.00	0.82	1.482	O				1.50
41.917	0.00	0.82	1.476	O				1.50
42.000	0.00	0.82	1.470	O				1.50
42.083	0.00	0.82	1.465	O				1.49
42.167	0.00	0.82	1.459	O				1.49
42.250	0.00	0.82	1.453	O				1.49
42.333	0.00	0.82	1.448	O				1.49
42.417	0.00	0.82	1.442	O				1.48
42.500	0.00	0.82	1.436	O				1.48
42.583	0.00	0.82	1.431	O				1.48
42.667	0.00	0.82	1.425	O				1.47
42.750	0.00	0.81	1.419	O				1.47
42.833	0.00	0.81	1.414	O				1.47
42.917	0.00	0.81	1.408	O				1.47
43.000	0.00	0.81	1.403	O				1.46
43.083	0.00	0.81	1.397	O				1.46

43.167	0.00	0.81	1.391	O	|	|	|	|	1.46
43.250	0.00	0.81	1.386	O	|	|	|	|	1.46
43.333	0.00	0.81	1.380	O	|	|	|	|	1.45
43.417	0.00	0.81	1.375	O	|	|	|	|	1.45
43.500	0.00	0.81	1.369	O	|	|	|	|	1.45
43.583	0.00	0.81	1.364	O	|	|	|	|	1.45
43.667	0.00	0.80	1.358	O	|	|	|	|	1.44
43.750	0.00	0.80	1.353	O	|	|	|	|	1.44
43.833	0.00	0.80	1.347	O	|	|	|	|	1.44
43.917	0.00	0.80	1.342	O	|	|	|	|	1.43
44.000	0.00	0.80	1.336	O	|	|	|	|	1.43
44.083	0.00	0.80	1.330	O	|	|	|	|	1.43
44.167	0.00	0.80	1.325	O	|	|	|	|	1.43
44.250	0.00	0.80	1.319	O	|	|	|	|	1.42
44.333	0.00	0.80	1.314	O	|	|	|	|	1.42
44.417	0.00	0.80	1.308	O	|	|	|	|	1.42
44.500	0.00	0.80	1.303	O	|	|	|	|	1.42
44.583	0.00	0.79	1.298	O	|	|	|	|	1.41
44.667	0.00	0.79	1.292	O	|	|	|	|	1.41
44.750	0.00	0.79	1.287	O	|	|	|	|	1.41
44.833	0.00	0.79	1.281	O	|	|	|	|	1.41
44.917	0.00	0.79	1.276	O	|	|	|	|	1.40
45.000	0.00	0.79	1.270	O	|	|	|	|	1.40
45.083	0.00	0.79	1.265	O	|	|	|	|	1.40
45.167	0.00	0.79	1.259	O	|	|	|	|	1.40
45.250	0.00	0.79	1.254	O	|	|	|	|	1.39
45.333	0.00	0.79	1.249	O	|	|	|	|	1.39
45.417	0.00	0.79	1.243	O	|	|	|	|	1.39
45.500	0.00	0.79	1.238	O	|	|	|	|	1.39
45.583	0.00	0.78	1.232	O	|	|	|	|	1.38
45.667	0.00	0.78	1.227	O	|	|	|	|	1.38
45.750	0.00	0.78	1.222	O	|	|	|	|	1.38
45.833	0.00	0.78	1.216	O	|	|	|	|	1.38
45.917	0.00	0.78	1.211	O	|	|	|	|	1.37
46.000	0.00	0.78	1.205	O	|	|	|	|	1.37
46.083	0.00	0.78	1.200	O	|	|	|	|	1.37
46.167	0.00	0.78	1.195	O	|	|	|	|	1.36
46.250	0.00	0.78	1.189	O	|	|	|	|	1.36
46.333	0.00	0.78	1.184	O	|	|	|	|	1.36
46.417	0.00	0.78	1.179	O	|	|	|	|	1.36
46.500	0.00	0.77	1.173	O	|	|	|	|	1.35
46.583	0.00	0.77	1.168	O	|	|	|	|	1.35
46.667	0.00	0.77	1.163	O	|	|	|	|	1.35
46.750	0.00	0.77	1.157	O	|	|	|	|	1.35
46.833	0.00	0.77	1.152	O	|	|	|	|	1.34
46.917	0.00	0.77	1.147	O	|	|	|	|	1.34
47.000	0.00	0.77	1.141	O	|	|	|	|	1.34
47.083	0.00	0.77	1.136	O	|	|	|	|	1.34
47.167	0.00	0.77	1.131	O	|	|	|	|	1.33
47.250	0.00	0.77	1.125	O	|	|	|	|	1.33
47.333	0.00	0.77	1.120	O	|	|	|	|	1.33
47.417	0.00	0.77	1.115	O	|	|	|	|	1.33
47.500	0.00	0.76	1.110	O	|	|	|	|	1.32
47.583	0.00	0.76	1.104	O	|	|	|	|	1.32
47.667	0.00	0.76	1.099	O	|	|	|	|	1.32
47.750	0.00	0.76	1.094	O	|	|	|	|	1.32
47.833	0.00	0.76	1.089	O	|	|	|	|	1.31
47.917	0.00	0.76	1.083	O	|	|	|	|	1.31
48.000	0.00	0.76	1.078	O	|	|	|	|	1.31
48.083	0.00	0.76	1.073	O	|	|	|	|	1.31
48.167	0.00	0.76	1.068	O	|	|	|	|	1.30
48.250	0.00	0.76	1.063	O	|	|	|	|	1.30
48.333	0.00	0.76	1.057	O	|	|	|	|	1.30
48.417	0.00	0.75	1.052	O	|	|	|	|	1.30
48.500	0.00	0.75	1.047	O	|	|	|	|	1.29
48.583	0.00	0.75	1.042	O	|	|	|	|	1.29
48.667	0.00	0.75	1.037	O	|	|	|	|	1.29
48.750	0.00	0.75	1.031	O	|	|	|	|	1.29
48.833	0.00	0.75	1.026	O	|	|	|	|	1.28
48.917	0.00	0.75	1.021	O	|	|	|	|	1.28
49.000	0.00	0.75	1.016	O	|	|	|	|	1.28
49.083	0.00	0.75	1.011	O	|	|	|	|	1.28
49.167	0.00	0.75	1.006	O	|	|	|	|	1.27
49.250	0.00	0.75	1.000	O	|	|	|	|	1.27
49.333	0.00	0.75	0.995	O	|	|	|	|	1.27

49.417	0.00	0.74	0.990	O					1.27
49.500	0.00	0.74	0.985	O					1.26
49.583	0.00	0.74	0.980	O					1.26
49.667	0.00	0.74	0.975	O					1.26
49.750	0.00	0.74	0.970	O					1.26
49.833	0.00	0.74	0.965	O					1.26
49.917	0.00	0.74	0.959	O					1.25
50.000	0.00	0.74	0.954	O					1.25
50.083	0.00	0.74	0.949	O					1.25
50.167	0.00	0.74	0.944	O					1.25
50.250	0.00	0.74	0.939	O					1.24
50.333	0.00	0.74	0.934	O					1.24
50.417	0.00	0.73	0.929	O					1.24
50.500	0.00	0.73	0.924	O					1.24
50.583	0.00	0.73	0.919	O					1.23
50.667	0.00	0.73	0.914	O					1.23
50.750	0.00	0.73	0.909	O					1.23
50.833	0.00	0.73	0.904	O					1.23
50.917	0.00	0.73	0.899	O					1.22
51.000	0.00	0.73	0.894	O					1.22
51.083	0.00	0.73	0.889	O					1.22
51.167	0.00	0.73	0.884	O					1.22
51.250	0.00	0.73	0.879	O					1.21
51.333	0.00	0.73	0.874	O					1.21
51.417	0.00	0.73	0.869	O					1.21
51.500	0.00	0.72	0.864	O					1.21
51.583	0.00	0.72	0.859	O					1.20
51.667	0.00	0.72	0.854	O					1.20
51.750	0.00	0.72	0.849	O					1.20
51.833	0.00	0.72	0.844	O					1.20
51.917	0.00	0.72	0.839	O					1.20
52.000	0.00	0.72	0.834	O					1.19
52.083	0.00	0.72	0.829	O					1.19
52.167	0.00	0.72	0.824	O					1.19
52.250	0.00	0.72	0.819	O					1.19
52.333	0.00	0.72	0.814	O					1.18
52.417	0.00	0.72	0.809	O					1.18
52.500	0.00	0.71	0.804	O					1.18
52.583	0.00	0.71	0.799	O					1.18
52.667	0.00	0.71	0.794	O					1.17
52.750	0.00	0.71	0.789	O					1.17
52.833	0.00	0.71	0.785	O					1.17
52.917	0.00	0.71	0.780	O					1.17
53.000	0.00	0.71	0.775	O					1.16
53.083	0.00	0.71	0.770	O					1.16
53.167	0.00	0.71	0.765	O					1.16
53.250	0.00	0.71	0.760	O					1.16
53.333	0.00	0.71	0.755	O					1.16
53.417	0.00	0.71	0.750	O					1.15
53.500	0.00	0.71	0.746	O					1.15
53.583	0.00	0.70	0.741	O					1.15
53.667	0.00	0.70	0.736	O					1.15
53.750	0.00	0.70	0.731	O					1.14
53.833	0.00	0.70	0.726	O					1.14
53.917	0.00	0.70	0.721	O					1.14
54.000	0.00	0.70	0.717	O					1.14
54.083	0.00	0.70	0.712	O					1.13
54.167	0.00	0.70	0.707	O					1.13
54.250	0.00	0.70	0.702	O					1.13
54.333	0.00	0.70	0.697	O					1.13
54.417	0.00	0.70	0.692	O					1.13
54.500	0.00	0.70	0.688	O					1.12
54.583	0.00	0.70	0.683	O					1.12
54.667	0.00	0.69	0.678	O					1.12
54.750	0.00	0.69	0.673	O					1.12
54.833	0.00	0.69	0.669	O					1.11
54.917	0.00	0.69	0.664	O					1.11
55.000	0.00	0.69	0.659	O					1.11
55.083	0.00	0.69	0.654	O					1.11
55.167	0.00	0.69	0.649	O					1.10
55.250	0.00	0.69	0.645	O					1.10
55.333	0.00	0.69	0.640	O					1.10
55.417	0.00	0.69	0.635	O					1.10
55.500	0.00	0.69	0.631	O					1.10
55.583	0.00	0.69	0.626	O					1.09

55.667	0.00	0.68	0.621	O	|	|	|	1.09
55.750	0.00	0.68	0.616	O	|	|	|	1.09
55.833	0.00	0.68	0.612	O	|	|	|	1.09
55.917	0.00	0.68	0.607	O	|	|	|	1.08
56.000	0.00	0.68	0.602	O	|	|	|	1.08
56.083	0.00	0.68	0.598	O	|	|	|	1.08
56.167	0.00	0.68	0.593	O	|	|	|	1.08
56.250	0.00	0.68	0.588	O	|	|	|	1.08
56.333	0.00	0.68	0.584	O	|	|	|	1.07
56.417	0.00	0.68	0.579	O	|	|	|	1.07
56.500	0.00	0.68	0.574	O	|	|	|	1.07
56.583	0.00	0.68	0.570	O	|	|	|	1.07
56.667	0.00	0.68	0.565	O	|	|	|	1.06
56.750	0.00	0.68	0.560	O	|	|	|	1.06
56.833	0.00	0.67	0.556	O	|	|	|	1.06
56.917	0.00	0.67	0.551	O	|	|	|	1.06
57.000	0.00	0.67	0.546	O	|	|	|	1.06
57.083	0.00	0.67	0.542	O	|	|	|	1.05
57.167	0.00	0.67	0.537	O	|	|	|	1.05
57.250	0.00	0.67	0.532	O	|	|	|	1.05
57.333	0.00	0.67	0.528	O	|	|	|	1.05
57.417	0.00	0.67	0.523	O	|	|	|	1.04
57.500	0.00	0.67	0.519	O	|	|	|	1.04
57.583	0.00	0.67	0.514	O	|	|	|	1.04
57.667	0.00	0.67	0.509	O	|	|	|	1.04
57.750	0.00	0.67	0.505	O	|	|	|	1.04
57.833	0.00	0.67	0.500	O	|	|	|	1.03
57.917	0.00	0.66	0.496	O	|	|	|	1.03
58.000	0.00	0.66	0.491	O	|	|	|	1.03
58.083	0.00	0.66	0.486	O	|	|	|	1.03
58.167	0.00	0.66	0.482	O	|	|	|	1.02
58.250	0.00	0.66	0.477	O	|	|	|	1.02
58.333	0.00	0.66	0.473	O	|	|	|	1.02
58.417	0.00	0.66	0.468	O	|	|	|	1.02
58.500	0.00	0.66	0.464	O	|	|	|	1.02
58.583	0.00	0.66	0.459	O	|	|	|	1.01
58.667	0.00	0.66	0.455	O	|	|	|	1.01
58.750	0.00	0.66	0.450	O	|	|	|	1.01
58.833	0.00	0.66	0.446	O	|	|	|	1.01
58.917	0.00	0.66	0.441	O	|	|	|	1.01
59.000	0.00	0.66	0.437	O	|	|	|	1.00
59.083	0.00	0.65	0.432	O	|	|	|	1.00
59.167	0.00	0.65	0.428	O	|	|	|	1.00
59.250	0.00	0.65	0.423	O	|	|	|	0.99
59.333	0.00	0.65	0.419	O	|	|	|	0.98
59.417	0.00	0.64	0.414	O	|	|	|	0.98
59.500	0.00	0.64	0.410	O	|	|	|	0.97
59.583	0.00	0.64	0.405	O	|	|	|	0.97
59.667	0.00	0.64	0.401	O	|	|	|	0.96
59.750	0.00	0.63	0.397	O	|	|	|	0.96
59.833	0.00	0.63	0.392	O	|	|	|	0.95
59.917	0.00	0.63	0.388	O	|	|	|	0.94
60.000	0.00	0.63	0.384	O	|	|	|	0.94
60.083	0.00	0.62	0.379	O	|	|	|	0.93
60.167	0.00	0.62	0.375	O	|	|	|	0.93
60.250	0.00	0.62	0.371	O	|	|	|	0.92
60.333	0.00	0.61	0.366	O	|	|	|	0.92
60.417	0.00	0.61	0.362	O	|	|	|	0.91
60.500	0.00	0.61	0.358	O	|	|	|	0.90
60.583	0.00	0.61	0.354	O	|	|	|	0.90
60.667	0.00	0.60	0.350	O	|	|	|	0.89
60.750	0.00	0.60	0.346	O	|	|	|	0.89
60.833	0.00	0.60	0.341	O	|	|	|	0.88
60.917	0.00	0.60	0.337	O	|	|	|	0.88
61.000	0.00	0.59	0.333	O	|	|	|	0.87
61.083	0.00	0.59	0.329	O	|	|	|	0.87
61.167	0.00	0.59	0.325	O	|	|	|	0.86
61.250	0.00	0.59	0.321	O	|	|	|	0.86
61.333	0.00	0.58	0.317	O	|	|	|	0.85
61.417	0.00	0.58	0.313	O	|	|	|	0.84
61.500	0.00	0.58	0.309	O	|	|	|	0.84
61.583	0.00	0.58	0.305	O	|	|	|	0.83
61.667	0.00	0.57	0.301	O	|	|	|	0.83
61.750	0.00	0.57	0.297	O	|	|	|	0.82
61.833	0.00	0.57	0.293	O	|	|	|	0.82

61.917	0.00	0.57	0.289	O	|	|	|	|	0.81
62.000	0.00	0.56	0.285	O	|	|	|	|	0.81
62.083	0.00	0.56	0.281	O	|	|	|	|	0.80
62.167	0.00	0.56	0.278	O	|	|	|	|	0.80
62.250	0.00	0.56	0.274	O	|	|	|	|	0.79
62.333	0.00	0.56	0.270	O	|	|	|	|	0.79
62.417	0.00	0.55	0.266	O	|	|	|	|	0.78
62.500	0.00	0.55	0.262	O	|	|	|	|	0.78
62.583	0.00	0.55	0.258	O	|	|	|	|	0.77
62.667	0.00	0.55	0.255	O	|	|	|	|	0.77
62.750	0.00	0.54	0.251	O	|	|	|	|	0.76
62.833	0.00	0.54	0.247	O	|	|	|	|	0.76
62.917	0.00	0.54	0.244	O	|	|	|	|	0.75
63.000	0.00	0.54	0.240	O	|	|	|	|	0.75
63.083	0.00	0.53	0.236	O	|	|	|	|	0.74
63.167	0.00	0.53	0.232	O	|	|	|	|	0.74
63.250	0.00	0.53	0.229	O	|	|	|	|	0.73
63.333	0.00	0.53	0.225	O	|	|	|	|	0.73
63.417	0.00	0.53	0.222	O	|	|	|	|	0.72
63.500	0.00	0.52	0.218	O	|	|	|	|	0.72
63.583	0.00	0.52	0.214	O	|	|	|	|	0.71
63.667	0.00	0.52	0.211	O	|	|	|	|	0.71
63.750	0.00	0.52	0.207	O	|	|	|	|	0.70
63.833	0.00	0.51	0.204	O	|	|	|	|	0.70
63.917	0.00	0.51	0.200	O	|	|	|	|	0.70
64.000	0.00	0.51	0.197	O	|	|	|	|	0.69
64.083	0.00	0.51	0.193	O	|	|	|	|	0.69
64.167	0.00	0.51	0.190	O	|	|	|	|	0.68
64.250	0.00	0.50	0.186	O	|	|	|	|	0.68
64.333	0.00	0.50	0.183	O	|	|	|	|	0.67
64.417	0.00	0.50	0.179	O	|	|	|	|	0.67
64.500	0.00	0.50	0.176	O	|	|	|	|	0.66
64.583	0.00	0.49	0.172	O	|	|	|	|	0.66
64.667	0.00	0.49	0.169	O	|	|	|	|	0.65
64.750	0.00	0.49	0.166	O	|	|	|	|	0.65
64.833	0.00	0.49	0.162	O	|	|	|	|	0.64
64.917	0.00	0.49	0.159	O	|	|	|	|	0.64
65.000	0.00	0.48	0.156	O	|	|	|	|	0.64
65.083	0.00	0.48	0.152	O	|	|	|	|	0.63
65.167	0.00	0.48	0.149	O	|	|	|	|	0.63
65.250	0.00	0.48	0.146	O	|	|	|	|	0.62
65.333	0.00	0.48	0.142	O	|	|	|	|	0.62
65.417	0.00	0.47	0.139	O	|	|	|	|	0.61
65.500	0.00	0.47	0.136	O	|	|	|	|	0.61
65.583	0.00	0.47	0.133	O	|	|	|	|	0.61
65.667	0.00	0.47	0.129	O	|	|	|	|	0.60
65.750	0.00	0.47	0.126	O	|	|	|	|	0.60
65.833	0.00	0.46	0.123	O	|	|	|	|	0.59
65.917	0.00	0.46	0.120	O	|	|	|	|	0.59
66.000	0.00	0.46	0.116	O	|	|	|	|	0.58
66.083	0.00	0.46	0.113	O	|	|	|	|	0.58
66.167	0.00	0.46	0.110	O	|	|	|	|	0.58
66.250	0.00	0.45	0.107	O	|	|	|	|	0.57
66.333	0.00	0.45	0.104	O	|	|	|	|	0.57
66.417	0.00	0.45	0.101	O	|	|	|	|	0.56
66.500	0.00	0.45	0.098	O	|	|	|	|	0.56
66.583	0.00	0.45	0.095	O	|	|	|	|	0.56
66.667	0.00	0.44	0.092	O	|	|	|	|	0.55
66.750	0.00	0.44	0.088	O	|	|	|	|	0.55
66.833	0.00	0.44	0.085	O	|	|	|	|	0.54
66.917	0.00	0.44	0.082	O	|	|	|	|	0.54
67.000	0.00	0.44	0.079	O	|	|	|	|	0.54
67.083	0.00	0.44	0.076	O	|	|	|	|	0.53
67.167	0.00	0.43	0.073	O	|	|	|	|	0.53
67.250	0.00	0.43	0.070	O	|	|	|	|	0.52
67.333	0.00	0.43	0.067	O	|	|	|	|	0.52
67.417	0.00	0.43	0.065	O	|	|	|	|	0.52
67.500	0.00	0.43	0.062	O	|	|	|	|	0.51
67.583	0.00	0.42	0.059	O	|	|	|	|	0.51
67.667	0.00	0.42	0.056	O	|	|	|	|	0.50
67.750	0.00	0.42	0.053	O	|	|	|	|	0.50
67.833	0.00	0.40	0.050	O	|	|	|	|	0.48
67.917	0.00	0.38	0.047	O	|	|	|	|	0.46
68.000	0.00	0.36	0.045	O	|	|	|	|	0.44
68.083	0.00	0.34	0.042	O	|	|	|	|	0.42

68.167	0.00	0.32	0.040	O	|	|	|	|	0.40
68.250	0.00	0.30	0.038	O	|	|	|	|	0.38
68.333	0.00	0.29	0.036	O	|	|	|	|	0.37
68.417	0.00	0.27	0.034	O	|	|	|	|	0.35
68.500	0.00	0.26	0.032	O	|	|	|	|	0.34
68.583	0.00	0.24	0.031	O	|	|	|	|	0.33
68.667	0.00	0.23	0.029	O	|	|	|	|	0.31
68.750	0.00	0.22	0.027	O	|	|	|	|	0.30
68.833	0.00	0.21	0.026	O	|	|	|	|	0.29
68.917	0.00	0.20	0.025	O	|	|	|	|	0.28
69.000	0.00	0.19	0.023	O	|	|	|	|	0.27
69.083	0.00	0.18	0.022	O	|	|	|	|	0.26
69.167	0.00	0.17	0.021	O	|	|	|	|	0.25
69.250	0.00	0.16	0.020	O	|	|	|	|	0.24
69.333	0.00	0.15	0.019	O	|	|	|	|	0.24
69.417	0.00	0.14	0.018	O	|	|	|	|	0.23
69.500	0.00	0.13	0.017	O	|	|	|	|	0.22
69.583	0.00	0.13	0.016	O	|	|	|	|	0.21
69.667	0.00	0.12	0.015	O	|	|	|	|	0.21
69.750	0.00	0.11	0.014	O	|	|	|	|	0.20
69.833	0.00	0.11	0.013	O	|	|	|	|	0.19
69.917	0.00	0.10	0.013	O	|	|	|	|	0.19
70.000	0.00	0.10	0.012	O	|	|	|	|	0.18
70.083	0.00	0.09	0.011	O	|	|	|	|	0.18
70.167	0.00	0.09	0.011	O	|	|	|	|	0.17
70.250	0.00	0.08	0.010	O	|	|	|	|	0.17
70.333	0.00	0.08	0.010	O	|	|	|	|	0.17
70.417	0.00	0.07	0.009	O	|	|	|	|	0.16
70.500	0.00	0.07	0.009	O	|	|	|	|	0.16
70.583	0.00	0.07	0.008	O	|	|	|	|	0.15
70.667	0.00	0.06	0.008	O	|	|	|	|	0.15
70.750	0.00	0.06	0.007	O	|	|	|	|	0.15
70.833	0.00	0.06	0.007	O	|	|	|	|	0.14
70.917	0.00	0.05	0.006	O	|	|	|	|	0.14
71.000	0.00	0.05	0.006	O	|	|	|	|	0.14
71.083	0.00	0.05	0.006	O	|	|	|	|	0.14
71.167	0.00	0.05	0.005	O	|	|	|	|	0.13
71.250	0.00	0.04	0.005	O	|	|	|	|	0.13
71.333	0.00	0.04	0.005	O	|	|	|	|	0.13
71.417	0.00	0.04	0.005	O	|	|	|	|	0.13
71.500	0.00	0.04	0.004	O	|	|	|	|	0.13
71.583	0.00	0.03	0.004	O	|	|	|	|	0.12
71.667	0.00	0.03	0.004	O	|	|	|	|	0.12
71.750	0.00	0.03	0.004	O	|	|	|	|	0.12
71.833	0.00	0.03	0.003	O	|	|	|	|	0.12
71.917	0.00	0.03	0.003	O	|	|	|	|	0.12
72.000	0.00	0.03	0.003	O	|	|	|	|	0.12
72.083	0.00	0.02	0.003	O	|	|	|	|	0.11
72.167	0.00	0.02	0.003	O	|	|	|	|	0.11
72.250	0.00	0.02	0.003	O	|	|	|	|	0.11
72.333	0.00	0.02	0.002	O	|	|	|	|	0.11
72.417	0.00	0.02	0.002	O	|	|	|	|	0.11
72.500	0.00	0.02	0.002	O	|	|	|	|	0.11
72.583	0.00	0.02	0.002	O	|	|	|	|	0.11
72.667	0.00	0.02	0.002	O	|	|	|	|	0.11
72.750	0.00	0.02	0.002	O	|	|	|	|	0.11
72.833	0.00	0.02	0.002	O	|	|	|	|	0.11
72.917	0.00	0.01	0.002	O	|	|	|	|	0.10
73.000	0.00	0.01	0.001	O	|	|	|	|	0.10
73.083	0.00	0.01	0.001	O	|	|	|	|	0.10
73.167	0.00	0.01	0.001	O	|	|	|	|	0.10
73.250	0.00	0.01	0.001	O	|	|	|	|	0.10
73.333	0.00	0.01	0.001	O	|	|	|	|	0.10
73.417	0.00	0.01	0.001	O	|	|	|	|	0.10
73.500	0.00	0.01	0.001	O	|	|	|	|	0.10
73.583	0.00	0.01	0.001	O	|	|	|	|	0.09
73.667	0.00	0.01	0.001	O	|	|	|	|	0.08
73.750	0.00	0.01	0.001	O	|	|	|	|	0.08
73.833	0.00	0.01	0.001	O	|	|	|	|	0.07
73.917	0.00	0.01	0.001	O	|	|	|	|	0.07
74.000	0.00	0.01	0.001	O	|	|	|	|	0.06
74.083	0.00	0.01	0.001	O	|	|	|	|	0.06
74.167	0.00	0.01	0.001	O	|	|	|	|	0.06
74.250	0.00	0.01	0.001	O	|	|	|	|	0.05
74.333	0.00	0.00	0.000	O	|	|	|	|	0.05

74.417	0.00	0.00	0.000	O	|	|	|	|	0.05
74.500	0.00	0.00	0.000	O	|	|	|	|	0.04
74.583	0.00	0.00	0.000	O	|	|	|	|	0.04
74.667	0.00	0.00	0.000	O	|	|	|	|	0.04
74.750	0.00	0.00	0.000	O	|	|	|	|	0.03
74.833	0.00	0.00	0.000	O	|	|	|	|	0.03
74.917	0.00	0.00	0.000	O	|	|	|	|	0.03
75.000	0.00	0.00	0.000	O	|	|	|	|	0.03
75.083	0.00	0.00	0.000	O	|	|	|	|	0.03
75.167	0.00	0.00	0.000	O	|	|	|	|	0.02
75.250	0.00	0.00	0.000	O	|	|	|	|	0.02
75.333	0.00	0.00	0.000	O	|	|	|	|	0.02
75.417	0.00	0.00	0.000	O	|	|	|	|	0.02
75.500	0.00	0.00	0.000	O	|	|	|	|	0.02
75.583	0.00	0.00	0.000	O	|	|	|	|	0.02
75.667	0.00	0.00	0.000	O	|	|	|	|	0.02
75.750	0.00	0.00	0.000	O	|	|	|	|	0.02
75.833	0.00	0.00	0.000	O	|	|	|	|	0.01
75.917	0.00	0.00	0.000	O	|	|	|	|	0.01
76.000	0.00	0.00	0.000	O	|	|	|	|	0.01
76.083	0.00	0.00	0.000	O	|	|	|	|	0.01
76.167	0.00	0.00	0.000	O	|	|	|	|	0.01
76.250	0.00	0.00	0.000	O	|	|	|	|	0.01
76.333	0.00	0.00	0.000	O	|	|	|	|	0.01

**********HYDROGRAPH DATA**********

Number of intervals = 916
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 40.497 (CFS)
Total volume = 13.750 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

BASIN ROUTING
DMA B
PROPOSED CONDITIONS
100-YEAR 24-HOUR

FLOOD HYDROGRAPH ROUTING PROGRAM
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Study date: 10/22/14

14-0213 SHOPOFF
BASIN ROUTING
DMA B
100-YEAR 24-HOUR

Program License Serial Number 4010

******************** HYDROGRAPH INFORMATION **********************

From study/file name: BPROP24100.rte
**************************HYDROGRAPH DATA**************************
Number of intervals = 295
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 53.919 (CFS)
Total volume = 27.063 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 295
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.100	0.001	0.010	0.001	0.001
0.500	0.053	0.421	0.052	0.054
1.000	0.430	0.654	0.428	0.432
1.500	1.478	0.824	1.475	1.481
1.900	2.842	0.937	2.839	2.845
2.000	3.240	0.964	3.237	3.243
2.400	4.909	5.372	4.891	4.927
2.500	5.335	6.288	5.313	5.357
3.000	7.513	19.930	7.444	7.582
3.100	7.959	22.013	7.883	8.035
3.500	9.773	35.542	9.651	9.895
4.000	12.116	58.286	11.915	12.317
4.500	14.544	85.412	14.250	14.838
5.000	17.059	116.189	16.659	17.459
5.500	19.662	150.189	19.145	20.179
6.000	22.356	187.115	21.712	23.000
6.200	23.460	202.653	22.762	24.158

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	13.5	26.96	40.44	53.92	Depth (Ft.)
0.083	0.39	0.01	0.001	O					0.10
0.167	1.96	0.07	0.009	OI					0.16
0.250	2.48	0.19	0.024	OI					0.27
0.333	2.89	0.32	0.040	OI					0.40
0.417	3.74	0.43	0.061	O I					0.51
0.500	4.03	0.44	0.084	O I					0.54
0.583	4.15	0.46	0.109	O I					0.57
0.667	4.19	0.47	0.135	O I					0.61
0.750	4.21	0.49	0.161	O I					0.64
0.833	4.41	0.50	0.187	O I					0.68
0.917	5.19	0.52	0.216	O I					0.72
1.000	5.46	0.54	0.249	O I					0.76
1.083	5.36	0.56	0.283	O I					0.80
1.167	4.62	0.58	0.313	O I					0.85
1.250	4.37	0.60	0.340	O I					0.88
1.333	4.27	0.61	0.366	O I					0.91
1.417	4.24	0.63	0.391	O I					0.95
1.500	4.23	0.65	0.416	O I					0.98
1.583	4.22	0.66	0.440	O I					1.00
1.667	4.22	0.66	0.465	O I					1.02
1.750	4.22	0.66	0.489	O I					1.03
1.833	4.41	0.67	0.514	O I					1.04
1.917	5.19	0.67	0.543	O I					1.05
2.000	5.46	0.68	0.575	O I					1.07
2.083	5.56	0.68	0.608	O I					1.08
2.167	5.60	0.69	0.642	O I					1.10
2.250	5.61	0.69	0.676	O I					1.12
2.333	5.62	0.70	0.709	O I					1.13
2.417	5.62	0.70	0.743	O I					1.15
2.500	5.62	0.71	0.777	O I					1.17
2.583	4.94	0.72	0.809	O I					1.18
2.667	2.24	0.72	0.828	OI					1.19
2.750	1.36	0.72	0.836	O					1.19
2.833	1.02	0.72	0.839	O					1.20
2.917	0.92	0.72	0.841	O					1.20
3.000	0.91	0.72	0.842	O					1.20
3.083	0.92	0.72	0.843	O					1.20
3.167	0.94	0.72	0.845	O					1.20
3.250	0.97	0.72	0.846	O					1.20
3.333	1.00	0.72	0.848	O					1.20
3.417	1.04	0.72	0.850	O					1.20
3.500	1.07	0.72	0.853	O					1.20
3.583	1.10	0.72	0.855	O					1.20
3.667	1.13	0.72	0.858	O					1.20
3.750	1.16	0.72	0.861	O					1.21
3.833	1.43	0.72	0.865	O					1.21
3.917	2.42	0.73	0.873	OI					1.21
4.000	2.77	0.73	0.886	OI					1.22
4.083	2.93	0.73	0.900	OI					1.22
4.167	3.00	0.73	0.916	OI					1.23
4.250	3.05	0.74	0.932	OI					1.24
4.333	3.33	0.74	0.948	OI					1.25
4.417	4.32	0.74	0.970	O I					1.26
4.500	4.67	0.75	0.995	O I					1.27
4.583	4.83	0.75	1.023	O I					1.28
4.667	4.90	0.75	1.051	O I					1.30
4.750	4.95	0.76	1.080	O I					1.31
4.833	5.23	0.76	1.110	O I					1.32
4.917	6.21	0.77	1.144	O I					1.34
5.000	6.56	0.78	1.182	O I					1.36
5.083	6.24	0.78	1.221	O I					1.38
5.167	4.41	0.79	1.252	O I					1.39
5.250	3.81	0.79	1.275	O I					1.40
5.333	3.83	0.79	1.296	O I					1.41
5.417	4.73	0.80	1.320	O I					1.42
5.500	5.05	0.80	1.348	O I					1.44
5.583	5.43	0.81	1.379	O I					1.45

5.667	6.45	0.81	1.414	O I	|	|	|	|	1.47
5.750	6.82	0.82	1.454	O I	|	|	|	|	1.49
5.833	6.99	0.83	1.496	O I	|	|	|	|	1.51
5.917	7.06	0.83	1.539	O I	|	|	|	|	1.52
6.000	7.11	0.83	1.582	O I	|	|	|	|	1.53
6.083	7.39	0.84	1.626	O I	|	|	|	|	1.54
6.167	8.37	0.84	1.675	O I	|	|	|	|	1.56
6.250	8.72	0.84	1.728	O I	|	|	|	|	1.57
6.333	8.88	0.85	1.782	O I	|	|	|	|	1.59
6.417	8.95	0.85	1.838	O I	|	|	|	|	1.61
6.500	8.99	0.86	1.894	O I	|	|	|	|	1.62
6.583	9.27	0.86	1.951	O I	|	|	|	|	1.64
6.667	10.26	0.87	2.012	O I	|	|	|	|	1.66
6.750	10.60	0.87	2.078	O I	|	|	|	|	1.68
6.833	10.76	0.88	2.145	O I	|	|	|	|	1.70
6.917	10.83	0.88	2.214	O I	|	|	|	|	1.72
7.000	10.88	0.89	2.282	O I	|	|	|	|	1.74
7.083	10.92	0.90	2.351	O I	|	|	|	|	1.76
7.167	10.95	0.90	2.420	O I	|	|	|	|	1.78
7.250	10.97	0.91	2.490	O I	|	|	|	|	1.80
7.333	11.24	0.91	2.560	O I	|	|	|	|	1.82
7.417	12.22	0.92	2.634	O I	|	|	|	|	1.84
7.500	12.57	0.93	2.713	O I	|	|	|	|	1.86
7.583	12.97	0.93	2.795	O I	|	|	|	|	1.89
7.667	13.99	0.94	2.881	O I	|	|	|	|	1.91
7.750	14.36	0.95	2.972	O I	|	|	|	|	1.93
7.833	14.76	0.95	3.066	O I	|	|	|	|	1.96
7.917	15.79	0.96	3.165	O I	|	|	|	|	1.98
8.000	16.15	1.04	3.268	O I	|	|	|	|	2.01
8.083	16.80	1.32	3.373	O I	|	|	|	|	2.03
8.167	18.78	1.61	3.486	O I	|	|	|	|	2.06
8.250	19.46	1.93	3.605	O I	|	|	|	|	2.09
8.333	19.76	2.25	3.726	O I	|	|	|	|	2.12
8.417	19.87	2.56	3.846	O I	|	|	|	|	2.15
8.500	19.93	2.88	3.964	O I	|	|	|	|	2.17
8.583	20.22	3.19	4.082	O I	|	|	|	|	2.20
8.667	21.20	3.50	4.201	O I	|	|	|	|	2.23
8.750	21.55	3.82	4.323	O I	|	|	|	|	2.26
8.833	21.95	4.15	4.445	O I	|	|	|	|	2.29
8.917	22.97	4.48	4.570	O I	|	|	|	|	2.32
9.000	23.33	4.81	4.698	O I	|	|	|	|	2.35
9.083	23.98	5.15	4.826	O I	|	|	|	|	2.38
9.167	25.96	5.49	4.962	O I	|	|	|	|	2.41
9.250	26.64	5.79	5.104	O I	|	|	|	|	2.45
9.333	27.17	6.10	5.248	O I	|	|	|	|	2.48
9.417	28.24	6.67	5.395	O I	|	|	|	|	2.51
9.500	28.62	7.58	5.542	O I	|	|	|	|	2.55
9.583	29.03	8.48	5.685	O I	|	|	|	|	2.58
9.667	30.06	9.37	5.827	O I	|	|	|	|	2.61
9.750	30.42	10.25	5.968	O I	|	|	|	|	2.65
9.833	30.83	11.11	6.105	O I	|	|	|	|	2.68
9.917	31.85	11.97	6.242	O I	|	|	|	|	2.71
10.000	32.21	12.81	6.377	O I	|	|	|	|	2.74
10.083	30.69	13.60	6.502	O I	|	|	|	|	2.77
10.167	24.09	14.18	6.595	O I	|	|	|	|	2.79
10.250	21.90	14.55	6.655	O I	|	|	|	|	2.80
10.333	21.02	14.85	6.701	O I	|	|	|	|	2.81
10.417	20.74	15.10	6.742	O I	|	|	|	|	2.82
10.500	20.67	15.34	6.780	O I	|	|	|	|	2.83
10.583	21.83	15.59	6.820	O I	|	|	|	|	2.84
10.667	26.60	15.95	6.878	O I	|	|	|	|	2.85
10.750	28.22	16.44	6.955	O I	|	|	|	|	2.87
10.833	28.89	16.95	7.037	O I	|	|	|	|	2.89
10.917	29.14	17.46	7.118	O I	|	|	|	|	2.91
11.000	29.23	17.95	7.197	O I	|	|	|	|	2.93
11.083	29.07	18.42	7.273	O I	|	|	|	|	2.94
11.167	28.15	18.85	7.341	O I	|	|	|	|	2.96
11.250	27.86	19.24	7.403	O I	|	|	|	|	2.97
11.333	27.75	19.60	7.461	O I	|	|	|	|	2.99
11.417	27.73	19.94	7.516	O I	|	|	|	|	3.00
11.500	27.74	20.19	7.568	O I	|	|	|	|	3.01
11.583	27.27	20.42	7.618	O I	|	|	|	|	3.02
11.667	25.39	20.61	7.658	O I	|	|	|	|	3.03
11.750	24.77	20.75	7.688	O I	|	|	|	|	3.04
11.833	24.78	20.88	7.716	O I	|	|	|	|	3.05

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11.917   25.67   21.01      7.745  |        |   O  I|        |        |     3.05
12.000   25.98   21.17      7.778  |        |   O  I|        |        |     3.06
12.083   27.80   21.35      7.817  |        |   O   I        |        |     3.07
12.167   34.53   21.66      7.883  |        |   O   |   I    |        |     3.08
12.250   36.80   22.15      7.978  |        |    O  |    I   |        |     3.10
12.333   37.98   22.92      8.080  |        |    O  |     I  |        |     3.13
12.417   39.27   23.70      8.186  |        |     O |      I|        |     3.15
12.500   39.72   24.49      8.292  |        |     O |      I|        |     3.17
12.583   40.42   25.27      8.396  |        |     O |      I|        |     3.20
12.667   42.41   26.08      8.505  |        |      O|       |I       |     3.22
12.750   43.09   26.92      8.617  |        |      O|       |I       |     3.24
12.833   43.62   27.74      8.727  |        |       O       |I       |     3.27
12.917   44.68   28.56      8.837  |        |       O       | I      |     3.29
13.000   45.06   29.38      8.947  |        |       |O      | I      |     3.32
13.083   46.43   30.20      9.056  |        |       |O      |  I     |     3.34
13.167   51.27   31.13      9.182  |        |       | O     |     I  |     3.37
13.250   52.90   32.18      9.322  |        |       |  O    |      I|     3.40
13.333   53.58   33.24      9.464  |        |       |  O    |      I|     3.43
13.417   53.82   34.26      9.601  |        |       |   O   |      I|     3.46
13.500   53.92   35.24      9.733  |        |       |   O   |       I     3.49
13.583   51.34   36.28      9.849  |        |       |    O  |     I  |     3.52
13.667   40.89   36.92      9.915  |        |       |    O  I       |     3.53
13.750   37.40   37.06      9.929  |        |       |    OI |       |     3.53
13.833   36.00   37.04      9.927  |        |       |    O  |       |     3.53
13.917   35.54   36.96      9.919  |        |       |    O  |       |     3.53
14.000   35.40   36.86      9.909  |        |       |    O  |       |     3.53
14.083   36.27   36.79      9.902  |        |       |    O  |       |     3.53
14.167   40.08   36.88      9.911  |        |       |    O I|       |     3.53
14.250   41.38   37.13      9.937  |        |       |     O I       |     3.53
14.333   41.67   37.42      9.966  |        |       |     O I       |     3.54
14.417   40.92   37.67      9.992  |        |       |     O I       |     3.55
14.500   40.68   37.87     10.013  |        |       |     O I       |     3.55
14.583   40.61   38.05     10.031  |        |       |     O I       |     3.56
14.667   40.60   38.21     10.048  |        |       |     O I       |     3.56
14.750   40.60   38.37     10.064  |        |       |     O I       |     3.56
14.833   40.37   38.50     10.078  |        |       |     OI|       |     3.57
14.917   39.44   38.60     10.088  |        |       |     OI|       |     3.57
15.000   39.14   38.64     10.092  |        |       |     OI|       |     3.57
15.083   38.79   38.66     10.094  |        |       |     OI|       |     3.57
15.167   37.81   38.64     10.092  |        |       |     O |       |     3.57
15.250   37.49   38.57     10.085  |        |       |     O |       |     3.57
15.333   37.13   38.49     10.077  |        |       |     O |       |     3.56
15.417   36.15   38.37     10.065  |        |       |    IO |       |     3.56
15.500   35.84   38.22     10.049  |        |       |    IO |       |     3.56
15.583   34.76   38.03     10.029  |        |       |   I O |       |     3.55
15.667   30.92   37.69      9.995  |        |       | I   O |       |     3.55
15.750   29.65   37.21      9.945  |        |       |I    O |       |     3.54
15.833   29.14   36.71      9.893  |        |       |I   O  |       |     3.53
15.917   28.98   36.21      9.842  |        |       |I   O  |       |     3.51
16.000   28.94   35.74      9.794  |        |       |I   O  |       |     3.50
16.083   25.31   35.27      9.736  |        |      I|   O   |       |     3.49
16.167   11.02   34.41      9.621  |     I  |       |   O   |       |     3.47
16.250    6.25   33.12      9.448  |  I     |       |  O    |       |     3.43
16.333    4.33   31.73      9.261  | I      |       | O     |       |     3.39
16.417    3.68   30.34      9.075  | I      |       | O     |       |     3.35
16.500    3.48   29.00      8.895  | I      |       |O      |       |     3.31
16.583    3.11   27.71      8.723  |I       |       O       |       |     3.27
16.667    2.14   26.45      8.554  |I       |      O|       |       |     3.23
16.750    1.84   25.23      8.390  |I       |     O |       |       |     3.20
16.833    1.72   24.05      8.233  |I       |     O |       |       |     3.16
16.917    1.70   22.94      8.083  |I       |    O  |       |       |     3.13
17.000    1.70   21.92      7.940  |I       |    O  |       |       |     3.10
17.083    2.19   21.29      7.804  |I       |   O   |       |       |     3.07
17.167    4.11   20.72      7.682  | I      |   O   |       |       |     3.04
17.250    4.77   20.20      7.571  | I      |  O    |       |       |     3.01
17.333    5.04   19.65      7.468  | I      |  O    |       |       |     2.99
17.417    5.15   19.03      7.370  |  I     |  O    |       |       |     2.97
17.500    5.19   18.45      7.276  |  I     | O     |       |       |     2.95
17.583    5.23   17.89      7.187  |  I     | O     |       |       |     2.93
17.667    5.25   17.35      7.102  |  I     | O     |       |       |     2.91
17.750    5.27   16.84      7.020  |  I     |O      |       |       |     2.89
17.833    5.04   16.35      6.941  | I      |O      |       |       |     2.87
17.917    4.11   15.85      6.862  | I      |O      |       |       |     2.85
18.000    3.80   15.35      6.782  | I      |O      |       |       |     2.83
18.083    3.69   14.86      6.704  | I      O       |       |       |     2.81
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18.167	3.66	14.39	6.628	| I O |	|	|	2.80
18.250	3.66	13.94	6.556	| I O |	|	|	2.78
18.333	3.67	13.50	6.487	| I O |	|	|	2.76
18.417	3.68	13.09	6.420	| I O|	|	|	2.75
18.500	3.70	12.69	6.357	| I O|	|	|	2.73
18.583	3.47	12.31	6.296	| I O|	|	|	2.72
18.667	2.54	11.91	6.233	|I O|	|	|	2.71
18.750	2.23	11.51	6.169	|I O |	|	|	2.69
18.833	1.88	11.11	6.105	|I O |	|	|	2.68
18.917	0.89	10.70	6.039	I O |	|	|	2.66
19.000	0.57	10.28	5.972	I O |	|	|	2.65
19.083	0.69	9.87	5.907	I O |	|	|	2.63
19.167	1.61	9.50	5.848	I O |	|	|	2.62
19.250	1.93	9.18	5.796	|I O |	|	|	2.61
19.333	2.30	8.88	5.749	|I O |	|	|	2.59
19.417	3.31	8.62	5.708	|I O |	|	|	2.59
19.500	3.66	8.41	5.673	| I O |	|	|	2.58
19.583	3.57	8.20	5.641	| I O |	|	|	2.57
19.667	2.68	7.99	5.607	|I O |	|	|	2.56
19.750	2.39	7.76	5.570	|I O |	|	|	2.55
19.833	2.04	7.53	5.533	|I O |	|	|	2.55
19.917	1.06	7.27	5.492	I O |	|	|	2.54
20.000	0.74	7.00	5.449	I O |	|	|	2.53
20.083	0.85	6.74	5.407	I O |	|	|	2.52
20.167	1.77	6.51	5.371	|I O |	|	|	2.51
20.250	2.09	6.32	5.340	|I O |	|	|	2.50
20.333	2.22	6.24	5.312	|I O |	|	|	2.49
20.417	2.28	6.18	5.284	|I O |	|	|	2.49
20.500	2.30	6.12	5.258	|I O |	|	|	2.48
20.583	2.33	6.07	5.232	|I O |	|	|	2.48
20.667	2.34	6.01	5.206	|I O |	|	|	2.47
20.750	2.35	5.96	5.181	|I O |	|	|	2.46
20.833	2.12	5.90	5.156	|I O |	|	|	2.46
20.917	1.18	5.84	5.127	I O |	|	|	2.45
21.000	0.87	5.77	5.094	I O |	|	|	2.44
21.083	1.00	5.70	5.061	I O |	|	|	2.44
21.167	1.92	5.64	5.032	|I O |	|	|	2.43
21.250	2.23	5.58	5.007	|I O |	|	|	2.42
21.333	2.12	5.53	4.984	|I O |	|	|	2.42
21.417	1.22	5.48	4.958	I O |	|	|	2.41
21.500	0.93	5.41	4.928	I O |	|	|	2.40
21.583	1.06	5.34	4.897	I O |	|	|	2.40
21.667	1.98	5.27	4.871	|I O |	|	|	2.39
21.750	2.29	5.22	4.850	|I O |	|	|	2.39
21.833	2.18	5.16	4.829	|I O |	|	|	2.38
21.917	1.28	5.10	4.806	I O |	|	|	2.38
22.000	0.98	5.03	4.779	I O |	|	|	2.37
22.083	1.11	4.96	4.752	I O |	|	|	2.36
22.167	2.03	4.90	4.729	|IO |	|	|	2.36
22.250	2.35	4.85	4.710	|IO |	|	|	2.35
22.333	2.23	4.80	4.693	|IO |	|	|	2.35
22.417	1.33	4.75	4.672	I O |	|	|	2.34
22.500	1.03	4.68	4.648	I O |	|	|	2.34
22.583	0.92	4.62	4.623	I O |	|	|	2.33
22.667	0.89	4.55	4.597	I O |	|	|	2.33
22.750	0.88	4.48	4.572	I O |	|	|	2.32
22.833	0.88	4.42	4.548	I O |	|	|	2.31
22.917	0.88	4.35	4.523	I O |	|	|	2.31
23.000	0.89	4.29	4.500	I O |	|	|	2.30
23.083	0.89	4.23	4.477	I O |	|	|	2.30
23.167	0.90	4.17	4.454	I O |	|	|	2.29
23.250	0.91	4.11	4.432	I O |	|	|	2.29
23.333	0.91	4.05	4.410	I O |	|	|	2.28
23.417	0.92	4.00	4.388	I O |	|	|	2.28
23.500	0.92	3.94	4.367	I O |	|	|	2.27
23.583	0.93	3.89	4.347	I O |	|	|	2.27
23.667	0.93	3.83	4.326	I O |	|	|	2.26
23.750	0.93	3.78	4.307	I O |	|	|	2.26
23.833	0.94	3.73	4.287	I O |	|	|	2.25
23.917	0.94	3.68	4.268	I O |	|	|	2.25
24.000	0.94	3.63	4.250	I O |	|	|	2.24
24.083	0.81	3.58	4.231	I O |	|	|	2.24
24.167	0.29	3.53	4.210	I O |	|	|	2.23
24.250	0.11	3.47	4.187	I O |	|	|	2.23
24.333	0.04	3.40	4.164	I O |	|	|	2.22

24.417	0.01	3.34	4.141	IO					2.22
24.500	0.01	3.28	4.118	IO					2.21
24.583	0.00	3.22	4.096	IO					2.21
24.667	0.00	3.17	4.074	IO					2.20
24.750	0.00	3.11	4.052	IO					2.19
24.833	0.00	3.05	4.031	IO					2.19
24.917	0.00	3.00	4.010	IO					2.18
25.000	0.00	2.94	3.990	IO					2.18
25.083	0.00	2.89	3.970	IO					2.17
25.167	0.00	2.84	3.950	IO					2.17
25.250	0.00	2.79	3.931	IO					2.17
25.333	0.00	2.74	3.912	IO					2.16
25.417	0.00	2.69	3.893	IO					2.16
25.500	0.00	2.64	3.875	IO					2.15
25.583	0.00	2.59	3.857	IO					2.15
25.667	0.00	2.55	3.839	IO					2.14
25.750	0.00	2.50	3.821	IO					2.14
25.833	0.00	2.45	3.804	IO					2.14
25.917	0.00	2.41	3.788	IO					2.13
26.000	0.00	2.37	3.771	IO					2.13
26.083	0.00	2.32	3.755	IO					2.12
26.167	0.00	2.28	3.739	IO					2.12
26.250	0.00	2.24	3.724	IO					2.12
26.333	0.00	2.20	3.708	IO					2.11
26.417	0.00	2.16	3.693	IO					2.11
26.500	0.00	2.12	3.679	IO					2.11
26.583	0.00	2.08	3.664	IO					2.10
26.667	0.00	2.05	3.650	IO					2.10
26.750	0.00	2.01	3.636	IO					2.09
26.833	0.00	1.97	3.622	IO					2.09
26.917	0.00	1.94	3.609	IO					2.09
27.000	0.00	1.90	3.595	IO					2.09
27.083	0.00	1.87	3.582	IO					2.08
27.167	0.00	1.83	3.570	IO					2.08
27.250	0.00	1.80	3.557	IO					2.08
27.333	0.00	1.77	3.545	IO					2.07
27.417	0.00	1.74	3.533	IO					2.07
27.500	0.00	1.71	3.521	IO					2.07
27.583	0.00	1.68	3.509	O					2.06
27.667	0.00	1.65	3.498	O					2.06
27.750	0.00	1.62	3.487	O					2.06
27.833	0.00	1.59	3.476	O					2.06
27.917	0.00	1.56	3.465	O					2.05
28.000	0.00	1.53	3.454	O					2.05
28.083	0.00	1.50	3.444	O					2.05
28.167	0.00	1.48	3.434	O					2.05
28.250	0.00	1.45	3.423	O					2.04
28.333	0.00	1.42	3.414	O					2.04
28.417	0.00	1.40	3.404	O					2.04
28.500	0.00	1.37	3.394	O					2.04
28.583	0.00	1.35	3.385	O					2.03
28.667	0.00	1.32	3.376	O					2.03
28.750	0.00	1.30	3.367	O					2.03
28.833	0.00	1.28	3.358	O					2.03
28.917	0.00	1.25	3.349	O					2.03
29.000	0.00	1.23	3.341	O					2.02
29.083	0.00	1.21	3.332	O					2.02
29.167	0.00	1.19	3.324	O					2.02
29.250	0.00	1.16	3.316	O					2.02
29.333	0.00	1.14	3.308	O					2.02
29.417	0.00	1.12	3.300	O					2.01
29.500	0.00	1.10	3.292	O					2.01
29.583	0.00	1.08	3.285	O					2.01
29.667	0.00	1.06	3.278	O					2.01
29.750	0.00	1.04	3.270	O					2.01
29.833	0.00	1.03	3.263	O					2.01
29.917	0.00	1.01	3.256	O					2.00
30.000	0.00	0.99	3.249	O					2.00
30.083	0.00	0.97	3.243	O					2.00
30.167	0.00	0.96	3.236	O					2.00
30.250	0.00	0.96	3.229	O					2.00
30.333	0.00	0.96	3.223	O					2.00
30.417	0.00	0.96	3.216	O					1.99
30.500	0.00	0.96	3.209	O					1.99
30.583	0.00	0.96	3.203	O					1.99

30.667	0.00	0.96	3.196	O					1.99
30.750	0.00	0.96	3.190	O					1.99
30.833	0.00	0.96	3.183	O					1.99
30.917	0.00	0.96	3.176	O					1.98
31.000	0.00	0.96	3.170	O					1.98
31.083	0.00	0.96	3.163	O					1.98
31.167	0.00	0.96	3.156	O					1.98
31.250	0.00	0.96	3.150	O					1.98
31.333	0.00	0.96	3.143	O					1.98
31.417	0.00	0.96	3.137	O					1.97
31.500	0.00	0.96	3.130	O					1.97
31.583	0.00	0.96	3.124	O					1.97
31.667	0.00	0.96	3.117	O					1.97
31.750	0.00	0.96	3.110	O					1.97
31.833	0.00	0.95	3.104	O					1.97
31.917	0.00	0.95	3.097	O					1.96
32.000	0.00	0.95	3.091	O					1.96
32.083	0.00	0.95	3.084	O					1.96
32.167	0.00	0.95	3.077	O					1.96
32.250	0.00	0.95	3.071	O					1.96
32.333	0.00	0.95	3.064	O					1.96
32.417	0.00	0.95	3.058	O					1.95
32.500	0.00	0.95	3.051	O					1.95
32.583	0.00	0.95	3.045	O					1.95
32.667	0.00	0.95	3.038	O					1.95
32.750	0.00	0.95	3.032	O					1.95
32.833	0.00	0.95	3.025	O					1.95
32.917	0.00	0.95	3.019	O					1.94
33.000	0.00	0.95	3.012	O					1.94
33.083	0.00	0.95	3.005	O					1.94
33.167	0.00	0.95	2.999	O					1.94
33.250	0.00	0.95	2.992	O					1.94
33.333	0.00	0.95	2.986	O					1.94
33.417	0.00	0.95	2.979	O					1.93
33.500	0.00	0.95	2.973	O					1.93
33.583	0.00	0.95	2.966	O					1.93
33.667	0.00	0.94	2.960	O					1.93
33.750	0.00	0.94	2.953	O					1.93
33.833	0.00	0.94	2.947	O					1.93
33.917	0.00	0.94	2.940	O					1.92
34.000	0.00	0.94	2.934	O					1.92
34.083	0.00	0.94	2.927	O					1.92
34.167	0.00	0.94	2.921	O					1.92
34.250	0.00	0.94	2.914	O					1.92
34.333	0.00	0.94	2.908	O					1.92
34.417	0.00	0.94	2.901	O					1.91
34.500	0.00	0.94	2.895	O					1.91
34.583	0.00	0.94	2.888	O					1.91
34.667	0.00	0.94	2.882	O					1.91
34.750	0.00	0.94	2.876	O					1.91
34.833	0.00	0.94	2.869	O					1.91
34.917	0.00	0.94	2.863	O					1.91
35.000	0.00	0.94	2.856	O					1.90
35.083	0.00	0.94	2.850	O					1.90
35.167	0.00	0.94	2.843	O					1.90
35.250	0.00	0.94	2.837	O					1.90
35.333	0.00	0.94	2.830	O					1.90
35.417	0.00	0.94	2.824	O					1.89
35.500	0.00	0.93	2.817	O					1.89
35.583	0.00	0.93	2.811	O					1.89
35.667	0.00	0.93	2.805	O					1.89
35.750	0.00	0.93	2.798	O					1.89
35.833	0.00	0.93	2.792	O					1.89
35.917	0.00	0.93	2.785	O					1.88
36.000	0.00	0.93	2.779	O					1.88
36.083	0.00	0.93	2.772	O					1.88
36.167	0.00	0.93	2.766	O					1.88
36.250	0.00	0.93	2.760	O					1.88
36.333	0.00	0.93	2.753	O					1.87
36.417	0.00	0.93	2.747	O					1.87
36.500	0.00	0.93	2.740	O					1.87
36.583	0.00	0.93	2.734	O					1.87
36.667	0.00	0.93	2.728	O					1.87
36.750	0.00	0.93	2.721	O					1.86
36.833	0.00	0.93	2.715	O					1.86

36.917	0.00	0.93	2.708	O	|	|	|	|	1.86
37.000	0.00	0.93	2.702	O	|	|	|	|	1.86
37.083	0.00	0.92	2.696	O	|	|	|	|	1.86
37.167	0.00	0.92	2.689	O	|	|	|	|	1.86
37.250	0.00	0.92	2.683	O	|	|	|	|	1.85
37.333	0.00	0.92	2.677	O	|	|	|	|	1.85
37.417	0.00	0.92	2.670	O	|	|	|	|	1.85
37.500	0.00	0.92	2.664	O	|	|	|	|	1.85
37.583	0.00	0.92	2.658	O	|	|	|	|	1.85
37.667	0.00	0.92	2.651	O	|	|	|	|	1.84
37.750	0.00	0.92	2.645	O	|	|	|	|	1.84
37.833	0.00	0.92	2.639	O	|	|	|	|	1.84
37.917	0.00	0.92	2.632	O	|	|	|	|	1.84
38.000	0.00	0.92	2.626	O	|	|	|	|	1.84
38.083	0.00	0.92	2.620	O	|	|	|	|	1.83
38.167	0.00	0.92	2.613	O	|	|	|	|	1.83
38.250	0.00	0.92	2.607	O	|	|	|	|	1.83
38.333	0.00	0.92	2.601	O	|	|	|	|	1.83
38.417	0.00	0.92	2.594	O	|	|	|	|	1.83
38.500	0.00	0.92	2.588	O	|	|	|	|	1.83
38.583	0.00	0.92	2.582	O	|	|	|	|	1.82
38.667	0.00	0.91	2.575	O	|	|	|	|	1.82
38.750	0.00	0.91	2.569	O	|	|	|	|	1.82
38.833	0.00	0.91	2.563	O	|	|	|	|	1.82
38.917	0.00	0.91	2.556	O	|	|	|	|	1.82
39.000	0.00	0.91	2.550	O	|	|	|	|	1.81
39.083	0.00	0.91	2.544	O	|	|	|	|	1.81
39.167	0.00	0.91	2.538	O	|	|	|	|	1.81
39.250	0.00	0.91	2.531	O	|	|	|	|	1.81
39.333	0.00	0.91	2.525	O	|	|	|	|	1.81
39.417	0.00	0.91	2.519	O	|	|	|	|	1.81
39.500	0.00	0.91	2.513	O	|	|	|	|	1.80
39.583	0.00	0.91	2.506	O	|	|	|	|	1.80
39.667	0.00	0.91	2.500	O	|	|	|	|	1.80
39.750	0.00	0.91	2.494	O	|	|	|	|	1.80
39.833	0.00	0.91	2.487	O	|	|	|	|	1.80
39.917	0.00	0.91	2.481	O	|	|	|	|	1.79
40.000	0.00	0.91	2.475	O	|	|	|	|	1.79
40.083	0.00	0.91	2.469	O	|	|	|	|	1.79
40.167	0.00	0.91	2.463	O	|	|	|	|	1.79
40.250	0.00	0.91	2.456	O	|	|	|	|	1.79
40.333	0.00	0.90	2.450	O	|	|	|	|	1.79
40.417	0.00	0.90	2.444	O	|	|	|	|	1.78
40.500	0.00	0.90	2.438	O	|	|	|	|	1.78
40.583	0.00	0.90	2.431	O	|	|	|	|	1.78
40.667	0.00	0.90	2.425	O	|	|	|	|	1.78
40.750	0.00	0.90	2.419	O	|	|	|	|	1.78
40.833	0.00	0.90	2.413	O	|	|	|	|	1.77
40.917	0.00	0.90	2.407	O	|	|	|	|	1.77
41.000	0.00	0.90	2.400	O	|	|	|	|	1.77
41.083	0.00	0.90	2.394	O	|	|	|	|	1.77
41.167	0.00	0.90	2.388	O	|	|	|	|	1.77
41.250	0.00	0.90	2.382	O	|	|	|	|	1.77
41.333	0.00	0.90	2.376	O	|	|	|	|	1.76
41.417	0.00	0.90	2.369	O	|	|	|	|	1.76
41.500	0.00	0.90	2.363	O	|	|	|	|	1.76
41.583	0.00	0.90	2.357	O	|	|	|	|	1.76
41.667	0.00	0.90	2.351	O	|	|	|	|	1.76
41.750	0.00	0.90	2.345	O	|	|	|	|	1.75
41.833	0.00	0.90	2.338	O	|	|	|	|	1.75
41.917	0.00	0.89	2.332	O	|	|	|	|	1.75
42.000	0.00	0.89	2.326	O	|	|	|	|	1.75
42.083	0.00	0.89	2.320	O	|	|	|	|	1.75
42.167	0.00	0.89	2.314	O	|	|	|	|	1.75
42.250	0.00	0.89	2.308	O	|	|	|	|	1.74
42.333	0.00	0.89	2.302	O	|	|	|	|	1.74
42.417	0.00	0.89	2.295	O	|	|	|	|	1.74
42.500	0.00	0.89	2.289	O	|	|	|	|	1.74
42.583	0.00	0.89	2.283	O	|	|	|	|	1.74
42.667	0.00	0.89	2.277	O	|	|	|	|	1.73
42.750	0.00	0.89	2.271	O	|	|	|	|	1.73
42.833	0.00	0.89	2.265	O	|	|	|	|	1.73
42.917	0.00	0.89	2.259	O	|	|	|	|	1.73
43.000	0.00	0.89	2.253	O	|	|	|	|	1.73
43.083	0.00	0.89	2.246	O	|	|	|	|	1.73

43.167	0.00	0.89	2.240	O	|	|	|	|	1.72
43.250	0.00	0.89	2.234	O	|	|	|	|	1.72
43.333	0.00	0.89	2.228	O	|	|	|	|	1.72
43.417	0.00	0.89	2.222	O	|	|	|	|	1.72
43.500	0.00	0.89	2.216	O	|	|	|	|	1.72
43.583	0.00	0.88	2.210	O	|	|	|	|	1.71
43.667	0.00	0.88	2.204	O	|	|	|	|	1.71
43.750	0.00	0.88	2.198	O	|	|	|	|	1.71
43.833	0.00	0.88	2.192	O	|	|	|	|	1.71
43.917	0.00	0.88	2.185	O	|	|	|	|	1.71
44.000	0.00	0.88	2.179	O	|	|	|	|	1.71
44.083	0.00	0.88	2.173	O	|	|	|	|	1.70
44.167	0.00	0.88	2.167	O	|	|	|	|	1.70
44.250	0.00	0.88	2.161	O	|	|	|	|	1.70
44.333	0.00	0.88	2.155	O	|	|	|	|	1.70
44.417	0.00	0.88	2.149	O	|	|	|	|	1.70
44.500	0.00	0.88	2.143	O	|	|	|	|	1.70
44.583	0.00	0.88	2.137	O	|	|	|	|	1.69
44.667	0.00	0.88	2.131	O	|	|	|	|	1.69
44.750	0.00	0.88	2.125	O	|	|	|	|	1.69
44.833	0.00	0.88	2.119	O	|	|	|	|	1.69
44.917	0.00	0.88	2.113	O	|	|	|	|	1.69
45.000	0.00	0.88	2.107	O	|	|	|	|	1.68
45.083	0.00	0.88	2.101	O	|	|	|	|	1.68
45.167	0.00	0.88	2.095	O	|	|	|	|	1.68
45.250	0.00	0.87	2.089	O	|	|	|	|	1.68
45.333	0.00	0.87	2.083	O	|	|	|	|	1.68
45.417	0.00	0.87	2.077	O	|	|	|	|	1.68
45.500	0.00	0.87	2.071	O	|	|	|	|	1.67
45.583	0.00	0.87	2.065	O	|	|	|	|	1.67
45.667	0.00	0.87	2.059	O	|	|	|	|	1.67
45.750	0.00	0.87	2.053	O	|	|	|	|	1.67
45.833	0.00	0.87	2.047	O	|	|	|	|	1.67
45.917	0.00	0.87	2.041	O	|	|	|	|	1.66
46.000	0.00	0.87	2.035	O	|	|	|	|	1.66
46.083	0.00	0.87	2.029	O	|	|	|	|	1.66
46.167	0.00	0.87	2.023	O	|	|	|	|	1.66
46.250	0.00	0.87	2.017	O	|	|	|	|	1.66
46.333	0.00	0.87	2.011	O	|	|	|	|	1.66
46.417	0.00	0.87	2.005	O	|	|	|	|	1.65
46.500	0.00	0.87	1.999	O	|	|	|	|	1.65
46.583	0.00	0.87	1.993	O	|	|	|	|	1.65
46.667	0.00	0.87	1.987	O	|	|	|	|	1.65
46.750	0.00	0.87	1.981	O	|	|	|	|	1.65
46.833	0.00	0.87	1.975	O	|	|	|	|	1.65
46.917	0.00	0.86	1.969	O	|	|	|	|	1.64
47.000	0.00	0.86	1.963	O	|	|	|	|	1.64
47.083	0.00	0.86	1.957	O	|	|	|	|	1.64
47.167	0.00	0.86	1.951	O	|	|	|	|	1.64
47.250	0.00	0.86	1.945	O	|	|	|	|	1.64
47.333	0.00	0.86	1.939	O	|	|	|	|	1.64
47.417	0.00	0.86	1.933	O	|	|	|	|	1.63
47.500	0.00	0.86	1.927	O	|	|	|	|	1.63
47.583	0.00	0.86	1.921	O	|	|	|	|	1.63
47.667	0.00	0.86	1.915	O	|	|	|	|	1.63
47.750	0.00	0.86	1.909	O	|	|	|	|	1.63
47.833	0.00	0.86	1.904	O	|	|	|	|	1.62
47.917	0.00	0.86	1.898	O	|	|	|	|	1.62
48.000	0.00	0.86	1.892	O	|	|	|	|	1.62
48.083	0.00	0.86	1.886	O	|	|	|	|	1.62
48.167	0.00	0.86	1.880	O	|	|	|	|	1.62
48.250	0.00	0.86	1.874	O	|	|	|	|	1.62
48.333	0.00	0.86	1.868	O	|	|	|	|	1.61
48.417	0.00	0.86	1.862	O	|	|	|	|	1.61
48.500	0.00	0.86	1.856	O	|	|	|	|	1.61
48.583	0.00	0.85	1.850	O	|	|	|	|	1.61
48.667	0.00	0.85	1.845	O	|	|	|	|	1.61
48.750	0.00	0.85	1.839	O	|	|	|	|	1.61
48.833	0.00	0.85	1.833	O	|	|	|	|	1.60
48.917	0.00	0.85	1.827	O	|	|	|	|	1.60
49.000	0.00	0.85	1.821	O	|	|	|	|	1.60
49.083	0.00	0.85	1.815	O	|	|	|	|	1.60
49.167	0.00	0.85	1.809	O	|	|	|	|	1.60
49.250	0.00	0.85	1.803	O	|	|	|	|	1.60
49.333	0.00	0.85	1.798	O	|	|	|	|	1.59

49.417	0.00	0.85	1.792	O				1.59
49.500	0.00	0.85	1.786	O				1.59
49.583	0.00	0.85	1.780	O				1.59
49.667	0.00	0.85	1.774	O				1.59
49.750	0.00	0.85	1.768	O				1.59
49.833	0.00	0.85	1.762	O				1.58
49.917	0.00	0.85	1.757	O				1.58
50.000	0.00	0.85	1.751	O				1.58
50.083	0.00	0.85	1.745	O				1.58
50.167	0.00	0.85	1.739	O				1.58
50.250	0.00	0.85	1.733	O				1.57
50.333	0.00	0.84	1.728	O				1.57
50.417	0.00	0.84	1.722	O				1.57
50.500	0.00	0.84	1.716	O				1.57
50.583	0.00	0.84	1.710	O				1.57
50.667	0.00	0.84	1.704	O				1.57
50.750	0.00	0.84	1.698	O				1.56
50.833	0.00	0.84	1.693	O				1.56
50.917	0.00	0.84	1.687	O				1.56
51.000	0.00	0.84	1.681	O				1.56
51.083	0.00	0.84	1.675	O				1.56
51.167	0.00	0.84	1.670	O				1.56
51.250	0.00	0.84	1.664	O				1.55
51.333	0.00	0.84	1.658	O				1.55
51.417	0.00	0.84	1.652	O				1.55
51.500	0.00	0.84	1.646	O				1.55
51.583	0.00	0.84	1.641	O				1.55
51.667	0.00	0.84	1.635	O				1.55
51.750	0.00	0.84	1.629	O				1.54
51.833	0.00	0.84	1.623	O				1.54
51.917	0.00	0.84	1.618	O				1.54
52.000	0.00	0.84	1.612	O				1.54
52.083	0.00	0.83	1.606	O				1.54
52.167	0.00	0.83	1.600	O				1.54
52.250	0.00	0.83	1.595	O				1.53
52.333	0.00	0.83	1.589	O				1.53
52.417	0.00	0.83	1.583	O				1.53
52.500	0.00	0.83	1.577	O				1.53
52.583	0.00	0.83	1.572	O				1.53
52.667	0.00	0.83	1.566	O				1.53
52.750	0.00	0.83	1.560	O				1.52
52.833	0.00	0.83	1.554	O				1.52
52.917	0.00	0.83	1.549	O				1.52
53.000	0.00	0.83	1.543	O				1.52
53.083	0.00	0.83	1.537	O				1.52
53.167	0.00	0.83	1.532	O				1.52
53.250	0.00	0.83	1.526	O				1.51
53.333	0.00	0.83	1.520	O				1.51
53.417	0.00	0.83	1.515	O				1.51
53.500	0.00	0.83	1.509	O				1.51
53.583	0.00	0.83	1.503	O				1.51
53.667	0.00	0.83	1.497	O				1.51
53.750	0.00	0.83	1.492	O				1.50
53.833	0.00	0.82	1.486	O				1.50
53.917	0.00	0.82	1.480	O				1.50
54.000	0.00	0.82	1.475	O				1.50
54.083	0.00	0.82	1.469	O				1.50
54.167	0.00	0.82	1.463	O				1.49
54.250	0.00	0.82	1.458	O				1.49
54.333	0.00	0.82	1.452	O				1.49
54.417	0.00	0.82	1.446	O				1.48
54.500	0.00	0.82	1.441	O				1.48
54.583	0.00	0.82	1.435	O				1.48
54.667	0.00	0.82	1.430	O				1.48
54.750	0.00	0.82	1.424	O				1.47
54.833	0.00	0.81	1.418	O				1.47
54.917	0.00	0.81	1.413	O				1.47
55.000	0.00	0.81	1.407	O				1.47
55.083	0.00	0.81	1.402	O				1.46
55.167	0.00	0.81	1.396	O				1.46
55.250	0.00	0.81	1.390	O				1.46
55.333	0.00	0.81	1.385	O				1.46
55.417	0.00	0.81	1.379	O				1.45
55.500	0.00	0.81	1.374	O				1.45
55.583	0.00	0.81	1.368	O				1.45

55.667	0.00	0.81	1.363	O	|	|	|	|	1.44
55.750	0.00	0.80	1.357	O	|	|	|	|	1.44
55.833	0.00	0.80	1.352	O	|	|	|	|	1.44
55.917	0.00	0.80	1.346	O	|	|	|	|	1.44
56.000	0.00	0.80	1.340	O	|	|	|	|	1.43
56.083	0.00	0.80	1.335	O	|	|	|	|	1.43
56.167	0.00	0.80	1.329	O	|	|	|	|	1.43
56.250	0.00	0.80	1.324	O	|	|	|	|	1.43
56.333	0.00	0.80	1.318	O	|	|	|	|	1.42
56.417	0.00	0.80	1.313	O	|	|	|	|	1.42
56.500	0.00	0.80	1.307	O	|	|	|	|	1.42
56.583	0.00	0.80	1.302	O	|	|	|	|	1.42
56.667	0.00	0.79	1.296	O	|	|	|	|	1.41
56.750	0.00	0.79	1.291	O	|	|	|	|	1.41
56.833	0.00	0.79	1.286	O	|	|	|	|	1.41
56.917	0.00	0.79	1.280	O	|	|	|	|	1.41
57.000	0.00	0.79	1.275	O	|	|	|	|	1.40
57.083	0.00	0.79	1.269	O	|	|	|	|	1.40
57.167	0.00	0.79	1.264	O	|	|	|	|	1.40
57.250	0.00	0.79	1.258	O	|	|	|	|	1.40
57.333	0.00	0.79	1.253	O	|	|	|	|	1.39
57.417	0.00	0.79	1.247	O	|	|	|	|	1.39
57.500	0.00	0.79	1.242	O	|	|	|	|	1.39
57.583	0.00	0.78	1.237	O	|	|	|	|	1.38
57.667	0.00	0.78	1.231	O	|	|	|	|	1.38
57.750	0.00	0.78	1.226	O	|	|	|	|	1.38
57.833	0.00	0.78	1.220	O	|	|	|	|	1.38
57.917	0.00	0.78	1.215	O	|	|	|	|	1.37
58.000	0.00	0.78	1.210	O	|	|	|	|	1.37
58.083	0.00	0.78	1.204	O	|	|	|	|	1.37
58.167	0.00	0.78	1.199	O	|	|	|	|	1.37
58.250	0.00	0.78	1.194	O	|	|	|	|	1.36
58.333	0.00	0.78	1.188	O	|	|	|	|	1.36
58.417	0.00	0.78	1.183	O	|	|	|	|	1.36
58.500	0.00	0.78	1.178	O	|	|	|	|	1.36
58.583	0.00	0.77	1.172	O	|	|	|	|	1.35
58.667	0.00	0.77	1.167	O	|	|	|	|	1.35
58.750	0.00	0.77	1.162	O	|	|	|	|	1.35
58.833	0.00	0.77	1.156	O	|	|	|	|	1.35
58.917	0.00	0.77	1.151	O	|	|	|	|	1.34
59.000	0.00	0.77	1.146	O	|	|	|	|	1.34
59.083	0.00	0.77	1.140	O	|	|	|	|	1.34
59.167	0.00	0.77	1.135	O	|	|	|	|	1.34
59.250	0.00	0.77	1.130	O	|	|	|	|	1.33
59.333	0.00	0.77	1.124	O	|	|	|	|	1.33
59.417	0.00	0.77	1.119	O	|	|	|	|	1.33
59.500	0.00	0.76	1.114	O	|	|	|	|	1.33
59.583	0.00	0.76	1.109	O	|	|	|	|	1.32
59.667	0.00	0.76	1.103	O	|	|	|	|	1.32
59.750	0.00	0.76	1.098	O	|	|	|	|	1.32
59.833	0.00	0.76	1.093	O	|	|	|	|	1.32
59.917	0.00	0.76	1.088	O	|	|	|	|	1.31
60.000	0.00	0.76	1.082	O	|	|	|	|	1.31
60.083	0.00	0.76	1.077	O	|	|	|	|	1.31
60.167	0.00	0.76	1.072	O	|	|	|	|	1.31
60.250	0.00	0.76	1.067	O	|	|	|	|	1.30
60.333	0.00	0.76	1.062	O	|	|	|	|	1.30
60.417	0.00	0.76	1.056	O	|	|	|	|	1.30
60.500	0.00	0.75	1.051	O	|	|	|	|	1.30
60.583	0.00	0.75	1.046	O	|	|	|	|	1.29
60.667	0.00	0.75	1.041	O	|	|	|	|	1.29
60.750	0.00	0.75	1.036	O	|	|	|	|	1.29
60.833	0.00	0.75	1.030	O	|	|	|	|	1.29
60.917	0.00	0.75	1.025	O	|	|	|	|	1.28
61.000	0.00	0.75	1.020	O	|	|	|	|	1.28
61.083	0.00	0.75	1.015	O	|	|	|	|	1.28
61.167	0.00	0.75	1.010	O	|	|	|	|	1.28
61.250	0.00	0.75	1.005	O	|	|	|	|	1.27
61.333	0.00	0.75	0.999	O	|	|	|	|	1.27
61.417	0.00	0.75	0.994	O	|	|	|	|	1.27
61.500	0.00	0.74	0.989	O	|	|	|	|	1.27
61.583	0.00	0.74	0.984	O	|	|	|	|	1.26
61.667	0.00	0.74	0.979	O	|	|	|	|	1.26
61.750	0.00	0.74	0.974	O	|	|	|	|	1.26
61.833	0.00	0.74	0.969	O	|	|	|	|	1.26

61.917	0.00	0.74	0.964	O	|	|	|	|	1.25
62.000	0.00	0.74	0.958	O	|	|	|	|	1.25
62.083	0.00	0.74	0.953	O	|	|	|	|	1.25
62.167	0.00	0.74	0.948	O	|	|	|	|	1.25
62.250	0.00	0.74	0.943	O	|	|	|	|	1.24
62.333	0.00	0.74	0.938	O	|	|	|	|	1.24
62.417	0.00	0.74	0.933	O	|	|	|	|	1.24
62.500	0.00	0.73	0.928	O	|	|	|	|	1.24
62.583	0.00	0.73	0.923	O	|	|	|	|	1.24
62.667	0.00	0.73	0.918	O	|	|	|	|	1.23
62.750	0.00	0.73	0.913	O	|	|	|	|	1.23
62.833	0.00	0.73	0.908	O	|	|	|	|	1.23
62.917	0.00	0.73	0.903	O	|	|	|	|	1.23
63.000	0.00	0.73	0.898	O	|	|	|	|	1.22
63.083	0.00	0.73	0.893	O	|	|	|	|	1.22
63.167	0.00	0.73	0.888	O	|	|	|	|	1.22
63.250	0.00	0.73	0.883	O	|	|	|	|	1.22
63.333	0.00	0.73	0.878	O	|	|	|	|	1.21
63.417	0.00	0.73	0.873	O	|	|	|	|	1.21
63.500	0.00	0.73	0.868	O	|	|	|	|	1.21
63.583	0.00	0.72	0.863	O	|	|	|	|	1.21
63.667	0.00	0.72	0.858	O	|	|	|	|	1.20
63.750	0.00	0.72	0.853	O	|	|	|	|	1.20
63.833	0.00	0.72	0.848	O	|	|	|	|	1.20
63.917	0.00	0.72	0.843	O	|	|	|	|	1.20
64.000	0.00	0.72	0.838	O	|	|	|	|	1.19
64.083	0.00	0.72	0.833	O	|	|	|	|	1.19
64.167	0.00	0.72	0.828	O	|	|	|	|	1.19
64.250	0.00	0.72	0.823	O	|	|	|	|	1.19
64.333	0.00	0.72	0.818	O	|	|	|	|	1.19
64.417	0.00	0.72	0.813	O	|	|	|	|	1.18
64.500	0.00	0.72	0.808	O	|	|	|	|	1.18
64.583	0.00	0.71	0.803	O	|	|	|	|	1.18
64.667	0.00	0.71	0.798	O	|	|	|	|	1.18
64.750	0.00	0.71	0.793	O	|	|	|	|	1.17
64.833	0.00	0.71	0.789	O	|	|	|	|	1.17
64.917	0.00	0.71	0.784	O	|	|	|	|	1.17
65.000	0.00	0.71	0.779	O	|	|	|	|	1.17
65.083	0.00	0.71	0.774	O	|	|	|	|	1.16
65.167	0.00	0.71	0.769	O	|	|	|	|	1.16
65.250	0.00	0.71	0.764	O	|	|	|	|	1.16
65.333	0.00	0.71	0.759	O	|	|	|	|	1.16
65.417	0.00	0.71	0.754	O	|	|	|	|	1.15
65.500	0.00	0.71	0.749	O	|	|	|	|	1.15
65.583	0.00	0.71	0.745	O	|	|	|	|	1.15
65.667	0.00	0.70	0.740	O	|	|	|	|	1.15
65.750	0.00	0.70	0.735	O	|	|	|	|	1.15
65.833	0.00	0.70	0.730	O	|	|	|	|	1.14
65.917	0.00	0.70	0.725	O	|	|	|	|	1.14
66.000	0.00	0.70	0.720	O	|	|	|	|	1.14
66.083	0.00	0.70	0.716	O	|	|	|	|	1.14
66.167	0.00	0.70	0.711	O	|	|	|	|	1.13
66.250	0.00	0.70	0.706	O	|	|	|	|	1.13
66.333	0.00	0.70	0.701	O	|	|	|	|	1.13
66.417	0.00	0.70	0.696	O	|	|	|	|	1.13
66.500	0.00	0.70	0.692	O	|	|	|	|	1.12
66.583	0.00	0.70	0.687	O	|	|	|	|	1.12
66.667	0.00	0.69	0.682	O	|	|	|	|	1.12
66.750	0.00	0.69	0.677	O	|	|	|	|	1.12
66.833	0.00	0.69	0.672	O	|	|	|	|	1.12
66.917	0.00	0.69	0.668	O	|	|	|	|	1.11
67.000	0.00	0.69	0.663	O	|	|	|	|	1.11
67.083	0.00	0.69	0.658	O	|	|	|	|	1.11
67.167	0.00	0.69	0.653	O	|	|	|	|	1.11
67.250	0.00	0.69	0.649	O	|	|	|	|	1.10
67.333	0.00	0.69	0.644	O	|	|	|	|	1.10
67.417	0.00	0.69	0.639	O	|	|	|	|	1.10
67.500	0.00	0.69	0.634	O	|	|	|	|	1.10
67.583	0.00	0.69	0.630	O	|	|	|	|	1.10
67.667	0.00	0.69	0.625	O	|	|	|	|	1.09
67.750	0.00	0.68	0.620	O	|	|	|	|	1.09
67.833	0.00	0.68	0.615	O	|	|	|	|	1.09
67.917	0.00	0.68	0.611	O	|	|	|	|	1.09
68.000	0.00	0.68	0.606	O	|	|	|	|	1.08
68.083	0.00	0.68	0.601	O	|	|	|	|	1.08

68.167	0.00	0.68	0.597	O	|	|	|	1.08
68.250	0.00	0.68	0.592	O	|	|	|	1.08
68.333	0.00	0.68	0.587	O	|	|	|	1.08
68.417	0.00	0.68	0.583	O	|	|	|	1.07
68.500	0.00	0.68	0.578	O	|	|	|	1.07
68.583	0.00	0.68	0.573	O	|	|	|	1.07
68.667	0.00	0.68	0.569	O	|	|	|	1.07
68.750	0.00	0.68	0.564	O	|	|	|	1.06
68.833	0.00	0.67	0.559	O	|	|	|	1.06
68.917	0.00	0.67	0.555	O	|	|	|	1.06
69.000	0.00	0.67	0.550	O	|	|	|	1.06
69.083	0.00	0.67	0.545	O	|	|	|	1.06
69.167	0.00	0.67	0.541	O	|	|	|	1.05
69.250	0.00	0.67	0.536	O	|	|	|	1.05
69.333	0.00	0.67	0.531	O	|	|	|	1.05
69.417	0.00	0.67	0.527	O	|	|	|	1.05
69.500	0.00	0.67	0.522	O	|	|	|	1.04
69.583	0.00	0.67	0.518	O	|	|	|	1.04
69.667	0.00	0.67	0.513	O	|	|	|	1.04
69.750	0.00	0.67	0.508	O	|	|	|	1.04
69.833	0.00	0.67	0.504	O	|	|	|	1.04
69.917	0.00	0.67	0.499	O	|	|	|	1.03
70.000	0.00	0.66	0.495	O	|	|	|	1.03
70.083	0.00	0.66	0.490	O	|	|	|	1.03
70.167	0.00	0.66	0.486	O	|	|	|	1.03
70.250	0.00	0.66	0.481	O	|	|	|	1.02
70.333	0.00	0.66	0.476	O	|	|	|	1.02
70.417	0.00	0.66	0.472	O	|	|	|	1.02
70.500	0.00	0.66	0.467	O	|	|	|	1.02
70.583	0.00	0.66	0.463	O	|	|	|	1.02
70.667	0.00	0.66	0.458	O	|	|	|	1.01
70.750	0.00	0.66	0.454	O	|	|	|	1.01
70.833	0.00	0.66	0.449	O	|	|	|	1.01
70.917	0.00	0.66	0.445	O	|	|	|	1.01
71.000	0.00	0.66	0.440	O	|	|	|	1.00
71.083	0.00	0.65	0.436	O	|	|	|	1.00
71.167	0.00	0.65	0.431	O	|	|	|	1.00
71.250	0.00	0.65	0.427	O	|	|	|	1.00
71.333	0.00	0.65	0.422	O	|	|	|	0.99
71.417	0.00	0.65	0.418	O	|	|	|	0.98
71.500	0.00	0.64	0.413	O	|	|	|	0.98
71.583	0.00	0.64	0.409	O	|	|	|	0.97
71.667	0.00	0.64	0.404	O	|	|	|	0.97
71.750	0.00	0.64	0.400	O	|	|	|	0.96
71.833	0.00	0.63	0.396	O	|	|	|	0.95
71.917	0.00	0.63	0.391	O	|	|	|	0.95
72.000	0.00	0.63	0.387	O	|	|	|	0.94
72.083	0.00	0.62	0.383	O	|	|	|	0.94
72.167	0.00	0.62	0.378	O	|	|	|	0.93
72.250	0.00	0.62	0.374	O	|	|	|	0.93
72.333	0.00	0.62	0.370	O	|	|	|	0.92
72.417	0.00	0.61	0.366	O	|	|	|	0.91
72.500	0.00	0.61	0.361	O	|	|	|	0.91
72.583	0.00	0.61	0.357	O	|	|	|	0.90
72.667	0.00	0.61	0.353	O	|	|	|	0.90
72.750	0.00	0.60	0.349	O	|	|	|	0.89
72.833	0.00	0.60	0.345	O	|	|	|	0.89
72.917	0.00	0.60	0.341	O	|	|	|	0.88
73.000	0.00	0.60	0.336	O	|	|	|	0.88
73.083	0.00	0.59	0.332	O	|	|	|	0.87
73.167	0.00	0.59	0.328	O	|	|	|	0.87
73.250	0.00	0.59	0.324	O	|	|	|	0.86
73.333	0.00	0.59	0.320	O	|	|	|	0.85
73.417	0.00	0.58	0.316	O	|	|	|	0.85
73.500	0.00	0.58	0.312	O	|	|	|	0.84
73.583	0.00	0.58	0.308	O	|	|	|	0.84
73.667	0.00	0.58	0.304	O	|	|	|	0.83
73.750	0.00	0.57	0.300	O	|	|	|	0.83
73.833	0.00	0.57	0.296	O	|	|	|	0.82
73.917	0.00	0.57	0.292	O	|	|	|	0.82
74.000	0.00	0.57	0.288	O	|	|	|	0.81
74.083	0.00	0.56	0.285	O	|	|	|	0.81
74.167	0.00	0.56	0.281	O	|	|	|	0.80
74.250	0.00	0.56	0.277	O	|	|	|	0.80
74.333	0.00	0.56	0.273	O	|	|	|	0.79

74.417	0.00	0.55	0.269	O					0.79
74.500	0.00	0.55	0.265	O					0.78
74.583	0.00	0.55	0.262	O					0.78
74.667	0.00	0.55	0.258	O					0.77
74.750	0.00	0.55	0.254	O					0.77
74.833	0.00	0.54	0.250	O					0.76
74.917	0.00	0.54	0.246	O					0.76
75.000	0.00	0.54	0.243	O					0.75
75.083	0.00	0.54	0.239	O					0.75
75.167	0.00	0.53	0.235	O					0.74
75.250	0.00	0.53	0.232	O					0.74
75.333	0.00	0.53	0.228	O					0.73
75.417	0.00	0.53	0.224	O					0.73
75.500	0.00	0.52	0.221	O					0.72
75.583	0.00	0.52	0.217	O					0.72
75.667	0.00	0.52	0.214	O					0.71
75.750	0.00	0.52	0.210	O					0.71
75.833	0.00	0.52	0.206	O					0.70
75.917	0.00	0.51	0.203	O					0.70
76.000	0.00	0.51	0.199	O					0.69
76.083	0.00	0.51	0.196	O					0.69
76.167	0.00	0.51	0.192	O					0.68
76.250	0.00	0.50	0.189	O					0.68
76.333	0.00	0.50	0.185	O					0.68
76.417	0.00	0.50	0.182	O					0.67
76.500	0.00	0.50	0.179	O					0.67
76.583	0.00	0.50	0.175	O					0.66
76.667	0.00	0.49	0.172	O					0.66
76.750	0.00	0.49	0.168	O					0.65
76.833	0.00	0.49	0.165	O					0.65
76.917	0.00	0.49	0.162	O					0.64
77.000	0.00	0.49	0.158	O					0.64
77.083	0.00	0.48	0.155	O					0.64
77.167	0.00	0.48	0.152	O					0.63
77.250	0.00	0.48	0.148	O					0.63
77.333	0.00	0.48	0.145	O					0.62
77.417	0.00	0.48	0.142	O					0.62
77.500	0.00	0.47	0.138	O					0.61
77.583	0.00	0.47	0.135	O					0.61
77.667	0.00	0.47	0.132	O					0.60
77.750	0.00	0.47	0.129	O					0.60
77.833	0.00	0.47	0.125	O					0.60
77.917	0.00	0.46	0.122	O					0.59
78.000	0.00	0.46	0.119	O					0.59
78.083	0.00	0.46	0.116	O					0.58
78.167	0.00	0.46	0.113	O					0.58
78.250	0.00	0.46	0.110	O					0.58
78.333	0.00	0.45	0.106	O					0.57
78.417	0.00	0.45	0.103	O					0.57
78.500	0.00	0.45	0.100	O					0.56
78.583	0.00	0.45	0.097	O					0.56
78.667	0.00	0.45	0.094	O					0.55
78.750	0.00	0.44	0.091	O					0.55
78.833	0.00	0.44	0.088	O					0.55
78.917	0.00	0.44	0.085	O					0.54
79.000	0.00	0.44	0.082	O					0.54
79.083	0.00	0.44	0.079	O					0.53
79.167	0.00	0.44	0.076	O					0.53
79.250	0.00	0.43	0.073	O					0.53
79.333	0.00	0.43	0.070	O					0.52
79.417	0.00	0.43	0.067	O					0.52
79.500	0.00	0.43	0.064	O					0.51
79.583	0.00	0.43	0.061	O					0.51
79.667	0.00	0.42	0.058	O					0.51
79.750	0.00	0.42	0.055	O					0.50
79.833	0.00	0.42	0.052	O					0.49
79.917	0.00	0.39	0.049	O					0.47
80.000	0.00	0.37	0.047	O					0.45
80.083	0.00	0.35	0.044	O					0.43
80.167	0.00	0.33	0.042	O					0.42
80.250	0.00	0.32	0.040	O					0.40
80.333	0.00	0.30	0.038	O					0.38
80.417	0.00	0.28	0.036	O					0.37
80.500	0.00	0.27	0.034	O					0.35
80.583	0.00	0.25	0.032	O					0.34

80.667	0.00	0.24	0.030	O	|	|	|	|	0.32
80.750	0.00	0.23	0.029	O	|	|	|	|	0.31
80.833	0.00	0.22	0.027	O	|	|	|	|	0.30
80.917	0.00	0.20	0.026	O	|	|	|	|	0.29
81.000	0.00	0.19	0.024	O	|	|	|	|	0.28
81.083	0.00	0.18	0.023	O	|	|	|	|	0.27
81.167	0.00	0.17	0.022	O	|	|	|	|	0.26
81.250	0.00	0.16	0.021	O	|	|	|	|	0.25
81.333	0.00	0.16	0.019	O	|	|	|	|	0.24
81.417	0.00	0.15	0.018	O	|	|	|	|	0.23
81.500	0.00	0.14	0.017	O	|	|	|	|	0.23
81.583	0.00	0.13	0.016	O	|	|	|	|	0.22
81.667	0.00	0.13	0.016	O	|	|	|	|	0.21
81.750	0.00	0.12	0.015	O	|	|	|	|	0.21
81.833	0.00	0.11	0.014	O	|	|	|	|	0.20
81.917	0.00	0.11	0.013	O	|	|	|	|	0.19
82.000	0.00	0.10	0.012	O	|	|	|	|	0.19
82.083	0.00	0.10	0.012	O	|	|	|	|	0.18
82.167	0.00	0.09	0.011	O	|	|	|	|	0.18
82.250	0.00	0.09	0.011	O	|	|	|	|	0.17
82.333	0.00	0.08	0.010	O	|	|	|	|	0.17
82.417	0.00	0.08	0.009	O	|	|	|	|	0.16
82.500	0.00	0.07	0.009	O	|	|	|	|	0.16
82.583	0.00	0.07	0.008	O	|	|	|	|	0.16
82.667	0.00	0.07	0.008	O	|	|	|	|	0.15
82.750	0.00	0.06	0.008	O	|	|	|	|	0.15
82.833	0.00	0.06	0.007	O	|	|	|	|	0.15
82.917	0.00	0.06	0.007	O	|	|	|	|	0.14
83.000	0.00	0.05	0.006	O	|	|	|	|	0.14
83.083	0.00	0.05	0.006	O	|	|	|	|	0.14
83.167	0.00	0.05	0.006	O	|	|	|	|	0.14
83.250	0.00	0.04	0.005	O	|	|	|	|	0.13
83.333	0.00	0.04	0.005	O	|	|	|	|	0.13
83.417	0.00	0.04	0.005	O	|	|	|	|	0.13
83.500	0.00	0.04	0.005	O	|	|	|	|	0.13
83.583	0.00	0.04	0.004	O	|	|	|	|	0.13
83.667	0.00	0.03	0.004	O	|	|	|	|	0.12
83.750	0.00	0.03	0.004	O	|	|	|	|	0.12
83.833	0.00	0.03	0.004	O	|	|	|	|	0.12
83.917	0.00	0.03	0.003	O	|	|	|	|	0.12
84.000	0.00	0.03	0.003	O	|	|	|	|	0.12
84.083	0.00	0.03	0.003	O	|	|	|	|	0.12
84.167	0.00	0.02	0.003	O	|	|	|	|	0.11
84.250	0.00	0.02	0.003	O	|	|	|	|	0.11
84.333	0.00	0.02	0.003	O	|	|	|	|	0.11
84.417	0.00	0.02	0.002	O	|	|	|	|	0.11
84.500	0.00	0.02	0.002	O	|	|	|	|	0.11
84.583	0.00	0.02	0.002	O	|	|	|	|	0.11
84.667	0.00	0.02	0.002	O	|	|	|	|	0.11
84.750	0.00	0.02	0.002	O	|	|	|	|	0.11
84.833	0.00	0.02	0.002	O	|	|	|	|	0.11
84.917	0.00	0.01	0.002	O	|	|	|	|	0.10
85.000	0.00	0.01	0.002	O	|	|	|	|	0.10
85.083	0.00	0.01	0.001	O	|	|	|	|	0.10
85.167	0.00	0.01	0.001	O	|	|	|	|	0.10
85.250	0.00	0.01	0.001	O	|	|	|	|	0.10
85.333	0.00	0.01	0.001	O	|	|	|	|	0.10
85.417	0.00	0.01	0.001	O	|	|	|	|	0.10
85.500	0.00	0.01	0.001	O	|	|	|	|	0.10
85.583	0.00	0.01	0.001	O	|	|	|	|	0.10
85.667	0.00	0.01	0.001	O	|	|	|	|	0.09
85.750	0.00	0.01	0.001	O	|	|	|	|	0.08
85.833	0.00	0.01	0.001	O	|	|	|	|	0.08
85.917	0.00	0.01	0.001	O	|	|	|	|	0.07
86.000	0.00	0.01	0.001	O	|	|	|	|	0.07
86.083	0.00	0.01	0.001	O	|	|	|	|	0.06
86.167	0.00	0.01	0.001	O	|	|	|	|	0.06
86.250	0.00	0.01	0.001	O	|	|	|	|	0.06
86.333	0.00	0.01	0.001	O	|	|	|	|	0.05
86.417	0.00	0.00	0.000	O	|	|	|	|	0.05
86.500	0.00	0.00	0.000	O	|	|	|	|	0.05
86.583	0.00	0.00	0.000	O	|	|	|	|	0.04
86.667	0.00	0.00	0.000	O	|	|	|	|	0.04
86.750	0.00	0.00	0.000	O	|	|	|	|	0.04
86.833	0.00	0.00	0.000	O	|	|	|	|	0.03

86.917	0.00	0.00	0.000	O	|	|	|	|	0.03
87.000	0.00	0.00	0.000	O	|	|	|	|	0.03
87.083	0.00	0.00	0.000	O	|	|	|	|	0.03
87.167	0.00	0.00	0.000	O	|	|	|	|	0.03
87.250	0.00	0.00	0.000	O	|	|	|	|	0.02
87.333	0.00	0.00	0.000	O	|	|	|	|	0.02
87.417	0.00	0.00	0.000	O	|	|	|	|	0.02
87.500	0.00	0.00	0.000	O	|	|	|	|	0.02
87.583	0.00	0.00	0.000	O	|	|	|	|	0.02
87.667	0.00	0.00	0.000	O	|	|	|	|	0.02
87.750	0.00	0.00	0.000	O	|	|	|	|	0.02
87.833	0.00	0.00	0.000	O	|	|	|	|	0.01
87.917	0.00	0.00	0.000	O	|	|	|	|	0.01
88.000	0.00	0.00	0.000	O	|	|	|	|	0.01
88.083	0.00	0.00	0.000	O	|	|	|	|	0.01
88.167	0.00	0.00	0.000	O	|	|	|	|	0.01
88.250	0.00	0.00	0.000	O	|	|	|	|	0.01
88.333	0.00	0.00	0.000	O	|	|	|	|	0.01

**********HYDROGRAPH DATA**********

Number of intervals = 1060
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 38.661 (CFS)
Total volume = 27.063 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

G.3 - Preliminary Off-Site Hydrology Study

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ALBERT A. WEBB ASSOCIATES

Preliminary Off-Site Hydrology Study

PP 25337, TPM 36564
Shopoff – San Gorgonio Crossings
Riverside County, CA

Prepared for:
TSG Cherry Valley, L.P.
C/O The Shopoff Group
8951 Research Drive
Irvine, CA 92618

Revised March, 2015

CVAR_10750

This Drainage Report has been prepared by or under the direction of the following Registered Civil Engineer. The undersigned attests to the technical information contained herein and the qualifications of any technical specialist providing engineering data upon which recommendations, conclusions, and decisions are based:

_____ _____

Registered Civil Engineer Date

Lin McCaffrey, P.E.
Senior Engineer

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SECTION 1 - Summary

Introduction

Parcel Map 36564, also known as San Gorgonio Crossings is located within the Santa Ana River watershed, at foothill of San Gorgonio Mountain range, in the unincorporated area of Riverside County. More specifically, the project site is at north of Cherry Valley Blvd., East of I-10 Freeway and Calimesa Boulevard, and west of Hannon Road. Parcel Map 36546 is approximately a 150-acre net-area proposed for Industrial Park/ Distribution Center uses. The northerly and westerly of the parcel boundary is bordering the City of Calimesa.

This report is primarily addressing the off-site drainage issues. Study Area is in the Santa Ana River Watershed, and is comprised of approximately 1,162 acres, of mountainous terrain to the north and foothill areas to the south. Approximately 990 acres of off-site areas, lying to the north and east of the project site, drains through the project site in a northeast to southwest direction. The project site is not within the boundary of any master drainage plans. There are no existing storm drain facilities with the study area. Runoff exits the study area at two points of discharge (exit nodes) located at the westerly boundary of the site.

The purpose of this study is to evaluate storm runoffs for the existing conditions and the developed conditions at two point of discharge, and to ensure that the increases of the runoff due to the site development are properly mitigated through the on-site extended detention basins. Secondly, it is to develop a conceptual flood control facilities to safely collect and convey the 100-year off-site storm runoffs through the site. This study is to present the hydrologic and hydraulic analysis prepared in conjunction with the onsite drainage studies, and also to determine that the proposed drainage facilities meet the design criteria set forth in Riverside County Flood Control and Water Conservation District Hydrology Manual.

Existing Site Conditions

Under existing conditions the project site study area is generally undeveloped with steep terrain and natural watercourses in the upper portions. Based on the points of discharge of the existing watercourses, the study area is divide into two major drainage areas identified as Drainage Area "A" and Drainage Area "B", as shown in *Existing Condition Hydrology Map.* Each drainage area is tributary to a discharge point (exit node) along the westerly boundary of the project site.

Drainage Area "A" is comprised of approximate 903.3 acres, with peak storm water discharge rates of approximately 739.7 cfs and 1,171.4 cfs, for 10-year and 100-year storms, respectively.

Drainage Area "B" is comprised of approximately 258.1 acres with peak discharge rates of 359.4 cfs and 563.2 cfs, for 10-year and100-year storms, respectively.

Existing Drainage Facilities

Except a paved drainage ditch along north side Cherry Valley Boulevard, there are no existing drainage facilities in the immediate project vicinity.

Hydrologic Analysis

Design Criteria

Hydrologic calculations were computed in accordance with the parameters outlined in Riverside County Flood Control and Water Conservation District Hydrology Manual. Specifically, the rational method was used for the watershed less than 300 areas. The synthetic unit hydrograph method was use for the larger watershed to determine the discharges for the 100-year storm in existing and off-site conditions. The on-site drainage study depicts the on-site hydrology and storm drain system as well as the extended detention basins. The routed storm runoffs from the on-site drainage study were introduced to the concrete channels for overall developed flow calculations.

Hydraulic Analysis

According to the Riverside County Flood Control and Water Conservation District (RCFC&WCD) Hydrology Manual, the 10-year flood shall be contained within the top of curbs and the 100-year flood shall be contained within street right-of-way limits. All on-site and off-site storm drain system is designed for the 100-year storm event.

The hydraulic analysis of storm drain systems was performed using the Water Surface and Pressure Gradient Hydraulic Analysis software (WSPG), developed by Los Angeles County Department of Public Works. The roughness coefficient n=0.013 for RCP is used for storm drain design and n=0.015 is used for concrete channel design. A preliminary WSPG for drainage Watershed-A Storm Drain Line-A is provided for reference. Adjustments for the alignment, grade and size of the channel may be made during the final design.

Calculations for Debris Production Rates (for off-site areas) are based on U.S. Army Corps of Engineers' Los Angeles District Debris Method; and, Bulking Factors for the preliminary sizing of facilities conveying potentially debris laden flows are based on the Peak Bulking Factor curves in Los Angeles County Department of Public Work's Sedimentation Manual.

A bulking factor of 1.4 was applied for off-site flow for storm drain and channel capacity calculations.

Proposed Drainage Facilities

The proposed on-site drainage system, inlets and extended detention basins are per On-Site Drainage Report. The proposed off-site drainage facilities include the following:

1. Line A – Storm drain Line-A system consists reinforced concrete boxes and concrete trap channels located on south side of the buildings convey 100-year 1-hour peak storm runoffs from offsite Areas A1 and A2, 25.9 acres of on-site self-treated areas and on-site extended basins outflow (routed). The off-site flow rates are bulked with a factor of 1.4 for debris laden flows, also a 100 CFS offsite flow is diverted to the on-site wetland mitigation areas. Lateral-A1 is a 48" RCP lateral collecting the bulked flow from off-site area A1 and conveying to Line A.
   The Line-A system is to be maintained by RCFCD.

2. Line B – Storm drain Line-B system is a 12' wide x 9' deep rectangular concrete channel, located on north site of the buildings intercept and convey 100-year 1-hour bulked peak flow from off-site Area B. Lateral-B1 consists of 300 LF 60" RCP and 550 LF of 8' wide x 4' deep concrete trap channel. Lateral –B1 conveys the runoffs from subarea B1 and 6.1 acres of on-site self-treated areas to Line-B. The Line-B system is to be maintained by the property owner/ developer.

Table 1-1 below summarizes the proposed storm drain systems in fully developed conditions, 100-year 1-hour off-site flow, on-site flow from self-treated areas and on-site routed flow.

Table 1-1 Summary of Proposed Drainage Facility

AREA A / LINE-A

LOCATION/ AREA		OFF-SITE		ON-SITE DMA B		ON-SITE DMA A		EXIT POINT
SUB-AREA		A1	A2	Self Treated	Basin Outlet	Self Treat	Basin Outlet	Line-A Outlet
NODE		99	82	84-85	86	87-88	89	90
STORM	DURATION	Peak Flow	Peak Flow	Peak Flow	Peak Flow	Peak Flow	Peak Flow	Peak Flow
YEAR	HOUR	CFS	CFS	CFS	CFS	CFS	CFS	CFS
10	1	152.3	511.1	13.3	2.6	3.1	2.2	641.8
100	1	243.4	808.9	21.8	9.5	5.1	9.9	1029.7
BULKED	1.4	340.8	1132.5					

AREA B / LINE-B

LOCATION/ AREA		OFF-SITE			DMA B	ON-SITE DMA A		EXIT POINT
SUB-AREA		B1	B2	B3	Self Treated	Self Treat	Basin Outlet	Line-A Outlet
NODE		35	36	37	35			43
STORM	DURATION	Peak Flow	Peak Flow	Peak Flow	Peak Flow			Peak Flow
YEAR	HOUR	CFS	CFS	CFS	CFS			CFS
10	1	117.8	238.3	113.5	8.3			448.0
100	1	183.2	372.7	175.5	13.1			697.4
BULKED	1.4	256.5	521.8	245.7				

Development Impact

To minimize the increase of the runoffs due to the site development, two on-site Extended Detention Basins are proposed for water quality treatment and hydro-modification. See On-Site Drainage Report for the detailed basin design and calculations. The summary of the on-site unit hydrograph studies and basin routings are attached below for quick reference.

DMA A, WEST EXTENDED DETENTION BASIN
Total treated areas =43.3 Acres, Building #1 and areas west of "A" Street

		EXISTING		PROPOSED		ROUTED	
		Unit Hydrograph		Unit Hydrograph		Basin Routing	
STORM	DURATION	Peak Flow	Total Volume	Peak Flow	Total Volume	Routed Peak	Basin Volume
YEAR	HOUR	CFS	Ac-Ft	CFS	Ac-Ft	CFS	Ac.Ft.
2	24	3.9	1.0	10.8	5.5	3.8	3.5
10	1	72.6	2.6	96.6	2.8	2.2	2.7
10	24	20.4	7.5	21.5	10.9	15.0	4.6
100	1			146.1	4.4	9.9	4.1
100	3			81.9	7.0	33.5	5.6
100	6			74.9	9.7	50.1	6.2
100	24			38.3	19.0	33.9	5.6

DMA B, EAST EXTENDED DETENTION BASIN

Total treated areas =60.7 Acres, Building #2 and areas east of "A" Street

		EXISTING		PROPOSED		ROUTED	
		Unit Hydrograph		Unit Hydrograph		Basin Routing	
STORM YEAR	DURATION HOUR	Peak Flow CFS	Total Volume Ac-Ft	Peak Flow CFS	Total Volume Ac-Ft	Routed Peak CFS	Basin Volume Ac.Ft.
2	24	6.1	2.0	15.3	7.9	5.5	5.0
10	1	88.1	3.7	135.6	4.0	2.6	3.9
10	24	28.7	10.9	32.4	15.8	21.0	7.7
100	1			204.9	6.2	9.5	5.8
100	3			115.0	9.9	25.6	8.4
100	6			106.1	13.8	40.5	10.3
100	24			53.9	27.1	38.7	10.1

Even though the mitigation for 100-year storm event is not required, our studies show that the proposed development with its drainage and detention facilities will not cause the advert impact to the downstream properties. See Table 1-2 for the results of pre and post developed condition runoffs.

The sum of developed peak flow 1,727.1 CFS is slightly less than the undeveloped conditions (1,734.6 CFS) for the 100-year storm event. However, there is approximate 130 CFS diversion from Area A to B on developed conditions. Since the two watersheds merge together soon after exit the project site, a letter of acceptance of the flow by the downstream property owner will be adequate to address this minor diversion (As agreed per meeting with RCFCD dated October 23, 2014).

Table 1-2 Summary of Existing and Developed Condition

		EXISTING CONDITIONS			DEVELOPED CONDITIONS			DELTA*
SUB-AREA		A	B	TOTAL	A	B	TOTAL	D-E
NODE		5	28		90	43		
STORM YEAR	DURATION HOUR	Peak Flow CFS	Peak Flow CFS	Peak Flow CFS	Peak Flow CFS	Peak Flow CFS	Peak Flow CFS	Peak Flow CFS
10	1	739.7	359.4	1099.1	641.8	448.0	1089.8	-9.3
100	1	1171.4	563.2	1734.6	1029.7	697.4	1727.1	-7.5

Proposed Post Construction BMP's

The proposed post construction water quality management plan may include, but may not be limited to the following measures:

- Public education programs
- Scheduled street sweeping
- Catch basin stenciling
- Landscaping and Erosion Control Landscaping
- Street landscaping
- Slope planting
- Drainage system maintenance and debris removal
- Extended Detention Basins

During the entitlement process, the potential and expected pollutants as well as the pollutants of concern were defined per the Preliminary WQMP. LID BMPs (Extended Detention Basins) are incorporated for the post-developed water quality and hydro-modification mitigations.

Methodology

Civil Design Version 7.0 Computer Software Program was utilized for Riverside County Rational Method calculations and Synthetic Unit Hydrograph Method study to determine on-site and off-site flows for 10-year and 100-year storm.
WSPG Version 14.06 was used in generating the hydraulic analysis for this report.

Conclusion

Based upon the results of this report, it is concluded that the proposed facilities will adequately provide drainage conveyance for the ultimate design capacity. The proposed facilities, with ultimate development and adequate maintenance, will convey flows safely through the site in accordance with Riverside County Requirements.

Location Map



G:\2014\14-0213\GIS\0213aerial.mxd

Sources: Eagle Aerial, April 2012

Legend

Project Location

N
W
E
S

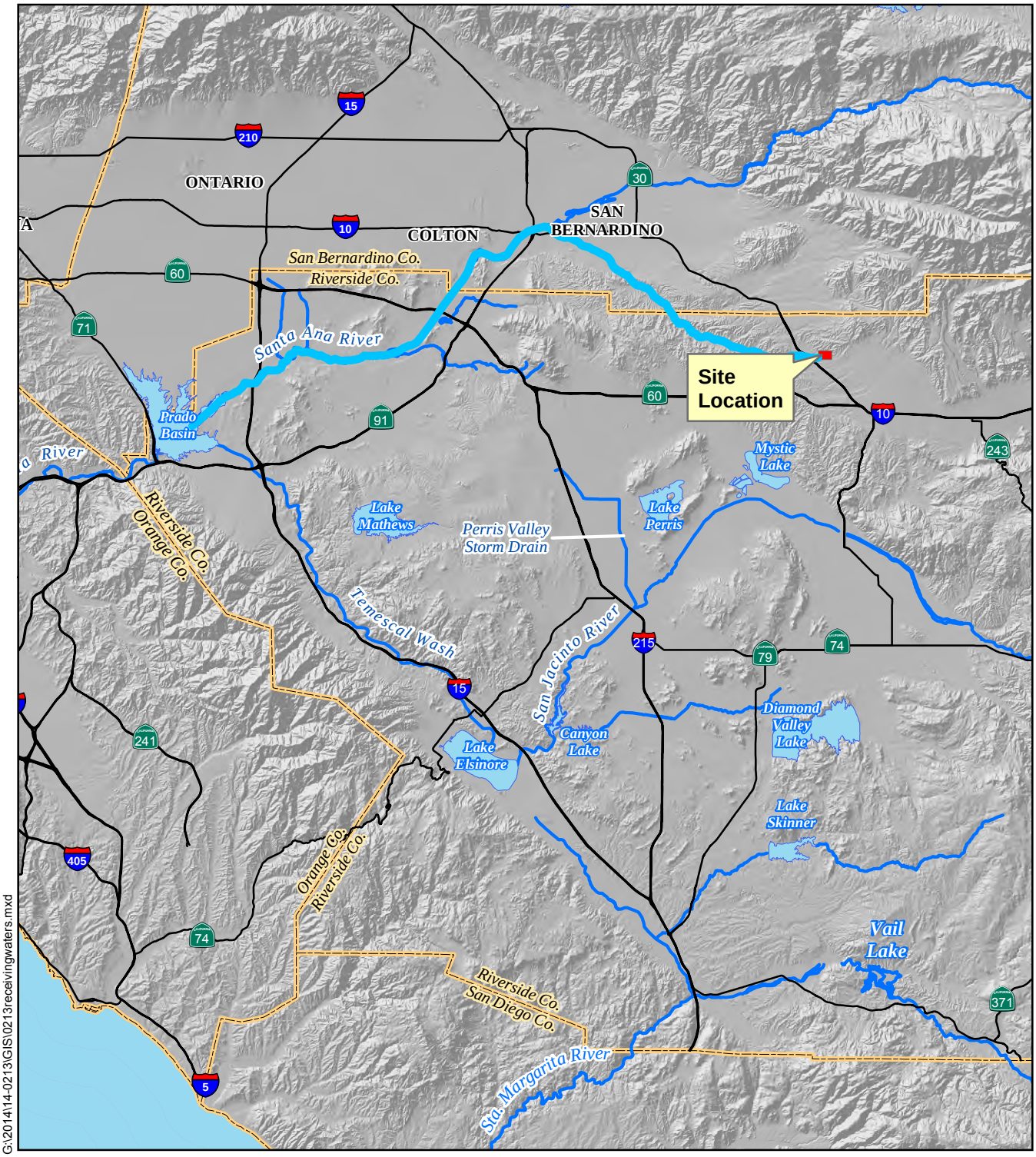
0 750 1,500 2,250 Feet

ALBERT A. WEBB ASSOCIATES

Aerial Map

Shopoff Realty Investments - San Gorgonio Crosings

CVAR_10760



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LEGEND

Receiving Waters

N
W E
S

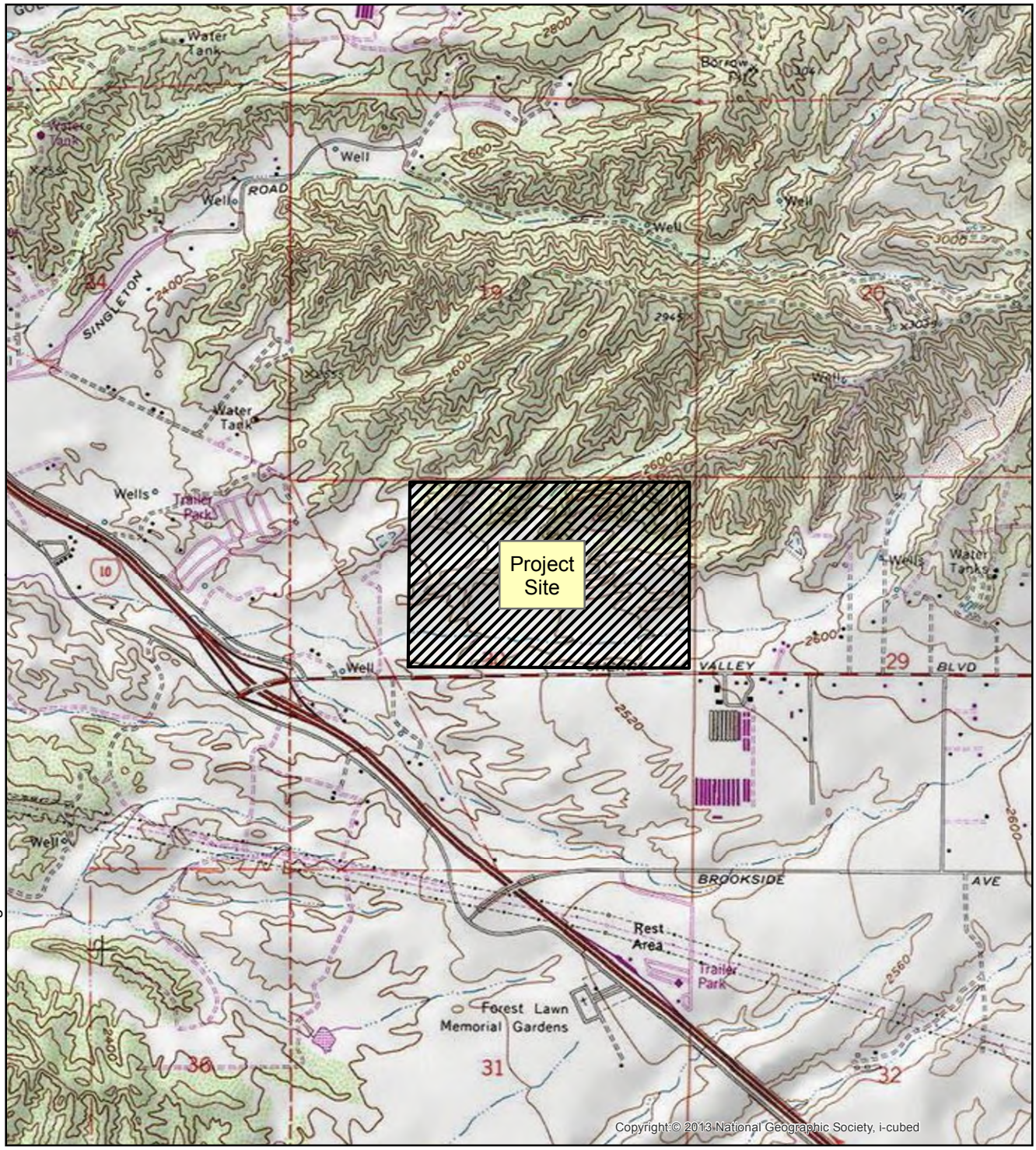
0 3 6 9
Miles

ALBERT A. WEBB ASSOCIATES

Receiving Waters Map

Shopoff Realty Investments - San Gorgonio Crossings

CVAR_10761



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Source: USGS 7.5 min Quadrangle
El Casco

Legend

Project Boundary

N
W E
S

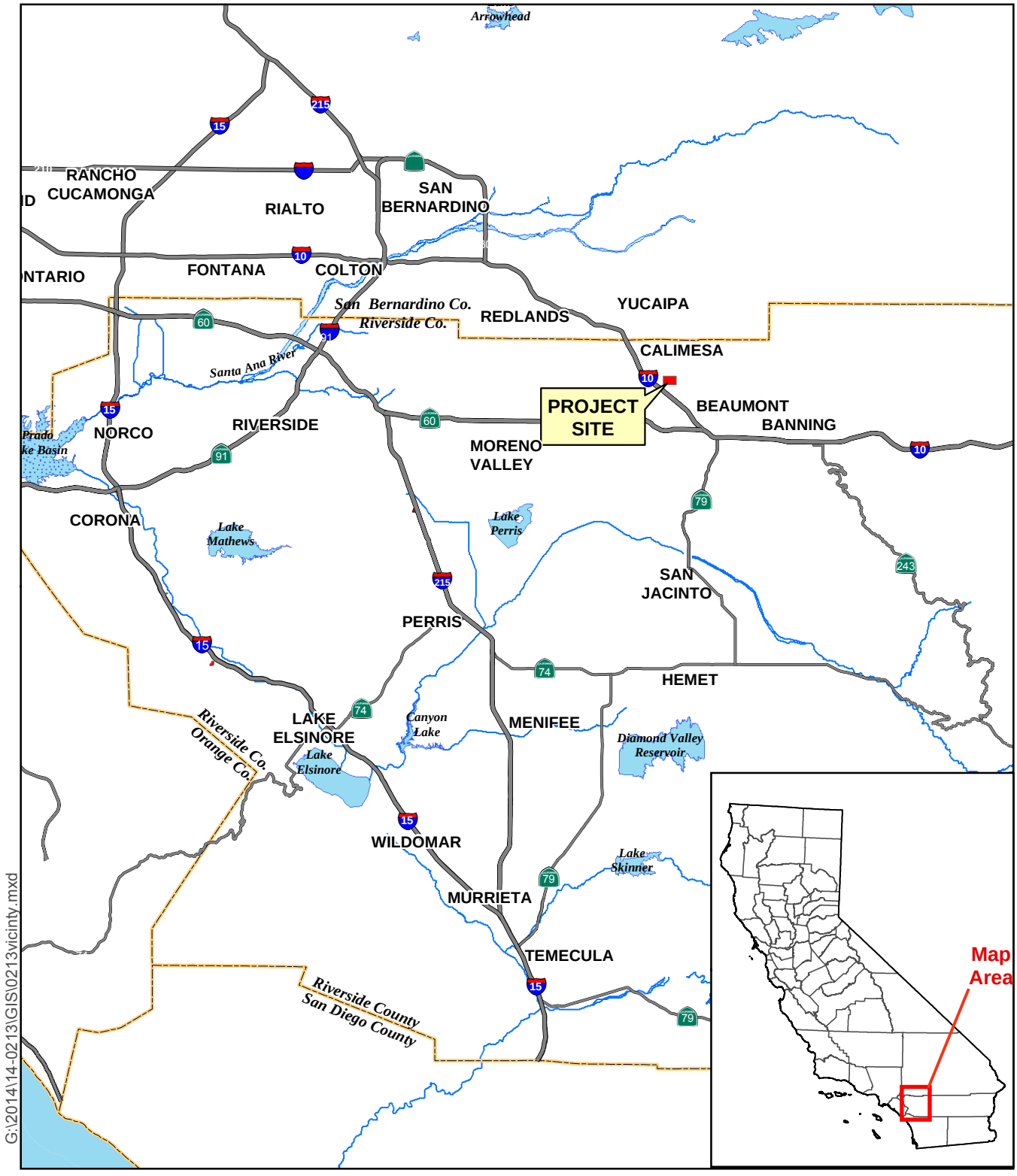
0 750 1,500 2,250
Feet

USGS Topographic Map

ALBERT A. WEBB ASSOCIATES

Shopoff Realty Investments - San Gorgonio Crossings

CVAR_10762



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Vicinity Map

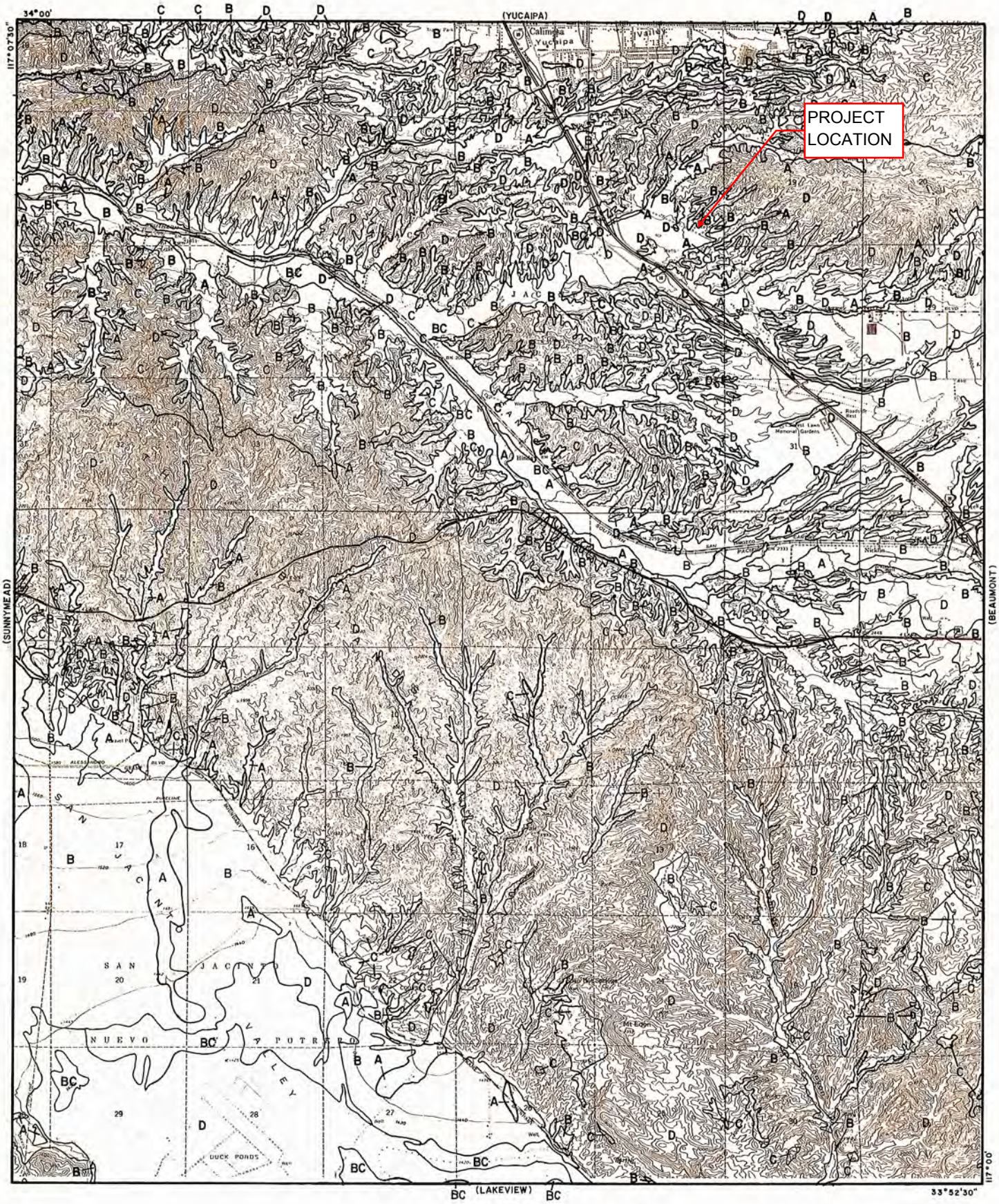
ALBERT A. WEBB ASSOCIATES

Shopoff Realty Investments - San Gorgonio Crossings

CVAR_10763

SECTION 2 - Hydrologic Studies

Soils Group Map



LEGEND

—— SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC&WCD

HYDROLOGY MANUAL

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR EL CASCO

PLATE C-1.18

GVAR 10766

Existing Conditions

100-Year Storm – Areas A & B

10-Year Storm – Areas A & B

100-Year Storm – Areas A & B (Existing Conditions)

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004, Version 7.0
Study date 10/23/14 File: AREAAEX1100.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 4010

 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format

TPM 36564 W.O. 2014-0213
OFF-SITE AREA A UNDEVELOPED CONDITIONS
100-YEAR 1-HOUR STORM AT NODE 5
FILE: AREAAEX.UM1

Drainage Area = 903.33(Ac.) = 1.411 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 903.33(Ac.) = 1.411 Sq. Mi.
Length along longest watercourse = 19860.00(Ft.)
Length along longest watercourse measured to centroid = 12732.00(Ft.)
Length along longest watercourse = 3.761 Mi.
Length along longest watercourse measured to centroid = 2.411 Mi.
Difference in elevation = 1506.00(Ft.)
Slope along watercourse = 400.3867 Ft./Mi.
Average Manning's 'N' = 0.036
Lag time = 0.640 Hr.
Lag time = 38.38 Min.
25% of lag time = 9.59 Min.
40% of lag time = 15.35 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
903.33	0.56	505.86

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
903.33	1.30	1174.33

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.560(In)
Area Averaged 100-Year Rainfall = 1.300(In)

Point rain (area averaged) = 1.300(In)
Areal adjustment factor = 99.18 %
Adjusted average point rain = 1.289(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
903.330	83.92	0.100

Total Area Entered = 903.33(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
83.9	83.9	0.199	0.100	0.181	1.000	0.181
					Sum (F) =	0.181

Area averaged mean soil loss (F) (In/Hr) = 0.181
Minimum soil loss rate ((In/Hr)) = 0.091
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.820

Slope of intensity-duration curve for a 1 hour storm =0.5300

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	13.028	0.825	7.512
2	0.167	26.056	1.949	17.740
3	0.250	39.085	2.734	24.894
4	0.333	52.113	3.544	32.268
5	0.417	65.141	4.585	41.739
6	0.500	78.169	6.429	58.530
7	0.583	91.198	9.202	83.776
8	0.667	104.226	16.953	154.338
9	0.750	117.254	10.724	97.632
10	0.833	130.282	6.166	56.134
11	0.917	143.310	4.754	43.276
12	1.000	156.339	3.900	35.508
13	1.083	169.367	3.167	28.836
14	1.167	182.395	2.966	26.998
15	1.250	195.423	2.461	22.400
16	1.333	208.452	2.288	20.825
17	1.417	221.480	1.908	17.372
18	1.500	234.508	1.793	16.321
19	1.583	247.536	1.575	14.337
20	1.667	260.564	1.461	13.297
21	1.750	273.593	1.256	11.437
22	1.833	286.621	1.168	10.631
23	1.917	299.649	1.043	9.500
24	2.000	312.677	0.944	8.590
25	2.083	325.706	0.834	7.589
26	2.167	338.734	0.719	6.542
27	2.250	351.762	0.624	5.684
28	2.333	364.790	0.560	5.099
29	2.417	377.818	0.517	4.711
30	2.500	390.847	0.413	3.758
31	2.583	403.875	0.356	3.237
32	2.667	416.903	0.208	1.892
33	2.750	429.931	0.156	1.423
34	2.833	442.959	0.156	1.423
35	2.917	455.988	0.154	1.398
36	3.000	469.016	0.134	1.221
37	3.083	482.044	0.130	1.186
38	3.167	495.072	0.130	1.186
39	3.250	508.101	0.120	1.094
40	3.333	521.129	0.082	0.746
41	3.417	534.157	0.078	0.712
42	3.500	547.185	0.078	0.712
43	3.583	560.213	0.086	0.785
44	3.667	573.242	0.104	0.943
45	3.750	586.270	0.104	0.949
46	3.833	599.298	0.104	0.949
47	3.917	612.326	0.081	0.737
48	4.000	625.355	0.052	0.475
49	4.083	638.383	0.052	0.474

```
          50   4.167        651.411          0.052              0.473
          51   4.250        664.439          0.036              0.332
          52   4.333        677.467          0.026              0.237
          53   4.417        690.496          0.026              0.237
          54   4.500        703.524          0.032              0.292
                                     Sum = 100.000   Sum=     910.387
-------------------------------------------------------------------------


  Unit Time   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max   |   Low        (In/Hr)
   1   0.08     3.40      0.526         0.181      ---          0.34
   2   0.17     4.70      0.727         0.181      ---          0.55
   3   0.25     4.70      0.727         0.181      ---          0.55
   4   0.33     5.10      0.789         0.181      ---          0.61
   5   0.42     5.80      0.897         0.181      ---          0.72
   6   0.50     5.90      0.913         0.181      ---          0.73
   7   0.58     7.10      1.099         0.181      ---          0.92
   8   0.67     8.70      1.346         0.181      ---          1.16
   9   0.75    13.20      2.042         0.181      ---          1.86
  10   0.83    29.70      4.595         0.181      ---          4.41
  11   0.92     7.70      1.191         0.181      ---          1.01
  12   1.00     4.00      0.619         0.181      ---          0.44
     Sum =     100.0                                    Sum =    13.3
        Flood volume = Effective rainfall      1.11(In)
         times area     903.3(Ac.)/[(In)/(Ft.)] =      83.4(Ac.Ft)
        Total soil loss =      0.18(In)
        Total soil loss =    13.653(Ac.Ft)
        Total rainfall =      1.29(In)
        Flood volume =     3633176.0 Cubic Feet
        Total soil loss =      594741.0 Cubic Feet
        ---------------------------------------------------------------------
         Peak flow rate of this hydrograph =   1171.428(CFS)
        ---------------------------------------------------------------------
        +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                            1 - H O U R    S T O R M
                       R u n o f f      H y d r o g r a p h
        ---------------------------------------------------------------------
                    Hydrograph in   5   Minute intervals ((CFS))

        ---------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0      300.0     600.0     900.0    1200.0
  ----------------------------------------------------------------------
    0+ 5       0.0178      2.59  Q         |         |         |         |
    0+10       0.0882     10.22  Q         |         |         |         |
    0+15       0.2423     22.38  Q         |         |         |         |
    0+20       0.5108     38.98  VQ        |         |         |         |
    0+25       0.9362     61.78  V Q       |         |         |         |
    0+30       1.5832     93.94  V  Q      |         |         |         |
    0+35       2.5542    140.98  |V  Q     |         |         |         |
    0+40       4.0878    222.69  |V     Q  |         |         |         |
    0+45       6.2250    310.31  | V       Q         |         |         |
    0+50       9.0156    405.20  |   V     |  Q      |         |         |
    0+55      12.4852    503.78  |    V    |     Q   |         |         |
    1+ 0      16.5579    591.36  |      V  |        Q|         |         |
    1+ 5      21.1599    668.22  |         V         | Q       |         |
    1+10      26.3837    758.49  |         | V       |    Q    |         |
    1+15      32.3899    872.10  |         |    V    |         Q|        |
    1+20      39.3378   1008.84  |         |       V |          |  Q     |
    1+25      47.4055   1171.43  |         |         | V        |       Q|
    1+30      53.5479    891.88  |         |         |    V   Q|         |
    1+35      57.9167    634.34  |         |         |Q     V  |         |
    1+40      61.2106    478.27  |         |    Q    |        V|         |
    1+45      63.8790    387.46  |         | Q       |         V         |
    1+50      66.1376    327.95  |         Q         |         |V        |
    1+55      68.1449    291.45  |        Q|         |         | V       |
    2+ 0      69.8925    253.75  |       Q |         |         |  V      |
    2+ 5      71.4616    227.83  |      Q  |         |         |   V     |
    2+10      72.8371    199.72  |     Q   |         |         |   V     |
    2+15      74.0831    180.92  |     Q   |         |         |    V    |
    2+20      75.1947    161.41  |    Q    |         |         |     V   |
```

```
    2+25      76.2000    145.97  |   Q     |         |         |     V   |
    2+30      77.0906    129.32  |   Q     |         |         |     V   |
    2+35      77.8943    116.69  |  Q      |         |         |      V  |
    2+40      78.6084    103.69  |  Q      |         |         |      V  |
    2+45      79.2410     91.84  |  Q      |         |         |       V |
    2+50      79.7936     80.25  | Q       |         |         |       V |
    2+55      80.2717     69.42  | Q       |         |         |       V |
    3+ 0      80.6851     60.02  | Q       |         |         |       V |
    3+ 5      81.0457     52.36  |Q        |         |         |       V |
    3+10      81.3596     45.59  |Q        |         |         |        V|
    3+15      81.6185     37.58  |Q        |         |         |        V|
    3+20      81.8304     30.76  |Q        |         |         |        V|
    3+25      81.9858     22.58  Q         |         |         |        V|
    3+30      82.1128     18.44  Q         |         |         |        V|
    3+35      82.2287     16.82  Q         |         |         |        V|
    3+40      82.3381     15.89  Q         |         |         |        V|
    3+45      82.4399     14.78  Q         |         |         |        V|
    3+50      82.5371     14.12  Q         |         |         |        V|
    3+55      82.6300     13.48  Q         |         |         |        V|
    4+ 0      82.7149     12.33  Q         |         |         |        V|
    4+ 5      82.7876     10.56  Q         |         |         |        V|
    4+10      82.8564      9.98  Q         |         |         |        V|
    4+15      82.9236      9.76  Q         |         |         |        V|
    4+20      82.9919      9.92  Q         |         |         |        V|
    4+25      83.0621     10.19  Q         |         |         |        V|
    4+30      83.1295      9.80  Q         |         |         |        V|
    4+35      83.1911      8.94  Q         |         |         |        V|
    4+40      83.2408      7.21  Q         |         |         |        V|
    4+45      83.2788      5.52  Q         |         |         |        V|
    4+50      83.3116      4.76  Q         |         |         |        V|
    4+55      83.3399      4.10  Q         |         |         |        V|
    5+ 0      83.3614      3.14  Q         |         |         |        V|
    5+ 5      83.3778      2.37  Q         |         |         |        V|
    5+10      83.3914      1.98  Q         |         |         |        V|
    5+15      83.4026      1.63  Q         |         |         |        V|
    5+20      83.4054      0.40  Q         |         |         |        V|
    5+25      83.4062      0.13  Q         |         |         |        V|
-------------------------------------------------------------------------
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
Rational Hydrology Study Date: 10/23/14 File:AREABEX.out

PM 36564 WO 2014-0213
AREA B UNDEVELOPED CONDITIONS
100-YEAR STORM
FILE: AREABEX.RRV

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 4010

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Beaumont] area used.
10 year storm 10 minute intensity = 2.300(In/Hr)
10 year storm 60 minute intensity = 0.890(In/Hr)
100 year storm 10 minute intensity = 3.410(In/Hr)
100 year storm 60 minute intensity = 1.320(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.320(In/Hr)
Slope of intensity duration curve = 0.5300

++

Process from Point/Station 16.000 to Point/Station 17.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 995.000(Ft.)
Top (of initial area) elevation = 3043.500(Ft.)
Bottom (of initial area) elevation = 2864.000(Ft.)
Difference in elevation = 179.500(Ft.)
Slope = 0.18040 s(percent)= 18.04
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.807 min.
Rainfall intensity = 3.124(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.855
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2) = 89.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 26.576(CFS)
Total initial stream area = 9.950(Ac.)
Pervious area fraction = 1.000

++

Process from Point/Station 17.000 to Point/Station 18.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****

```
Top of natural channel elevation =   2864.000(Ft.)
End of natural channel elevation =   2748.000(Ft.)
Length of natural channel  =  1285.000(Ft.)
Estimated mean flow rate at midpoint of channel =     53.433(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  11.85(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0903
Corrected/adjusted channel slope =  0.0903
Travel time =    1.81 min.     TC =   13.61  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.852
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  89.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.897(In/Hr) for a   100.0 year storm
Subarea runoff =     49.614(CFS) for     20.110(Ac.)
Total runoff =     76.191(CFS)        Total area =      30.060(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       18.000 to Point/Station       19.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of natural channel elevation =   2748.000(Ft.)
End of natural channel elevation =   2620.000(Ft.)
Length of natural channel  =  1525.000(Ft.)
Estimated mean flow rate at midpoint of channel =    133.651(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  15.01(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0839
Corrected/adjusted channel slope =  0.0839
Travel time =    1.69 min.     TC =   15.31  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.846
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.950
RI index for soil(AMC 2)  =  88.45
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.723(In/Hr) for a   100.0 year storm
Subarea runoff =    104.425(CFS) for     45.340(Ac.)
Total runoff =    180.615(CFS)        Total area =      75.400(Ac.)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Process from Point/Station       19.000 to Point/Station       20.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
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```
Top of natural channel elevation =   2620.000(Ft.)
End of natural channel elevation =   2470.000(Ft.)
Length of natural channel  =  2685.000(Ft.)
Estimated mean flow rate at midpoint of channel =    283.331(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  15.45(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0559
Corrected/adjusted channel slope =  0.0559
Travel time =    2.90 min.     TC =   18.20  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.832
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.200
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.800
RI index for soil(AMC 2)  =  86.80
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.484(In/Hr) for a   100.0 year storm
Subarea runoff =    177.242(CFS) for     85.760(Ac.)
Total runoff =    357.857(CFS)        Total area =     161.160(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       20.000 to Point/Station       27.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   2481.000(Ft.)
End of natural channel elevation =   2429.000(Ft.)
Length of natural channel  =  1130.000(Ft.)
Estimated mean flow rate at midpoint of channel =    371.202(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  15.28(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0460
Corrected/adjusted channel slope =  0.0460
Travel time =    1.23 min.     TC =   19.44  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.811
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.500
RI index for soil(AMC 2)  =  83.50
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.399(In/Hr) for a   100.0 year storm
Subarea runoff =     23.384(CFS) for     12.020(Ac.)
Total runoff =    381.242(CFS)        Total area =     173.180(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       27.000 to Point/Station       27.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
```

```
Stream flow area =    173.180(Ac.)
Runoff from this stream =    381.242(CFS)
Time of concentration =   19.44 min.
Rainfall intensity =     2.399(In/Hr)


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Process from Point/Station       21.000 to Point/Station       22.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =  1000.000(Ft.)
Top (of initial area) elevation =  2940.000(Ft.)
Bottom (of initial area) elevation =  2720.000(Ft.)
Difference in elevation =   220.000(Ft.)
Slope =    0.22000  s(percent)=      22.00
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.371 min.
Rainfall intensity =      3.187(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.856
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  89.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =     25.530(CFS)
Total initial stream area =        9.360(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       22.000 to Point/Station       23.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   2720.000(Ft.)
End of natural channel elevation =   2616.000(Ft.)
Length of natural channel  =  1020.000(Ft.)
Estimated mean flow rate at midpoint of channel =     44.009(CFS)

Natural mountain channel type used
L.A. County flood control district formula for channel velocity:
 Velocity = 5.48(q^.33)(slope^.492)
Velocity using mean channel flow =   6.20(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.1020
Corrected/adjusted channel slope =  0.1014
Travel time =    2.74 min.     TC =   14.11  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.851
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  89.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.842(In/Hr) for a   100.0 year storm
Subarea runoff =     32.762(CFS) for     13.550(Ac.)
Total runoff =     58.292(CFS)        Total area =      22.910(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       23.000 to Point/Station       24.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   2616.000(Ft.)
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End of natural channel elevation =   2576.000(Ft.)
Length of natural channel  =   475.000(Ft.)
Estimated mean flow rate at midpoint of channel =     84.855(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  13.11(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0842
Corrected/adjusted channel slope =  0.0842
Travel time =    0.60 min.     TC =   14.72  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.847
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.950
RI index for soil(AMC 2)  =  88.45
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.780(In/Hr) for a   100.0 year storm
Subarea runoff =     49.161(CFS) for     20.880(Ac.)
Total runoff =    107.453(CFS)       Total area =      43.790(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       24.000 to Point/Station       25.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of natural channel elevation =   2576.000(Ft.)
End of natural channel elevation =   2459.000(Ft.)
Length of natural channel  =  1675.000(Ft.)
Estimated mean flow rate at midpoint of channel =    126.948(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  13.48(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0699
Corrected/adjusted channel slope =  0.0699
Travel time =    2.07 min.     TC =   16.79  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.828
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.310
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.690
RI index for soil(AMC 2)  =  85.59
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.593(In/Hr) for a   100.0 year storm
Subarea runoff =     34.122(CFS) for     15.890(Ac.)
Total runoff =    141.574(CFS)       Total area =      59.680(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       25.000 to Point/Station       27.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of natural channel elevation =   2466.000(Ft.)
End of natural channel elevation =   2429.000(Ft.)
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Length of natural channel  =   693.000(Ft.)
Estimated mean flow rate at midpoint of channel =    149.889(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  12.40(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0534
Corrected/adjusted channel slope =  0.0534
Travel time =    0.93 min.     TC =   17.72  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.805
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.650
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.350
RI index for soil(AMC 2)  =  81.85
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.519(In/Hr) for a   100.0 year storm
Subarea runoff =     14.226(CFS) for      7.010(Ac.)
Total runoff =    155.800(CFS)       Total area =      66.690(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       27.000 to Point/Station       27.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     66.690(Ac.)
Runoff from this stream =    155.800(CFS)
Time of concentration =   17.72 min.
Rainfall intensity =     2.519(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1      381.242     19.44                2.399
2      155.800     17.72                2.519
Largest stream flow has longer time of concentration
Qp =    381.242 + sum of
          Qb         Ia/Ib
         155.800 *    0.952 =    148.355
Qp =    529.597

Total of 2 streams to confluence:
Flow rates before confluence point:
     381.242     155.800
Area of streams before confluence:
      173.180       66.690
Results of confluence:
Total flow rate =    529.597(CFS)
Time of concentration =    19.436 min.
Effective stream area after confluence =    239.870(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       27.000 to Point/Station       28.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of natural channel elevation =   2429.000(Ft.)
End of natural channel elevation =   2384.000(Ft.)
Length of natural channel  =  1213.000(Ft.)
Estimated mean flow rate at midpoint of channel =    549.721(CFS)
```

```
Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  15.55(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0371
Corrected/adjusted channel slope =  0.0371
Travel time =    1.30 min.     TC =   20.74  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.793
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.720
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.280
RI index for soil(AMC 2)  =  81.08
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.318(In/Hr) for a   100.0 year storm
Subarea runoff =     33.532(CFS) for     18.230(Ac.)
Total runoff =    563.129(CFS)       Total area =     258.100(Ac.)
End of computations, total study area =          258.10 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  86.9
```

10-Year Storm – Areas A & B (Existing Conditions)

U n i t H y d r o g r a p h A n a l y s i s

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Study date 10/23/14 File: AREAAEX110.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

TPM 36564 W.O. 2014-0213
OFF-SITE AREA A UNDEVELOPED CONDITIONS
10-YEAR STORM 1-HOUR
FILE: AREAAEX.UM1

Drainage Area = 903.33(Ac.) = 1.411 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 903.33(Ac.) = 1.411 Sq. Mi.
Length along longest watercourse = 19860.00(Ft.)
Length along longest watercourse measured to centroid = 12732.00(Ft.)
Length along longest watercourse = 3.761 Mi.
Length along longest watercourse measured to centroid = 2.411 Mi.
Difference in elevation = 1506.00(Ft.)
Slope along watercourse = 400.3867 Ft./Mi.
Average Manning's 'N' = 0.036
Lag time = 0.640 Hr.
Lag time = 38.38 Min.
25% of lag time = 9.59 Min.
40% of lag time = 15.35 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
903.33	0.56	505.86

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
903.33	1.30	1174.33

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 0.560(In)
Area Averaged 100-Year Rainfall = 1.300(In)

Point rain (area averaged) = 0.864(In)
Areal adjustment factor = 99.18 %
Adjusted average point rain = 0.857(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
903.330	83.92	0.100

Total Area Entered = 903.33(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
83.9	83.9	0.199	0.100	0.181	1.000	0.181
					Sum (F) =	0.181

Area averaged mean soil loss (F) (In/Hr) = 0.181
Minimum soil loss rate ((In/Hr)) = 0.091
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.820

Slope of intensity-duration curve for a 1 hour storm =0.5300

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	13.028	0.825	7.512
2	0.167	26.056	1.949	17.740
3	0.250	39.085	2.734	24.894
4	0.333	52.113	3.544	32.268
5	0.417	65.141	4.585	41.739
6	0.500	78.169	6.429	58.530
7	0.583	91.198	9.202	83.776
8	0.667	104.226	16.953	154.338
9	0.750	117.254	10.724	97.632
10	0.833	130.282	6.166	56.134
11	0.917	143.310	4.754	43.276
12	1.000	156.339	3.900	35.508
13	1.083	169.367	3.167	28.836
14	1.167	182.395	2.966	26.998
15	1.250	195.423	2.461	22.400
16	1.333	208.452	2.288	20.825
17	1.417	221.480	1.908	17.372
18	1.500	234.508	1.793	16.321
19	1.583	247.536	1.575	14.337
20	1.667	260.564	1.461	13.297
21	1.750	273.593	1.256	11.437
22	1.833	286.621	1.168	10.631
23	1.917	299.649	1.043	9.500
24	2.000	312.677	0.944	8.590
25	2.083	325.706	0.834	7.589
26	2.167	338.734	0.719	6.542
27	2.250	351.762	0.624	5.684
28	2.333	364.790	0.560	5.099
29	2.417	377.818	0.517	4.711
30	2.500	390.847	0.413	3.758
31	2.583	403.875	0.356	3.237
32	2.667	416.903	0.208	1.892
33	2.750	429.931	0.156	1.423
34	2.833	442.959	0.156	1.423
35	2.917	455.988	0.154	1.398
36	3.000	469.016	0.134	1.221
37	3.083	482.044	0.130	1.186
38	3.167	495.072	0.130	1.186
39	3.250	508.101	0.120	1.094
40	3.333	521.129	0.082	0.746
41	3.417	534.157	0.078	0.712
42	3.500	547.185	0.078	0.712
43	3.583	560.213	0.086	0.785
44	3.667	573.242	0.104	0.943
45	3.750	586.270	0.104	0.949
46	3.833	599.298	0.104	0.949
47	3.917	612.326	0.081	0.737
48	4.000	625.355	0.052	0.475
49	4.083	638.383	0.052	0.474

```
          50   4.167        651.411          0.052              0.473
          51   4.250        664.439          0.036              0.332
          52   4.333        677.467          0.026              0.237
          53   4.417        690.496          0.026              0.237
          54   4.500        703.524          0.032              0.292
                                     Sum = 100.000   Sum=     910.387
-------------------------------------------------------------------------


  Unit Time   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max   |   Low        (In/Hr)
   1   0.08     3.40      0.350         0.181      ---          0.17
   2   0.17     4.70      0.484         0.181      ---          0.30
   3   0.25     4.70      0.484         0.181      ---          0.30
   4   0.33     5.10      0.525         0.181      ---          0.34
   5   0.42     5.80      0.597         0.181      ---          0.42
   6   0.50     5.90      0.607         0.181      ---          0.43
   7   0.58     7.10      0.730         0.181      ---          0.55
   8   0.67     8.70      0.895         0.181      ---          0.71
   9   0.75    13.20      1.358         0.181      ---          1.18
  10   0.83    29.70      3.056         0.181      ---          2.87
  11   0.92     7.70      0.792         0.181      ---          0.61
  12   1.00     4.00      0.412         0.181      ---          0.23
     Sum =     100.0                                    Sum =     8.1
        Flood volume = Effective rainfall      0.68(In)
         times area     903.3(Ac.)/[(In)/(Ft.)] =      50.9(Ac.Ft)
        Total soil loss =      0.18(In)
        Total soil loss =    13.653(Ac.Ft)
        Total rainfall =      0.86(In)
        Flood volume =     2216635.1 Cubic Feet
        Total soil loss =      594741.0 Cubic Feet
        ---------------------------------------------------------------------
         Peak flow rate of this hydrograph =    739.694(CFS)
        ---------------------------------------------------------------------
        +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                             1 - H O U R    S T O R M
                        R u n o f f      H y d r o g r a p h
        ---------------------------------------------------------------------
                    Hydrograph in   5   Minute intervals ((CFS))

        ---------------------------------------------------------------------
  Time(h+m) Volume Ac.Ft   Q(CFS)  0      200.0     400.0     600.0     800.0
  ----------------------------------------------------------------------
    0+ 5       0.0087      1.27  Q         |         |         |         |
    0+10       0.0449      5.26  Q         |         |         |         |
    0+15       0.1264     11.83  Q         |         |         |         |
    0+20       0.2704     20.91  VQ        |         |         |         |
    0+25       0.5013     33.53  VQ        |         |         |         |
    0+30       0.8551     51.36  V Q       |         |         |         |
    0+35       1.3891     77.54  |V Q      |         |         |         |
    0+40       2.2327    122.49  |V    Q   |         |         |         |
    0+45       3.4368    174.82  | V     Q |         |         |         |
    0+50       5.0518    234.51  |  V      |Q        |         |         |
    0+55       7.1002    297.43  |    V    |   Q     |         |         |
    1+ 0       9.5348    353.50  |      V  |      Q  |         |         |
    1+ 5      12.3124    403.31  |        V|         Q         |         |
    1+10      15.4996    462.78  |         | V       |  Q      |         |
    1+15      19.2082    538.48  |         |    V    |     Q   |         |
    1+20      23.5477    630.10  |         |       V |         |Q        |
    1+25      28.6420    739.69  |         |         | V       |     Q   |
    1+30      32.4737    556.37  |         |         |    V Q  |         |
    1+35      35.1552    389.35  |         |        Q|      V  |         |
    1+40      37.1809    294.14  |         |   Q     |        V|         |
    1+45      38.8269    239.00  |         |Q        |         V         |
    1+50      40.2194    202.19  |         Q         |         |V        |
    1+55      41.4589    179.97  |       Q |         |         | V       |
    2+ 0      42.5370    156.54  |      Q  |         |         |  V      |
    2+ 5      43.5053    140.60  |      Q  |         |         |   V     |
    2+10      44.3534    123.15  |     Q   |         |         |   V     |
    2+15      45.1224    111.66  |    Q    |         |         |    V    |
    2+20      45.8087     99.64  |   Q     |         |         |     V   |
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   2+25      46.4295     90.15  |   Q     |         |         |     V   |
   2+30      46.9794     79.84  |  Q      |         |         |     V   |
   2+35      47.4761     72.12  |  Q      |         |         |      V  |
   2+40      47.9180     64.17  |  Q      |         |         |      V  |
   2+45      48.3099     56.90  | Q       |         |         |      V  |
   2+50      48.6525     49.75  | Q       |         |         |       V |
   2+55      48.9489     43.04  | Q       |         |         |       V |
   3+ 0      49.2054     37.24  |Q        |         |         |       V |
   3+ 5      49.4294     32.53  |Q        |         |         |       V |
   3+10      49.6247     28.35  |Q        |         |         |        V|
   3+15      49.7852     23.31  |Q        |         |         |        V|
   3+20      49.9164     19.04  Q         |         |         |        V|
   3+25      50.0117     13.84  Q         |         |         |        V|
   3+30      50.0893     11.27  Q         |         |         |        V|
   3+35      50.1606     10.35  Q         |         |         |        V|
   3+40      50.2280      9.79  Q         |         |         |        V|
   3+45      50.2905      9.08  Q         |         |         |        V|
   3+50      50.3502      8.67  Q         |         |         |        V|
   3+55      50.4072      8.28  Q         |         |         |        V|
   4+ 0      50.4593      7.56  Q         |         |         |        V|
   4+ 5      50.5036      6.43  Q         |         |         |        V|
   4+10      50.5455      6.09  Q         |         |         |        V|
   4+15      50.5867      5.99  Q         |         |         |        V|
   4+20      50.6289      6.12  Q         |         |         |        V|
   4+25      50.6725      6.33  Q         |         |         |        V|
   4+30      50.7145      6.09  Q         |         |         |        V|
   4+35      50.7529      5.57  Q         |         |         |        V|
   4+40      50.7837      4.48  Q         |         |         |        V|
   4+45      50.8072      3.41  Q         |         |         |        V|
   4+50      50.8277      2.97  Q         |         |         |        V|
   4+55      50.8454      2.57  Q         |         |         |        V|
   5+ 0      50.8589      1.96  Q         |         |         |        V|
   5+ 5      50.8691      1.48  Q         |         |         |        V|
   5+10      50.8777      1.25  Q         |         |         |        V|
   5+15      50.8849      1.04  Q         |         |         |        V|
   5+20      50.8865      0.23  Q         |         |         |        V|
   5+25      50.8869      0.07  Q         |         |         |        V|
-------------------------------------------------------------------------
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Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
Rational Hydrology Study Date: 10/23/14 File:AREABEX.out

PM 36564 WO 2014-0213
AREA B UNDEVELOPED CONDITIONS
10-YEAR STORM
FILE: AREABEX.RRV

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 4010

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Beaumont] area used.
10 year storm 10 minute intensity = 2.300(In/Hr)
10 year storm 60 minute intensity = 0.890(In/Hr)
100 year storm 10 minute intensity = 3.410(In/Hr)
100 year storm 60 minute intensity = 1.320(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.890(In/Hr)
Slope of intensity duration curve = 0.5300

++

Process from Point/Station 16.000 to Point/Station 17.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 995.000(Ft.)
Top (of initial area) elevation = 3043.500(Ft.)
Bottom (of initial area) elevation = 2864.000(Ft.)
Difference in elevation = 179.500(Ft.)
Slope = 0.18040 s(percent)= 18.04
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.807 min.
Rainfall intensity = 2.107(In/Hr) for a 10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.835
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2) = 89.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 17.495(CFS)
Total initial stream area = 9.950(Ac.)
Pervious area fraction = 1.000

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Process from Point/Station 17.000 to Point/Station 18.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****

```
Top of natural channel elevation =   2864.000(Ft.)
End of natural channel elevation =   2748.000(Ft.)
Length of natural channel  =  1285.000(Ft.)
Estimated mean flow rate at midpoint of channel =     35.175(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  10.52(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0903
Corrected/adjusted channel slope =  0.0903
Travel time =    2.04 min.     TC =   13.84  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.829
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  89.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.936(In/Hr) for a    10.0 year storm
Subarea runoff =     32.295(CFS) for     20.110(Ac.)
Total runoff =     49.790(CFS)        Total area =      30.060(Ac.)


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Process from Point/Station       18.000 to Point/Station       19.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of natural channel elevation =   2748.000(Ft.)
End of natural channel elevation =   2620.000(Ft.)
Length of natural channel  =  1525.000(Ft.)
Estimated mean flow rate at midpoint of channel =     87.340(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  13.21(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0839
Corrected/adjusted channel slope =  0.0839
Travel time =    1.92 min.     TC =   15.77  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.821
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.950
RI index for soil(AMC 2)  =  88.45
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.807(In/Hr) for a    10.0 year storm
Subarea runoff =     67.261(CFS) for     45.340(Ac.)
Total runoff =    117.052(CFS)        Total area =      75.400(Ac.)


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Process from Point/Station       19.000 to Point/Station       20.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
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Top of natural channel elevation =   2620.000(Ft.)
End of natural channel elevation =   2470.000(Ft.)
Length of natural channel  =  2685.000(Ft.)
Estimated mean flow rate at midpoint of channel =    183.619(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  13.50(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0559
Corrected/adjusted channel slope =  0.0559
Travel time =    3.31 min.     TC =   19.08  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.801
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.200
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.800
RI index for soil(AMC 2)  =  86.80
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.633(In/Hr) for a    10.0 year storm
Subarea runoff =    112.144(CFS) for     85.760(Ac.)
Total runoff =    229.196(CFS)        Total area =     161.160(Ac.)


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Process from Point/Station       20.000 to Point/Station       27.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   2481.000(Ft.)
End of natural channel elevation =   2429.000(Ft.)
Length of natural channel  =  1130.000(Ft.)
Estimated mean flow rate at midpoint of channel =    237.743(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  13.28(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0460
Corrected/adjusted channel slope =  0.0460
Travel time =    1.42 min.     TC =   20.50  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.771
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.500
RI index for soil(AMC 2)  =  83.50
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.572(In/Hr) for a    10.0 year storm
Subarea runoff =     14.569(CFS) for     12.020(Ac.)
Total runoff =    243.765(CFS)        Total area =     173.180(Ac.)


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Process from Point/Station       27.000 to Point/Station       27.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
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Stream flow area =    173.180(Ac.)
Runoff from this stream =    243.765(CFS)
Time of concentration =   20.50 min.
Rainfall intensity =     1.572(In/Hr)


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Process from Point/Station       21.000 to Point/Station       22.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =  1000.000(Ft.)
Top (of initial area) elevation =  2940.000(Ft.)
Bottom (of initial area) elevation =  2720.000(Ft.)
Difference in elevation =   220.000(Ft.)
Slope =    0.22000  s(percent)=      22.00
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.371 min.
Rainfall intensity =      2.149(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.836
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  89.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =     16.814(CFS)
Total initial stream area =        9.360(Ac.)
Pervious area fraction = 1.000


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Process from Point/Station       22.000 to Point/Station       23.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   2720.000(Ft.)
End of natural channel elevation =   2616.000(Ft.)
Length of natural channel  =  1020.000(Ft.)
Estimated mean flow rate at midpoint of channel =     28.984(CFS)

Natural mountain channel type used
L.A. County flood control district formula for channel velocity:
 Velocity = 5.48(q^.33)(slope^.492)
Velocity using mean channel flow =   5.40(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.1020
Corrected/adjusted channel slope =  0.1014
Travel time =    3.15 min.     TC =   14.52  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.828
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  89.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.888(In/Hr) for a    10.0 year storm
Subarea runoff =     21.174(CFS) for     13.550(Ac.)
Total runoff =     37.988(CFS)        Total area =      22.910(Ac.)


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Process from Point/Station       23.000 to Point/Station       24.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   2616.000(Ft.)
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End of natural channel elevation =   2576.000(Ft.)
Length of natural channel  =   475.000(Ft.)
Estimated mean flow rate at midpoint of channel =     55.299(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  11.56(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0842
Corrected/adjusted channel slope =  0.0842
Travel time =    0.68 min.     TC =   15.20  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.822
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.950
RI index for soil(AMC 2)  =  88.45
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.842(In/Hr) for a    10.0 year storm
Subarea runoff =     31.631(CFS) for     20.880(Ac.)
Total runoff =     69.619(CFS)       Total area =      43.790(Ac.)


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Process from Point/Station       24.000 to Point/Station       25.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   2576.000(Ft.)
End of natural channel elevation =   2459.000(Ft.)
Length of natural channel  =  1675.000(Ft.)
Estimated mean flow rate at midpoint of channel =     82.250(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  11.83(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0699
Corrected/adjusted channel slope =  0.0699
Travel time =    2.36 min.     TC =   17.56  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.795
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.310
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.690
RI index for soil(AMC 2)  =  85.59
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.707(In/Hr) for a    10.0 year storm
Subarea runoff =     21.571(CFS) for     15.890(Ac.)
Total runoff =     91.189(CFS)       Total area =      59.680(Ac.)


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Process from Point/Station       25.000 to Point/Station       27.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   2466.000(Ft.)
End of natural channel elevation =   2429.000(Ft.)
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Length of natural channel  =   693.000(Ft.)
Estimated mean flow rate at midpoint of channel =     96.545(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  10.85(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0534
Corrected/adjusted channel slope =  0.0534
Travel time =    1.06 min.     TC =   18.63  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.764
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.650
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.350
RI index for soil(AMC 2)  =  81.85
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.654(In/Hr) for a    10.0 year storm
Subarea runoff =      8.855(CFS) for      7.010(Ac.)
Total runoff =    100.044(CFS)       Total area =      66.690(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       27.000 to Point/Station       27.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     66.690(Ac.)
Runoff from this stream =    100.044(CFS)
Time of concentration =   18.63 min.
Rainfall intensity =     1.654(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1      243.765     20.50                1.572
2      100.044     18.63                1.654
Largest stream flow has longer time of concentration
Qp =    243.765 + sum of
          Qb         Ia/Ib
         100.044 *    0.950 =     95.091
Qp =    338.856

Total of 2 streams to confluence:
Flow rates before confluence point:
     243.765     100.044
Area of streams before confluence:
      173.180       66.690
Results of confluence:
Total flow rate =    338.856(CFS)
Time of concentration =    20.501 min.
Effective stream area after confluence =    239.870(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       27.000 to Point/Station       28.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   2429.000(Ft.)
End of natural channel elevation =   2384.000(Ft.)
Length of natural channel  =  1213.000(Ft.)
Estimated mean flow rate at midpoint of channel =    351.732(CFS)
```

```
Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  13.48(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0371
Corrected/adjusted channel slope =  0.0371
Travel time =    1.50 min.     TC =   22.00  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.747
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.720
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.280
RI index for soil(AMC 2)  =  81.08
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.515(In/Hr) for a    10.0 year storm
Subarea runoff =     20.616(CFS) for     18.230(Ac.)
Total runoff =    359.472(CFS)       Total area =     258.100(Ac.)
End of computations, total study area =          258.10 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  86.9
```

Developed Conditions

100-Year Storm – Off-Site Areas A & B

100-Year Storm – Developed Conditions

10-Year Storm – Off-Site Areas A & B

10-Year Storm – Developed Conditions

STORM DRAIN SUMMARY
14-0213 SHOPOFF
OFF-SITE DEVELOPED CONDITIONS

AREA A / LINE-A

LOCATION/ AREA		OFF-SITE		ON-SITE DMA B		ON-SITE DMA A		EXIT POINT
SUB-AREA		A1	A2	Self Treated	Basin Outlet	Self Treat	Basin Outlet	Line-A Outlet
NODE		99	82	84-85	86	87-88	89	90
STORM	DURATION	Peak Flow	Peak Flow	Peak Flow	Peak Flow	Peak Flow	Peak Flow	Peak Flow
YEAR	HOUR	CFS	CFS	CFS	CFS	CFS	CFS	CFS
10	1	152.3	511.1	13.3	2.6	3.1	2.2	641.8
100	1	243.4	808.9	21.8	9.5	5.1	9.9	1029.7
BULKED	1.4	340.8	1132.5					

AREA B / LINE-B

LOCATION/ AREA		OFF-SITE			DMA B	ON-SITE DMA A		EXIT POINT
SUB-AREA		B1	B2	B3	Self Treated	Self Treat	Basin Outlet	Line-A Outlet
NODE		35	36	37	35			43
STORM	DURATION	Peak Flow	Peak Flow	Peak Flow	Peak Flow			Peak Flow
YEAR	HOUR	CFS	CFS	CFS	CFS			CFS
10	1	117.8	238.3	113.5	8.3			448.0
100	1	183.2	372.7	175.5	13.1			697.4
BULKED	1.4	256.5	521.8	245.7				

SUMMARY OF EXISTNIG AND DEVELOPED CONDITIONS

		EXISTING CONDITIONS			DEVELOPED CONDITIONS			DELTA*
SUB-AREA		A	B	TOTAL	A	B	TOTAL	D-E
NODE		5	28		90	43		
STORM	DURATION	Peak Flow	Peak Flow	Peak Flow	Peak Flow	Peak Flow	Peak Flow	Peak Flow
YEAR	HOUR	CFS	CFS	CFS	CFS	CFS	CFS	CFS
10	1	739.7	359.4	1099.1	641.8	448.0	1089.8	-9.3
100	1	1171.4	563.2	1734.6	1029.7	697.4	1727.1	-7.5

* SEE ON-SITE DRAINAGE REPORT FOR DMA A AND DMA B BASIN ROUTING SUMMARY

100-Year Storm – Off-Site Areas A & B

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
Rational Hydrology Study Date: 10/27/14 File:AREAA1EX100.out

TPM 36564 W.O. 2014-0213
OFF-SITE AREA A1
100-YEAR STORM UNDEVELOPED CONDITION
FILE: AREAA1EX100.RRV

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 4010

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Beaumont] area used.
10 year storm 10 minute intensity = 2.300(In/Hr)
10 year storm 60 minute intensity = 0.890(In/Hr)
100 year storm 10 minute intensity = 3.410(In/Hr)
100 year storm 60 minute intensity = 1.320(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.320(In/Hr)
Slope of intensity duration curve = 0.5300

++

Process from Point/Station 95.100 to Point/Station 95.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 880.000(Ft.)
Top (of initial area) elevation = 2838.000(Ft.)
Bottom (of initial area) elevation = 2740.000(Ft.)
Difference in elevation = 98.000(Ft.)
Slope = 0.11136 s(percent)= 11.14
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.380 min.
Rainfall intensity = 3.047(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.851
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.950
RI index for soil(AMC 2) = 88.45
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 11.154(CFS)
Total initial stream area = 4.300(Ac.)
Pervious area fraction = 1.000

++

Process from Point/Station 95.000 to Point/Station 96.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****

```
Top of natural channel elevation =   2740.000(Ft.)
End of natural channel elevation =   2708.000(Ft.)
Length of natural channel  =   815.000(Ft.)
Estimated mean flow rate at midpoint of channel =     23.255(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   6.19(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0393
Corrected/adjusted channel slope =  0.0393
Travel time =    2.20 min.     TC =   14.58  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.847
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.950
RI index for soil(AMC 2)  =  88.45
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.794(In/Hr) for a   100.0 year storm
Subarea runoff =     22.087(CFS) for      9.330(Ac.)
Total runoff =     33.241(CFS)        Total area =      13.630(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       96.000 to Point/Station       97.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of natural channel elevation =   2708.000(Ft.)
End of natural channel elevation =   2680.000(Ft.)
Length of natural channel  =   836.000(Ft.)
Estimated mean flow rate at midpoint of channel =     48.703(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   7.03(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0335
Corrected/adjusted channel slope =  0.0335
Travel time =    1.98 min.     TC =   16.56  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.829
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.300
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.700
RI index for soil(AMC 2)  =  85.70
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.612(In/Hr) for a   100.0 year storm
Subarea runoff =     27.465(CFS) for     12.680(Ac.)
Total runoff =     60.706(CFS)        Total area =      26.310(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       97.000 to Point/Station       98.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
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```
Top of natural channel elevation =   2680.000(Ft.)
End of natural channel elevation =   2632.000(Ft.)
Length of natural channel  =   982.000(Ft.)
Estimated mean flow rate at midpoint of channel =    132.799(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  11.43(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0489
Corrected/adjusted channel slope =  0.0489
Travel time =    1.43 min.     TC =   17.99  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.795
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.800
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.200
RI index for soil(AMC 2)  =  80.20
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.499(In/Hr) for a   100.0 year storm
Subarea runoff =    124.210(CFS) for     62.490(Ac.)
Total runoff =    184.916(CFS)       Total area =      88.800(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       98.000 to Point/Station       99.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2632.000(Ft.)
Downstream point elevation =  2555.000(Ft.)
Channel length thru subarea  =  2995.000(Ft.)
Channel base width     =    5.000(Ft.)
Slope or 'Z' of left channel bank =   2.000
Slope or 'Z' of right channel bank =   2.000
Estimated mean flow rate at midpoint of channel =    214.182(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    3.000(Ft.)
Flow(q) thru subarea =    214.182(CFS)
Depth of flow =   1.581(Ft.), Average velocity =  16.605(Ft/s)
Channel flow top width =   11.322(Ft.)
Flow Velocity =   16.61(Ft/s)
Travel time  =    3.01 min.
Time of concentration =   21.00 min.

Sub-Channel No. 1 Critical depth =      2.719(Ft.)
  '     '       '     Critical flow top width =     15.875(Ft.)
  '     '       '     Critical flow velocity=    7.548(Ft/s)
  '     '       '     Critical flow area =     28.377(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.774
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  78.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.303(In/Hr) for a   100.0 year storm
Subarea runoff =     58.455(CFS) for     32.810(Ac.)
Total runoff =    243.371(CFS)       Total area =     121.610(Ac.)
Depth of flow =   1.689(Ft.), Average velocity =  17.203(Ft/s)

Sub-Channel No. 1 Critical depth =      2.906(Ft.)
```

```
  '     '       '     Critical flow top width =     16.625(Ft.)
  '     '       '     Critical flow velocity=    7.745(Ft/s)
  '     '       '     Critical flow area =     31.424(Sq.Ft)

End of computations, total study area =          121.61 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  81.1
```

U n i t H y d r o g r a p h A n a l y s i s

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Study date 10/24/14 File: AREAA2EX1100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 4010

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

TPM 36564 W.O. 2014-0213
AREA A2 OFF-SITE UNDEVELOPED CONDITIONS
100-YEAR -HOUR STORM
FILE: AREAA2EX.UM1

Drainage Area = 568.30(Ac.) = 0.888 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 568.30(Ac.) = 0.888 Sq. Mi.
Length along longest watercourse = 15270.00(Ft.)
Length along longest watercourse measured to centroid = 8200.00(Ft.)
Length along longest watercourse = 2.892 Mi.
Length along longest watercourse measured to centroid = 1.553 Mi.
Difference in elevation = 1354.00(Ft.)
Slope along watercourse = 468.1807 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time = 0.528 Hr.
Lag time = 31.69 Min.
25% of lag time = 7.92 Min.
40% of lag time = 12.68 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
568.30	0.56	318.25

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
568.30	1.30	738.79

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.560(In)
Area Averaged 100-Year Rainfall = 1.300(In)

Point rain (area averaged) = 1.300(In)
Areal adjustment factor = 99.48 %
Adjusted average point rain = 1.293(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
568.300	83.92	0.100

Total Area Entered = 568.30(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
83.9	83.9	0.199	0.100	0.181	1.000	0.181
					Sum (F) =	0.181

Area averaged mean soil loss (F) (In/Hr) = 0.181
Minimum soil loss rate ((In/Hr)) = 0.091
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.820

Slope of intensity-duration curve for a 1 hour storm =0.5300

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	15.777	1.000	5.730
2	0.167	31.554	2.587	14.816
3	0.250	47.330	3.711	21.256
4	0.333	63.107	4.995	28.609
5	0.417	78.884	7.454	42.694
6	0.500	94.661	12.000	68.728
7	0.583	110.438	19.421	111.230
8	0.667	126.215	9.556	54.731
9	0.750	141.991	6.224	35.646
10	0.833	157.768	4.813	27.568
11	0.917	173.545	3.833	21.954
12	1.000	189.322	3.385	19.389
13	1.083	205.099	2.873	16.457
14	1.167	220.876	2.416	13.840
15	1.250	236.652	2.169	12.420
16	1.333	252.429	1.902	10.892
17	1.417	268.206	1.650	9.451
18	1.500	283.983	1.474	8.440
19	1.583	299.760	1.286	7.363
20	1.667	315.537	1.140	6.528
21	1.750	331.313	0.990	5.667
22	1.833	347.090	0.803	4.597
23	1.917	362.867	0.715	4.097
24	2.000	378.644	0.628	3.598
25	2.083	394.421	0.498	2.851
26	2.167	410.198	0.389	2.228
27	2.250	425.974	0.205	1.175
28	2.333	441.751	0.189	1.084
29	2.417	457.528	0.186	1.064
30	2.500	473.305	0.162	0.928
31	2.583	489.082	0.158	0.904
32	2.667	504.859	0.155	0.886
33	2.750	520.635	0.110	0.629
34	2.833	536.412	0.095	0.542
35	2.917	552.189	0.095	0.544
36	3.000	567.966	0.115	0.656
37	3.083	583.743	0.126	0.723
38	3.167	599.520	0.126	0.723
39	3.250	615.296	0.097	0.553
40	3.333	631.073	0.063	0.362
41	3.417	646.850	0.063	0.361
42	3.500	662.627	0.053	0.304
43	3.583	678.404	0.032	0.184
44	3.667	694.181	0.032	0.181
45	3.750	709.957	0.027	0.157
			Sum = 100.000	Sum= 572.740

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	3.40	0.528	0.181	---	0.35
2	0.17	4.70	0.729	0.181	---	0.55
3	0.25	4.70	0.729	0.181	---	0.55
4	0.33	5.10	0.792	0.181	---	0.61
5	0.42	5.80	0.900	0.181	---	0.72
6	0.50	5.90	0.916	0.181	---	0.73
7	0.58	7.10	1.102	0.181	---	0.92
8	0.67	8.70	1.350	0.181	---	1.17
9	0.75	13.20	2.049	0.181	---	1.87
10	0.83	29.70	4.609	0.181	---	4.43
11	0.92	7.70	1.195	0.181	---	1.01
12	1.00	4.00	0.621	0.181	---	0.44
Sum =		100.0			Sum =	13.3

Flood volume = Effective rainfall 1.11(In)
times area 568.3(Ac.)/[(In)/(Ft.)] = 52.7(Ac.Ft)
Total soil loss = 0.18(In)
Total soil loss = 8.590(Ac.Ft)
Total rainfall = 1.29(In)
Flood volume = 2293834.3 Cubic Feet
Total soil loss = 374161.5 Cubic Feet

Peak flow rate of this hydrograph = 808.866(CFS)

++

1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 225.0 450.0 675.0 900.0
0+ 5	0.0137	1.99	Q
0+10	0.0707	8.28	Q
0+15	0.1990	18.63	Q
0+20	0.4275	33.19	VQ
0+25	0.8084	55.30	V Q
0+30	1.4334	90.75	V Q
0+35	2.4565	148.55	V Q
0+40	3.8355	200.24	V Q
0+45	5.5203	244.64	V Q
0+50	7.6696	312.07	V Q
0+55	10.3562	390.10	V Q
1+ 0	13.4905	455.10	V Q
1+ 5	17.1298	528.44	V Q
1+10	21.4016	620.25	V Q
1+15	26.4552	733.79	V Q
1+20	32.0259	808.87	V Q
1+25	35.8491	555.13	V Q
1+30	38.6113	401.07	Q V
1+35	40.6726	299.30	Q V
1+40	42.3445	242.76	Q V
1+45	43.7782	208.18	Q V
1+50	45.0070	178.42	Q V
1+55	46.0656	153.70	Q V
2+ 0	46.9957	135.05	Q V
2+ 5	47.8092	118.13	Q V
2+10	48.5189	103.04	Q V
2+15	49.1393	90.09	Q V
2+20	49.6763	77.97	Q V
2+25	50.1411	67.50	Q V
2+30	50.5376	57.57	Q V
2+35	50.8684	48.02	Q V
2+40	51.1508	41.02	Q V
2+45	51.3881	34.46	Q V
2+50	51.5784	27.63	Q V
2+55	51.7264	21.49	Q V
3+ 0	51.8322	15.35	Q V
3+ 5	51.9232	13.22	Q V

```
    3+10      52.0067     12.13  Q         |         |         |        V|
    3+15      52.0835     11.15  Q         |         |         |        V|
    3+20      52.1554     10.44  Q         |         |         |        V|
    3+25      52.2217      9.63  Q         |         |         |        V|
    3+30      52.2784      8.22  Q         |         |         |        V|
    3+35      52.3297      7.46  Q         |         |         |        V|
    3+40      52.3792      7.19  Q         |         |         |        V|
    3+45      52.4300      7.37  Q         |         |         |        V|
    3+50      52.4797      7.22  Q         |         |         |        V|
    3+55      52.5249      6.56  Q         |         |         |        V|
    4+ 0      52.5610      5.24  Q         |         |         |        V|
    4+ 5      52.5880      3.93  Q         |         |         |        V|
    4+10      52.6106      3.28  Q         |         |         |        V|
    4+15      52.6283      2.57  Q         |         |         |        V|
    4+20      52.6407      1.80  Q         |         |         |        V|
    4+25      52.6505      1.41  Q         |         |         |        V|
    4+30      52.6571      0.96  Q         |         |         |        V|
    4+35      52.6587      0.24  Q         |         |         |        V|
    4+40      52.6592      0.07  Q         |         |         |         V
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Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
Rational Hydrology Study Date: 10/27/14 File:AREABOFF100.out

TPM 36564 W.O. 2014-0213
AREA B OFF-SITE UNDEVELOPED CONDITIONS
100-YEAR STORM
FILE: AREABOFF100.RRV

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 4010

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Beaumont] area used.
10 year storm 10 minute intensity = 2.300(In/Hr)
10 year storm 60 minute intensity = 0.890(In/Hr)
100 year storm 10 minute intensity = 3.410(In/Hr)
100 year storm 60 minute intensity = 1.320(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.320(In/Hr)
Slope of intensity duration curve = 0.5300

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Process from Point/Station 31.000 to Point/Station 32.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 605.000(Ft.)
Top (of initial area) elevation = 2824.000(Ft.)
Bottom (of initial area) elevation = 2655.000(Ft.)
Difference in elevation = 169.000(Ft.)
Slope = 0.27934 s(percent)= 27.93
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.866 min.
Rainfall intensity = 3.637(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.861
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2) = 89.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 11.929(CFS)
Total initial stream area = 3.810(Ac.)
Pervious area fraction = 1.000

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Process from Point/Station 32.000 to Point/Station 33.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****

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Top of natural channel elevation =   2655.000(Ft.)
End of natural channel elevation =   2605.000(Ft.)
Length of natural channel  =   508.000(Ft.)
Estimated mean flow rate at midpoint of channel =     20.430(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   9.45(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0984
Corrected/adjusted channel slope =  0.0984
Travel time =    0.90 min.     TC =    9.76  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.859
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  89.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      3.456(In/Hr) for a   100.0 year storm
Subarea runoff =     16.119(CFS) for      5.430(Ac.)
Total runoff =     28.048(CFS)        Total area =       9.240(Ac.)


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Process from Point/Station       33.000 to Point/Station       34.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
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Top of natural channel elevation =   2605.000(Ft.)
End of natural channel elevation =   2548.000(Ft.)
Length of natural channel  =   788.000(Ft.)
Estimated mean flow rate at midpoint of channel =     58.905(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  10.92(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0723
Corrected/adjusted channel slope =  0.0723
Travel time =    1.20 min.     TC =   10.97  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.854
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.950
RI index for soil(AMC 2)  =  88.45
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      3.249(In/Hr) for a   100.0 year storm
Subarea runoff =     56.428(CFS) for     20.330(Ac.)
Total runoff =     84.477(CFS)        Total area =      29.570(Ac.)


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Process from Point/Station       34.000 to Point/Station       35.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
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Top of natural channel elevation =   2548.000(Ft.)
End of natural channel elevation =   2454.000(Ft.)
Length of natural channel  =  2180.000(Ft.)
Estimated mean flow rate at midpoint of channel =    143.914(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  11.01(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0431
Corrected/adjusted channel slope =  0.0431
Travel time =    3.30 min.     TC =   14.27  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.840
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.200
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.800
RI index for soil(AMC 2)  =  86.80
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.826(In/Hr) for a   100.0 year storm
Subarea runoff =     98.754(CFS) for     41.610(Ac.)
Total runoff =    183.231(CFS)       Total area =      71.180(Ac.)


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Process from Point/Station       16.000 to Point/Station       17.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
Initial area flow distance =   995.000(Ft.)
Top (of initial area) elevation =  3043.500(Ft.)
Bottom (of initial area) elevation =  2864.000(Ft.)
Difference in elevation =   179.500(Ft.)
Slope =    0.18040  s(percent)=      18.04
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.807 min.
Rainfall intensity =      3.124(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.855
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  89.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =     26.576(CFS)
Total initial stream area =        9.950(Ac.)
Pervious area fraction = 1.000


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Process from Point/Station       17.000 to Point/Station       18.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of natural channel elevation =   2864.000(Ft.)
End of natural channel elevation =   2748.000(Ft.)
Length of natural channel  =  1285.000(Ft.)
Estimated mean flow rate at midpoint of channel =     53.433(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  11.85(Ft/s)

Correction to map slope used on extremely rugged channels with
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drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0903
Corrected/adjusted channel slope =  0.0903
Travel time =    1.81 min.     TC =   13.61  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.852
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  89.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.897(In/Hr) for a   100.0 year storm
Subarea runoff =     49.614(CFS) for     20.110(Ac.)
Total runoff =     76.191(CFS)        Total area =      30.060(Ac.)


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Process from Point/Station       18.000 to Point/Station       19.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of natural channel elevation =   2748.000(Ft.)
End of natural channel elevation =   2620.000(Ft.)
Length of natural channel  =  1525.000(Ft.)
Estimated mean flow rate at midpoint of channel =    133.651(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  15.01(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0839
Corrected/adjusted channel slope =  0.0839
Travel time =    1.69 min.     TC =   15.31  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.846
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.950
RI index for soil(AMC 2)  =  88.45
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.723(In/Hr) for a   100.0 year storm
Subarea runoff =    104.425(CFS) for     45.340(Ac.)
Total runoff =    180.615(CFS)        Total area =      75.400(Ac.)


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Process from Point/Station       19.000 to Point/Station       20.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of natural channel elevation =   2620.000(Ft.)
End of natural channel elevation =   2470.000(Ft.)
Length of natural channel  =  2685.000(Ft.)
Estimated mean flow rate at midpoint of channel =    283.331(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  15.45(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
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       Normal channel slope =  0.0559
Corrected/adjusted channel slope =  0.0559
Travel time =    2.90 min.     TC =   18.20  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.832
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.200
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.800
RI index for soil(AMC 2)  =  86.80
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.484(In/Hr) for a   100.0 year storm
Subarea runoff =    177.242(CFS) for     85.760(Ac.)
Total runoff =    357.857(CFS)        Total area =     161.160(Ac.)


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Process from Point/Station       20.000 to Point/Station       36.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of natural channel elevation =   2470.000(Ft.)
End of natural channel elevation =   2446.000(Ft.)
Length of natural channel  =   857.000(Ft.)
Estimated mean flow rate at midpoint of channel =    366.551(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  11.87(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0280
Corrected/adjusted channel slope =  0.0280
Travel time =    1.20 min.     TC =   19.41  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.789
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.840
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.160
RI index for soil(AMC 2)  =  79.76
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.401(In/Hr) for a   100.0 year storm
Subarea runoff =     14.830(CFS) for      7.830(Ac.)
Total runoff =    372.687(CFS)        Total area =     168.990(Ac.)


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Process from Point/Station       21.000 to Point/Station       22.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
Initial area flow distance =  1000.000(Ft.)
Top (of initial area) elevation =  2940.000(Ft.)
Bottom (of initial area) elevation =  2720.000(Ft.)
Difference in elevation =   220.000(Ft.)
Slope =    0.22000  s(percent)=      22.00
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.371 min.
Rainfall intensity =      3.187(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.856
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
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Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  89.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =     25.530(CFS)
Total initial stream area =        9.360(Ac.)
Pervious area fraction = 1.000


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Process from Point/Station       22.000 to Point/Station       23.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   2720.000(Ft.)
End of natural channel elevation =   2616.000(Ft.)
Length of natural channel  =  1020.000(Ft.)
Estimated mean flow rate at midpoint of channel =     44.009(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  11.91(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.1020
Corrected/adjusted channel slope =  0.1020
Travel time =    1.43 min.     TC =   12.80  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.853
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  89.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.994(In/Hr) for a   100.0 year storm
Subarea runoff =     34.604(CFS) for     13.550(Ac.)
Total runoff =     60.134(CFS)        Total area =      22.910(Ac.)


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Process from Point/Station       23.000 to Point/Station       24.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   2616.000(Ft.)
End of natural channel elevation =   2576.000(Ft.)
Length of natural channel  =   475.000(Ft.)
Estimated mean flow rate at midpoint of channel =     87.537(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  13.24(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0842
Corrected/adjusted channel slope =  0.0842
Travel time =    0.60 min.     TC =   13.40  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.849
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.950
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RI index for soil(AMC 2)  =  88.45
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.922(In/Hr) for a   100.0 year storm
Subarea runoff =     51.825(CFS) for     20.880(Ac.)
Total runoff =    111.959(CFS)        Total area =      43.790(Ac.)


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Process from Point/Station       24.000 to Point/Station       25.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of natural channel elevation =   2576.000(Ft.)
End of natural channel elevation =      0.000(Ft.)
Length of natural channel  =  2459.000(Ft.)
Estimated mean flow rate at midpoint of channel =    132.272(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  52.87(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  1.0476
Corrected/adjusted channel slope =  1.0476
Travel time =    0.78 min.     TC =   14.17  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.834
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.310
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.690
RI index for soil(AMC 2)  =  85.59
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.836(In/Hr) for a   100.0 year storm
Subarea runoff =     37.587(CFS) for     15.890(Ac.)
Total runoff =    149.546(CFS)        Total area =      59.680(Ac.)


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Process from Point/Station       25.000 to Point/Station       37.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of natural channel elevation =   2459.000(Ft.)
End of natural channel elevation =   2442.000(Ft.)
Length of natural channel  =   464.000(Ft.)
Estimated mean flow rate at midpoint of channel =    164.105(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  10.56(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0366
Corrected/adjusted channel slope =  0.0366
Travel time =    0.73 min.     TC =   14.90  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.809
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.720
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.280
RI index for soil(AMC 2)  =  81.08
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Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.762(In/Hr) for a   100.0 year storm
Subarea runoff =     25.956(CFS) for     11.620(Ac.)
Total runoff =    175.502(CFS)        Total area =      71.300(Ac.)
End of computations, total study area =          311.47 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  87.2
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100-Year Storm – Developed Conditions

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
Rational Hydrology Study Date: 10/29/14 File:AREAADEV100.out

TPM 36564 W.O. 2014-0213
WATERSHED A DEVELOPED CONDITIONS
100-YEAR 1-HOUR STORM
FILE: AREAADEV100.RRV

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 4010

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Beaumont] area used.
10 year storm 10 minute intensity = 2.300(In/Hr)
10 year storm 60 minute intensity = 0.890(In/Hr)
100 year storm 10 minute intensity = 3.410(In/Hr)
100 year storm 60 minute intensity = 1.320(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.320(In/Hr)
Slope of intensity duration curve = 0.5300

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Process from Point/Station 81.000 to Point/Station 82.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****

Rainfall intensity = 1.643(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.779
Decimal fraction soil group A = 0.120
Decimal fraction soil group B = 0.110
Decimal fraction soil group C = 0.410
Decimal fraction soil group D = 0.360
RI index for soil(AMC 2) = 83.92
Pervious area fraction = 1.000; Impervious fraction = 0.000
User specified values are as follows:
TC = 39.70 min. Rain intensity = 1.64(In/Hr)
Total area = 568.30(Ac.) Total runoff = 808.90(CFS)

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Process from Point/Station 82.000 to Point/Station 83.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2510.000(Ft.)
Downstream point/station elevation = 2457.000(Ft.)
Pipe length = 410.00(Ft.) Manning's N = 0.014
No. of pipes = 3 Required pipe flow = 808.900(CFS)
Nearest computed pipe diameter = 39.00(In.)
Calculated individual pipe flow = 269.633(CFS)

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Normal flow depth in pipe =   31.22(In.)
Flow top width inside pipe =   31.17(In.)
Critical depth could not be calculated.
Pipe flow velocity =     37.87(Ft/s)
Travel time through pipe =    0.18 min.
Time of concentration (TC) =    39.88 min.


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Process from Point/Station       82.000 to Point/Station       83.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =    568.300(Ac.)
Runoff from this stream =    808.900(CFS)
Time of concentration =   39.88 min.
Rainfall intensity =     1.639(In/Hr)


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Process from Point/Station       95.100 to Point/Station       99.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
______________________________________________________________________________
Rainfall intensity =      2.303(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.793
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.720
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.280
RI index for soil(AMC 2)  =  81.08
Pervious area fraction =  1.000; Impervious fraction =  0.000
User specified values are as follows:
TC =  21.00 min.  Rain intensity =       2.30(In/Hr)
Total area =       121.61(Ac.)  Total runoff =    243.40(CFS)


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Process from Point/Station       99.000 to Point/Station       83.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2548.000(Ft.)
Downstream point/station elevation =  2457.000(Ft.)
Pipe length  =   740.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =   243.400(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =   243.400(CFS)
Normal flow depth in pipe =   31.03(In.)
Flow top width inside pipe =   24.83(In.)
Critical depth could not be calculated.
Pipe flow velocity =     37.57(Ft/s)
Travel time through pipe =    0.33 min.
Time of concentration (TC) =    21.33 min.


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Process from Point/Station       99.000 to Point/Station       83.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =    121.610(Ac.)
Runoff from this stream =    243.400(CFS)
Time of concentration =   21.33 min.
Rainfall intensity =     2.284(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1      808.900     39.88                1.639
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2      243.400     21.33                 2.284
Largest stream flow has longer time of concentration
Qp =    808.900 + sum of
          Qb         Ia/Ib
         243.400 *    0.718 =    174.689
Qp =    983.589

Total of 2 streams to confluence:
Flow rates before confluence point:
     808.900     243.400
Area of streams before confluence:
      568.300      121.610
Results of confluence:
Total flow rate =    983.589(CFS)
Time of concentration =    39.880 min.
Effective stream area after confluence =    689.910(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       83.000 to Point/Station       84.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2457.000(Ft.)
Downstream point/station elevation =  2455.600(Ft.)
Pipe length  =   100.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =   983.589(CFS)
Nearest computed pipe diameter  =     93.00(In.)
Calculated individual pipe flow  =   983.589(CFS)
Normal flow depth in pipe =   75.56(In.)
Flow top width inside pipe =   72.60(In.)
Critical depth could not be calculated.
Pipe flow velocity =     23.96(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =    39.95 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       84.000 to Point/Station       85.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2455.600(Ft.)
Downstream point elevation =  2447.000(Ft.)
Channel length thru subarea  =  1700.000(Ft.)
Channel base width     =   12.000(Ft.)
Slope or 'Z' of left channel bank =   1.500
Slope or 'Z' of right channel bank =   1.500
Estimated mean flow rate at midpoint of channel =    994.510(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    9.000(Ft.)
Flow(q) thru subarea =    994.510(CFS)
Depth of flow =   4.010(Ft.), Average velocity =  13.765(Ft/s)
Channel flow top width =   24.031(Ft.)
Flow Velocity =   13.77(Ft/s)
Travel time  =    2.06 min.
Time of concentration =   42.01 min.

Sub-Channel No. 1 Critical depth =      4.844(Ft.)
  '     '       '     Critical flow top width =     26.531(Ft.)
  '     '       '     Critical flow velocity=   10.657(Ft/s)
  '     '       '     Critical flow area =     93.318(Sq.Ft)

 Adding area flow to channel
SINGLE FAMILY (1 Acre Lot)
Runoff Coefficient = 0.680
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.500
RI index for soil(AMC 2)  =  65.50
Pervious area fraction =  0.800; Impervious fraction =  0.200
Rainfall intensity =      1.595(In/Hr) for a   100.0 year storm
```

```
Subarea runoff =     21.789(CFS) for     20.100(Ac.)
Total runoff =   1005.377(CFS)        Total area =     710.010(Ac.)
Depth of flow =   4.034(Ft.), Average velocity =  13.807(Ft/s)

Sub-Channel No. 1 Critical depth =      4.875(Ft.)
  '     '       '     Critical flow top width =     26.625(Ft.)
  '     '       '     Critical flow velocity=   10.679(Ft/s)
  '     '       '     Critical flow area =     94.148(Sq.Ft)



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       85.000 to Point/Station       85.100
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  2447.000(Ft.)
Downstream point elevation =  2440.000(Ft.)
Channel length thru subarea  =   200.000(Ft.)
Channel base width     =   12.000(Ft.)
Slope or 'Z' of left channel bank =   1.500
Slope or 'Z' of right channel bank =   1.500
Manning's 'N'    = 0.015
Maximum depth of channel  =    9.000(Ft.)
Flow(q) thru subarea =   1005.377(CFS)
Depth of flow =   2.365(Ft.), Average velocity =  27.338(Ft/s)
Channel flow top width =   19.096(Ft.)
Flow Velocity =   27.34(Ft/s)
Travel time  =    0.12 min.
Time of concentration =   42.13 min.

Sub-Channel No. 1 Critical depth =      4.875(Ft.)
  '     '       '     Critical flow top width =     26.625(Ft.)
  '     '       '     Critical flow velocity=   10.679(Ft/s)
  '     '       '     Critical flow area =     94.148(Sq.Ft)



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       85.100 to Point/Station       86.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2440.000(Ft.)
Downstream point/station elevation =  2438.000(Ft.)
Pipe length  =   120.00(Ft.)   Manning's N = 0.013
No. of pipes = 2  Required pipe flow  =  1005.377(CFS)
Nearest computed pipe diameter  =     69.00(In.)
Calculated individual pipe flow  =   502.689(CFS)
Normal flow depth in pipe =   58.69(In.)
Flow top width inside pipe =   49.20(In.)
Critical depth could not be calculated.
Pipe flow velocity =     21.38(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =    42.22 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       85.100 to Point/Station       86.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =    710.010(Ac.)
Runoff from this stream =   1005.377(CFS)
Time of concentration =   42.22 min.
Rainfall intensity =     1.590(In/Hr)


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Process from Point/Station       86.100 to Point/Station       86.100
**** USER DEFINED FLOW INFORMATION AT A POINT ****
______________________________________________________________________________
Rainfall intensity =      1.636(In/Hr) for a   100.0 year storm
```

```
COMMERCIAL subarea type
Runoff Coefficient = 0.872
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.580
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.420
RI index for soil(AMC 2)  =  63.98
Pervious area fraction =  0.100; Impervious fraction =  0.900
User specified values are as follows:
TC =  40.00 min.  Rain intensity =       1.64(In/Hr)
Total area =        60.70(Ac.)  Total runoff =      9.50(CFS)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       86.100 to Point/Station       86.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2439.200(Ft.)
Downstream point/station elevation =  2438.000(Ft.)
Pipe length  =   400.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.500(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =     9.500(CFS)
Normal flow depth in pipe =   15.75(In.)
Flow top width inside pipe =   22.80(In.)
Critical Depth =   13.22(In.)
Pipe flow velocity =      4.35(Ft/s)
Travel time through pipe =    1.53 min.
Time of concentration (TC) =    41.53 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       86.100 to Point/Station       86.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     60.700(Ac.)
Runoff from this stream =      9.500(CFS)
Time of concentration =   41.53 min.
Rainfall intensity =     1.604(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1     1005.377     42.22                1.590
2        9.500     41.53                1.604
Largest stream flow has longer time of concentration
Qp =   1005.377 + sum of
         Qb         Ia/Ib
          9.500 *    0.991 =      9.417
Qp =   1014.795

Total of 2 streams to confluence:
Flow rates before confluence point:
    1005.377       9.500
Area of streams before confluence:
      710.010       60.700
Results of confluence:
Total flow rate =   1014.795(CFS)
Time of concentration =    42.224 min.
Effective stream area after confluence =    770.710(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       86.000 to Point/Station       87.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2438.000(Ft.)
Downstream point/station elevation =  2434.000(Ft.)
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```
Pipe length  =   140.00(Ft.)   Manning's N = 0.013
No. of pipes = 2  Required pipe flow  =  1014.795(CFS)
Nearest computed pipe diameter  =     63.00(In.)
Calculated individual pipe flow  =   507.397(CFS)
Normal flow depth in pipe =   52.31(In.)
Flow top width inside pipe =   47.29(In.)
Critical depth could not be calculated.
Pipe flow velocity =     26.39(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =    42.31 min.


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Process from Point/Station       87.000 to Point/Station       88.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2434.000(Ft.)
Downstream point elevation =  2395.000(Ft.)
Channel length thru subarea  =  1000.000(Ft.)
Channel base width     =   12.000(Ft.)
Slope or 'Z' of left channel bank =   1.500
Slope or 'Z' of right channel bank =   1.500
Estimated mean flow rate at midpoint of channel =   1017.362(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    9.000(Ft.)
Flow(q) thru subarea =   1017.362(CFS)
Depth of flow =   2.309(Ft.), Average velocity =  28.486(Ft/s)
Channel flow top width =   18.928(Ft.)
Flow Velocity =   28.49(Ft/s)
Travel time  =    0.59 min.
Time of concentration =   42.90 min.

Sub-Channel No. 1 Critical depth =      4.906(Ft.)
  '     '       '     Critical flow top width =     26.719(Ft.)
  '     '       '     Critical flow velocity=   10.711(Ft/s)
  '     '       '     Critical flow area =     94.982(Sq.Ft)

 Adding area flow to channel
SINGLE FAMILY (1 Acre Lot)
Runoff Coefficient = 0.668
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.580
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.420
RI index for soil(AMC 2)  =  63.98
Pervious area fraction =  0.800; Impervious fraction =  0.200
Rainfall intensity =      1.577(In/Hr) for a   100.0 year storm
Subarea runoff =      5.055(CFS) for      4.800(Ac.)
Total runoff =   1019.849(CFS)        Total area =     775.510(Ac.)
Depth of flow =   2.313(Ft.), Average velocity =  28.508(Ft/s)

Sub-Channel No. 1 Critical depth =      4.938(Ft.)
  '     '       '     Critical flow top width =     26.813(Ft.)
  '     '       '     Critical flow velocity=   10.644(Ft/s)
  '     '       '     Critical flow area =     95.818(Sq.Ft)



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Process from Point/Station       88.000 to Point/Station       89.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2395.000(Ft.)
Downstream point/station elevation =  2390.000(Ft.)
Pipe length  =   170.00(Ft.)   Manning's N = 0.013
No. of pipes = 2  Required pipe flow  =  1019.849(CFS)
Nearest computed pipe diameter  =     63.00(In.)
Calculated individual pipe flow  =   509.925(CFS)
Normal flow depth in pipe =   51.75(In.)
Flow top width inside pipe =   48.26(In.)
Critical depth could not be calculated.
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Pipe flow velocity =     26.79(Ft/s)
Travel time through pipe =    0.11 min.
Time of concentration (TC) =    43.00 min.


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Process from Point/Station       88.000 to Point/Station       89.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =    775.510(Ac.)
Runoff from this stream =   1019.849(CFS)
Time of concentration =   43.00 min.
Rainfall intensity =     1.575(In/Hr)


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Process from Point/Station       89.100 to Point/Station       89.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
________________________________________________________________________
Rainfall intensity =      1.595(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.872
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.500
RI index for soil(AMC 2)  =  65.50
Pervious area fraction =  0.100; Impervious fraction =  0.900
User specified values are as follows:
TC =  42.00 min.  Rain intensity =       1.59(In/Hr)
Total area =        43.30(Ac.)  Total runoff =      9.90(CFS)


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Process from Point/Station       89.100 to Point/Station       89.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2422.000(Ft.)
Downstream point/station elevation =  2390.000(Ft.)
Pipe length  =   400.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.900(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     9.900(CFS)
Normal flow depth in pipe =    9.66(In.)
Flow top width inside pipe =    9.51(In.)
Critical depth could not be calculated.
Pipe flow velocity =     14.63(Ft/s)
Travel time through pipe =    0.46 min.
Time of concentration (TC) =    42.46 min.


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Process from Point/Station       89.100 to Point/Station       89.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     43.300(Ac.)
Runoff from this stream =      9.900(CFS)
Time of concentration =   42.46 min.
Rainfall intensity =     1.586(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1     1019.849     43.00                1.575
2        9.900     42.46                1.586
Largest stream flow has longer time of concentration
Qp =   1019.849 + sum of
```

```
          Qb         Ia/Ib
           9.900 *    0.993 =      9.833
Qp =   1029.682

Total of 2 streams to confluence:
Flow rates before confluence point:
    1019.849       9.900
Area of streams before confluence:
      775.510       43.300
Results of confluence:
Total flow rate =   1029.682(CFS)
Time of concentration =    43.003 min.
Effective stream area after confluence =    818.810(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       89.000 to Point/Station       90.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2390.000(Ft.)
Downstream point/station elevation =  2380.000(Ft.)
Pipe length  =   140.00(Ft.)   Manning's N = 0.013
No. of pipes = 2  Required pipe flow  =  1029.682(CFS)
Nearest computed pipe diameter  =     54.00(In.)
Calculated individual pipe flow  =   514.841(CFS)
Normal flow depth in pipe =   43.31(In.)
Flow top width inside pipe =   43.03(In.)
Critical depth could not be calculated.
Pipe flow velocity =     37.67(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =    43.06 min.
End of computations, total study area =          818.81 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.880
Area averaged RI index number =  80.5
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Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
Rational Hydrology Study Date: 10/29/14 File:AREABDEV100.out

TPM 36564 W.O. 2014-0213
WATERSHED B DEVELOPED CONDITIONS
100-YEAR 1-HOUR STORM
FILE: AREABDEV100.RRV

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 4010

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Beaumont] area used.
10 year storm 10 minute intensity = 2.300(In/Hr)
10 year storm 60 minute intensity = 0.890(In/Hr)
100 year storm 10 minute intensity = 3.410(In/Hr)
100 year storm 60 minute intensity = 1.320(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.320(In/Hr)
Slope of intensity duration curve = 0.5300

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Process from Point/Station 31.000 to Point/Station 35.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****

Rainfall intensity = 2.823(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.843
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.130
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.870
RI index for soil(AMC 2) = 87.57
Pervious area fraction = 1.000; Impervious fraction = 0.000
User specified values are as follows:
TC = 14.30 min. Rain intensity = 2.82(In/Hr)
Total area = 71.18(Ac.) Total runoff = 183.20(CFS)

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Process from Point/Station 35.000 to Point/Station 41.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 2452.000(Ft.)
Downstream point elevation = 2440.000(Ft.)
Channel length thru subarea = 560.000(Ft.)
Channel base width = 6.000(Ft.)
Slope or 'Z' of left channel bank = 1.500
Slope or 'Z' of right channel bank = 1.500

```
Estimated mean flow rate at midpoint of channel =    189.784(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    5.000(Ft.)
Flow(q) thru subarea =    189.784(CFS)
Depth of flow =   1.501(Ft.), Average velocity =  15.318(Ft/s)
Channel flow top width =   10.504(Ft.)
Flow Velocity =   15.32(Ft/s)
Travel time  =    0.61 min.
Time of concentration =   14.91 min.

Sub-Channel No. 1 Critical depth =      2.531(Ft.)
  '     '       '     Critical flow top width =     13.594(Ft.)
  '     '       '     Critical flow velocity=    7.653(Ft/s)
  '     '       '     Critical flow area =     24.798(Sq.Ft)

 Adding area flow to channel
SINGLE FAMILY (1 Acre Lot)
Runoff Coefficient = 0.782
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.200
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.800
RI index for soil(AMC 2)  =  71.20
Pervious area fraction =  0.800; Impervious fraction =  0.200
Rainfall intensity =      2.761(In/Hr) for a   100.0 year storm
Subarea runoff =     13.090(CFS) for      6.060(Ac.)
Total runoff =    196.290(CFS)        Total area =      77.240(Ac.)
Depth of flow =   1.530(Ft.), Average velocity =  15.470(Ft/s)

Sub-Channel No. 1 Critical depth =      2.578(Ft.)
  '     '       '     Critical flow top width =     13.734(Ft.)
  '     '       '     Critical flow velocity=    7.716(Ft/s)
  '     '       '     Critical flow area =     25.439(Sq.Ft)



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Process from Point/Station       41.000 to Point/Station       42.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2440.000(Ft.)
Downstream point/station elevation =  2434.000(Ft.)
Pipe length  =   200.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =   196.290(CFS)
Nearest computed pipe diameter  =     45.00(In.)
Calculated individual pipe flow  =   196.290(CFS)
Normal flow depth in pipe =   34.59(In.)
Flow top width inside pipe =   37.95(In.)
Critical depth could not be calculated.
Pipe flow velocity =     21.56(Ft/s)
Travel time through pipe =    0.15 min.
Time of concentration (TC) =    15.06 min.


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Process from Point/Station       42.000 to Point/Station       36.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2434.000(Ft.)
Downstream point elevation =  2432.200(Ft.)
Channel length thru subarea  =   180.000(Ft.)
Channel base width     =   10.000(Ft.)
Slope or 'Z' of left channel bank =   0.000
Slope or 'Z' of right channel bank =   0.000
Manning's 'N'    = 0.015
Maximum depth of channel  =    6.000(Ft.)
Flow(q) thru subarea =    196.290(CFS)
Depth of flow =   1.694(Ft.), Average velocity =  11.589(Ft/s)
Channel flow top width =   10.000(Ft.)
Flow Velocity =   11.59(Ft/s)
Travel time  =    0.26 min.
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Time of concentration =   15.32 min.

Sub-Channel No. 1 Critical depth =      2.281(Ft.)
  '     '       '     Critical flow top width =     10.000(Ft.)
  '     '       '     Critical flow velocity=    8.604(Ft/s)
  '     '       '     Critical flow area =     22.813(Sq.Ft)



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Process from Point/Station       42.000 to Point/Station       36.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     77.240(Ac.)
Runoff from this stream =    196.290(CFS)
Time of concentration =   15.32 min.
Rainfall intensity =     2.721(In/Hr)


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Process from Point/Station       36.000 to Point/Station       36.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
________________________________________________________________________
Rainfall intensity =      2.401(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.829
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.220
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.780
RI index for soil(AMC 2)  =  86.58
Pervious area fraction =  1.000; Impervious fraction =  0.000
User specified values are as follows:
TC =  19.41 min.  Rain intensity =       2.40(In/Hr)
Total area =       168.99(Ac.)  Total runoff =    372.70(CFS)


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Process from Point/Station       36.000 to Point/Station       36.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =    168.990(Ac.)
Runoff from this stream =    372.700(CFS)
Time of concentration =   19.41 min.
Rainfall intensity =     2.401(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1      196.290     15.32                2.721
2      372.700     19.41                2.401
Largest stream flow has longer time of concentration
Qp =    372.700 + sum of
          Qb         Ia/Ib
         196.290 *    0.882 =    173.170
Qp =    545.870

Total of 2 streams to confluence:
Flow rates before confluence point:
     196.290     372.700
Area of streams before confluence:
       77.240      168.990
Results of confluence:
Total flow rate =    545.870(CFS)
Time of concentration =    19.410 min.
Effective stream area after confluence =    246.230(Ac.)
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Process from Point/Station       36.000 to Point/Station       37.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  2432.200(Ft.)
Downstream point elevation =  2429.800(Ft.)
Channel length thru subarea  =   240.000(Ft.)
Channel base width     =   10.000(Ft.)
Slope or 'Z' of left channel bank =   0.000
Slope or 'Z' of right channel bank =   0.000
Manning's 'N'    = 0.015
Maximum depth of channel  =    6.000(Ft.)
Flow(q) thru subarea =    545.870(CFS)
Depth of flow =   3.431(Ft.), Average velocity =  15.908(Ft/s)
Channel flow top width =   10.000(Ft.)
Flow Velocity =   15.91(Ft/s)
Travel time  =    0.25 min.
Time of concentration =   19.66 min.

Sub-Channel No. 1 Critical depth =      4.500(Ft.)
  '     '       '     Critical flow top width =     10.000(Ft.)
  '     '       '     Critical flow velocity=   12.130(Ft/s)
  '     '       '     Critical flow area =     45.000(Sq.Ft)



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Process from Point/Station       36.000 to Point/Station       37.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =    246.230(Ac.)
Runoff from this stream =    545.870(CFS)
Time of concentration =   19.66 min.
Rainfall intensity =     2.384(In/Hr)


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Process from Point/Station       37.000 to Point/Station       37.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
______________________________________________________________________________
Rainfall intensity =      2.762(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.836
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.240
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.760
RI index for soil(AMC 2)  =  86.36
Pervious area fraction =  1.000; Impervious fraction =  0.000
User specified values are as follows:
TC =  14.90 min.  Rain intensity =       2.76(In/Hr)
Total area =        71.30(Ac.)  Total runoff =    175.50(CFS)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       37.000 to Point/Station       37.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     71.300(Ac.)
Runoff from this stream =    175.500(CFS)
Time of concentration =   14.90 min.
Rainfall intensity =     2.762(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)
```

```
1      545.870     19.66                2.384
2      175.500     14.90                2.762
Largest stream flow has longer time of concentration
Qp =    545.870 + sum of
          Qb         Ia/Ib
         175.500 *    0.863 =    151.513
Qp =    697.383

Total of 2 streams to confluence:
Flow rates before confluence point:
     545.870     175.500
Area of streams before confluence:
      246.230       71.300
Results of confluence:
Total flow rate =    697.383(CFS)
Time of concentration =    19.661 min.
Effective stream area after confluence =    317.530(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       37.000 to Point/Station       42.100
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2429.800(Ft.)
Downstream point elevation =  2414.400(Ft.)
Channel length thru subarea  =   700.000(Ft.)
Channel base width     =   10.000(Ft.)
Slope or 'Z' of left channel bank =   0.000
Slope or 'Z' of right channel bank =   0.000
Manning's 'N'    = 0.015
Maximum depth of channel  =    6.000(Ft.)
Flow(q) thru subarea =    697.383(CFS)
Depth of flow =   3.085(Ft.), Average velocity =  22.604(Ft/s)
Channel flow top width =   10.000(Ft.)
Flow Velocity =   22.60(Ft/s)
Travel time  =    0.52 min.
Time of concentration =   20.18 min.

Sub-Channel No. 1 Critical depth =      5.313(Ft.)
  '     '       '     Critical flow top width =     10.000(Ft.)
  '     '       '     Critical flow velocity=   13.127(Ft/s)
  '     '       '     Critical flow area =     53.125(Sq.Ft)



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       42.100 to Point/Station       43.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2414.400(Ft.)
Downstream point elevation =  2400.300(Ft.)
Channel length thru subarea  =   440.000(Ft.)
Channel base width     =   10.000(Ft.)
Slope or 'Z' of left channel bank =   0.000
Slope or 'Z' of right channel bank =   0.000
Manning's 'N'    = 0.015
Maximum depth of channel  =    6.000(Ft.)
Flow(q) thru subarea =    697.383(CFS)
Depth of flow =   2.703(Ft.), Average velocity =  25.799(Ft/s)
Channel flow top width =   10.000(Ft.)
Flow Velocity =   25.80(Ft/s)
Travel time  =    0.28 min.
Time of concentration =   20.46 min.

Sub-Channel No. 1 Critical depth =      5.313(Ft.)
  '     '       '     Critical flow top width =     10.000(Ft.)
  '     '       '     Critical flow velocity=   13.127(Ft/s)
  '     '       '     Critical flow area =     53.125(Sq.Ft)

End of computations, total study area =          317.53 (Ac.)
The following figures may
```

be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.996
Area averaged RI index number = 86.5

10-Year Storm – Off-Site Areas A & B

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
Rational Hydrology Study Date: 10/27/14 File:AREAA1OFF10.out

TPM 36564 W.O. 2014-0213
OFF-SITE AREA A1
10-YEAR STORM UNDEVELOPED CONDITION
FILE: AREAA1OFF10.RRV

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 4010

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Beaumont] area used.
10 year storm 10 minute intensity = 2.300(In/Hr)
10 year storm 60 minute intensity = 0.890(In/Hr)
100 year storm 10 minute intensity = 3.410(In/Hr)
100 year storm 60 minute intensity = 1.320(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.890(In/Hr)
Slope of intensity duration curve = 0.5300

++

Process from Point/Station 95.100 to Point/Station 95.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 880.000(Ft.)
Top (of initial area) elevation = 2838.000(Ft.)
Bottom (of initial area) elevation = 2740.000(Ft.)
Difference in elevation = 98.000(Ft.)
Slope = 0.11136 s(percent)= 11.14
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.380 min.
Rainfall intensity = 2.054(In/Hr) for a 10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.830
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.950
RI index for soil(AMC 2) = 88.45
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 7.329(CFS)
Total initial stream area = 4.300(Ac.)
Pervious area fraction = 1.000

++

Process from Point/Station 95.000 to Point/Station 96.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****

```
Top of natural channel elevation =   2740.000(Ft.)
End of natural channel elevation =   2708.000(Ft.)
Length of natural channel  =   815.000(Ft.)
Estimated mean flow rate at midpoint of channel =     15.280(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   5.53(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0393
Corrected/adjusted channel slope =  0.0393
Travel time =    2.46 min.     TC =   14.84  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.823
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.950
RI index for soil(AMC 2)  =  88.45
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.866(In/Hr) for a    10.0 year storm
Subarea runoff =     14.334(CFS) for      9.330(Ac.)
Total runoff =     21.663(CFS)        Total area =      13.630(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       96.000 to Point/Station       97.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of natural channel elevation =   2708.000(Ft.)
End of natural channel elevation =   2680.000(Ft.)
Length of natural channel  =   836.000(Ft.)
Estimated mean flow rate at midpoint of channel =     31.740(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   6.23(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0335
Corrected/adjusted channel slope =  0.0335
Travel time =    2.24 min.     TC =   17.08  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.798
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.300
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.700
RI index for soil(AMC 2)  =  85.70
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.732(In/Hr) for a    10.0 year storm
Subarea runoff =     17.520(CFS) for     12.680(Ac.)
Total runoff =     39.183(CFS)        Total area =      26.310(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       97.000 to Point/Station       98.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
```

```
Top of natural channel elevation =   2680.000(Ft.)
End of natural channel elevation =   2632.000(Ft.)
Length of natural channel  =   982.000(Ft.)
Estimated mean flow rate at midpoint of channel =     85.716(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  10.02(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0489
Corrected/adjusted channel slope =  0.0489
Travel time =    1.63 min.     TC =   18.71  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.750
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.800
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.200
RI index for soil(AMC 2)  =  80.20
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.651(In/Hr) for a    10.0 year storm
Subarea runoff =     77.392(CFS) for     62.490(Ac.)
Total runoff =    116.575(CFS)       Total area =      88.800(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       98.000 to Point/Station       99.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2632.000(Ft.)
Downstream point elevation =  2555.000(Ft.)
Channel length thru subarea  =  2995.000(Ft.)
Channel base width     =    5.000(Ft.)
Slope or 'Z' of left channel bank =   2.000
Slope or 'Z' of right channel bank =   2.000
Estimated mean flow rate at midpoint of channel =    134.449(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    3.000(Ft.)
Flow(q) thru subarea =    134.449(CFS)
Depth of flow =   1.236(Ft.), Average velocity =  14.557(Ft/s)
Channel flow top width =    9.944(Ft.)
Flow Velocity =   14.56(Ft/s)
Travel time  =    3.43 min.
Time of concentration =   22.14 min.

Sub-Channel No. 1 Critical depth =      2.125(Ft.)
  '     '       '     Critical flow top width =     13.500(Ft.)
  '     '       '     Critical flow velocity=    6.840(Ft/s)
  '     '       '     Critical flow area =     19.656(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.721
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  78.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.510(In/Hr) for a    10.0 year storm
Subarea runoff =     35.689(CFS) for     32.810(Ac.)
Total runoff =    152.264(CFS)       Total area =     121.610(Ac.)
Depth of flow =   1.321(Ft.), Average velocity =  15.085(Ft/s)

Sub-Channel No. 1 Critical depth =      2.266(Ft.)
```

```
  '     '       '     Critical flow top width =     14.063(Ft.)
  '     '       '     Critical flow velocity=    7.051(Ft/s)
  '     '       '     Critical flow area =     21.594(Sq.Ft)

End of computations, total study area =          121.61 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  81.1
```

```
       U n i t   H y d r o g r a p h   A n a l y s i s

       Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004, Version 7.0
              Study date  10/28/14 File: AREAA2OFF110.out

++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4010

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



------------------------------------------------------------------------
TPM 36564  W.O. 14-0213
WATERSHED A2, OFF-SITE UNDEVELOPED CONDITIONS
10-YEAR STORM 1-HOUR
FILE: AREAA2OFF.UM1
------------------------------------------------------------------------
Drainage Area =     568.30(Ac.)  =      0.888 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =     568.30(Ac.)  =      0.888 Sq. Mi.
Length along longest watercourse =   15270.00(Ft.)
Length along longest watercourse measured to centroid =    8200.00(Ft.)
Length along longest watercourse =      2.892 Mi.
Length along longest watercourse measured to centroid =      1.553 Mi.
Difference in elevation =    1354.00(Ft.)
Slope along watercourse =    468.1807 Ft./Mi.
Average Manning's 'N' = 0.040
Lag time =    0.528 Hr.
Lag time =    31.69 Min.
25% of lag time =     7.92 Min.
40% of lag time =    12.68 Min.
Unit time =     5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
      568.30           0.56                318.25

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
      568.30           1.30                738.79

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    0.560(In)
Area Averaged 100-Year Rainfall =    1.300(In)

Point rain (area averaged) =    0.864(In)
Areal adjustment factor =   99.48 %
Adjusted average point rain =    0.860(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
   568.300           83.92         0.100
 Total Area Entered =    568.30(Ac.)
```

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
83.9	83.9	0.199	0.100	0.181	1.000	0.181
					Sum (F) =	0.181

Area averaged mean soil loss (F) (In/Hr) = 0.181
Minimum soil loss rate ((In/Hr)) = 0.091
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.820

Slope of intensity-duration curve for a 1 hour storm =0.5300

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	15.777	1.000	5.730
2	0.167	31.554	2.587	14.816
3	0.250	47.330	3.711	21.256
4	0.333	63.107	4.995	28.609
5	0.417	78.884	7.454	42.694
6	0.500	94.661	12.000	68.728
7	0.583	110.438	19.421	111.230
8	0.667	126.215	9.556	54.731
9	0.750	141.991	6.224	35.646
10	0.833	157.768	4.813	27.568
11	0.917	173.545	3.833	21.954
12	1.000	189.322	3.385	19.389
13	1.083	205.099	2.873	16.457
14	1.167	220.876	2.416	13.840
15	1.250	236.652	2.169	12.420
16	1.333	252.429	1.902	10.892
17	1.417	268.206	1.650	9.451
18	1.500	283.983	1.474	8.440
19	1.583	299.760	1.286	7.363
20	1.667	315.537	1.140	6.528
21	1.750	331.313	0.990	5.667
22	1.833	347.090	0.803	4.597
23	1.917	362.867	0.715	4.097
24	2.000	378.644	0.628	3.598
25	2.083	394.421	0.498	2.851
26	2.167	410.198	0.389	2.228
27	2.250	425.974	0.205	1.175
28	2.333	441.751	0.189	1.084
29	2.417	457.528	0.186	1.064
30	2.500	473.305	0.162	0.928
31	2.583	489.082	0.158	0.904
32	2.667	504.859	0.155	0.886
33	2.750	520.635	0.110	0.629
34	2.833	536.412	0.095	0.542
35	2.917	552.189	0.095	0.544
36	3.000	567.966	0.115	0.656
37	3.083	583.743	0.126	0.723
38	3.167	599.520	0.126	0.723
39	3.250	615.296	0.097	0.553
40	3.333	631.073	0.063	0.362
41	3.417	646.850	0.063	0.361
42	3.500	662.627	0.053	0.304
43	3.583	678.404	0.032	0.184
44	3.667	694.181	0.032	0.181
45	3.750	709.957	0.027	0.157
			Sum = 100.000	Sum= 572.740

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	3.40	0.351	0.181	---	0.17
2	0.17	4.70	0.485	0.181	---	0.30
3	0.25	4.70	0.485	0.181	---	0.30
4	0.33	5.10	0.526	0.181	---	0.34
5	0.42	5.80	0.599	0.181	---	0.42
6	0.50	5.90	0.609	0.181	---	0.43
7	0.58	7.10	0.733	0.181	---	0.55
8	0.67	8.70	0.898	0.181	---	0.72
9	0.75	13.20	1.362	0.181	---	1.18
10	0.83	29.70	3.065	0.181	---	2.88
11	0.92	7.70	0.795	0.181	---	0.61
12	1.00	4.00	0.413	0.181	---	0.23
Sum =		100.0			Sum =	8.1

Flood volume = Effective rainfall 0.68(In)
times area 568.3(Ac.)/[(In)/(Ft.)] = 32.1(Ac.Ft)
Total soil loss = 0.18(In)
Total soil loss = 8.590(Ac.Ft)
Total rainfall = 0.86(In)
Flood volume = 1399936.6 Cubic Feet
Total soil loss = 374161.5 Cubic Feet

Peak flow rate of this hydrograph = 511.378(CFS)

++

1 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	150.0	300.0	450.0	600.0
0+ 5	0.0067	0.97	Q	|	|	|	|
0+10	0.0360	4.25	Q	|	|	|	|
0+15	0.1038	9.85	Q	|	|	|	|
0+20	0.2263	17.79	VQ	|	|	|	|
0+25	0.4322	29.90	VQ	|	|	|	|
0+30	0.7717	49.29	V Q	|	|	|	|
0+35	1.3292	80.96	|V Q	|	|	|	|
0+40	2.1006	112.00	| V Q |	|	|	|	|
0+45	3.0604	139.36	| V Q|	|	|	|	|
0+50	4.3174	182.52	| V | Q	|	|	|	|
0+55	5.9226	233.07	| V | Q |	|	|	|	|
1+ 0	7.8173	275.12	| V| Q |	|	|	|	|
1+ 5	10.0435	323.23	| | V |Q |	|	|	|	|
1+10	12.6905	384.34	| | V | Q |	|	|	|	|
1+15	15.8611	460.38	| | V| Q |	|	|	|	|
1+20	19.3830	511.38	| | | V | Q |	|	|	|	|
1+25	21.7568	344.68	| | | Q V |	|	|	|	|
1+30	23.4503	245.90	| | Q | | V|	|	|	|	|
1+35	24.7213	184.54	| | Q | | V	|	|	|	|
1+40	25.7535	149.87	| Q| | | V	|	|	|	|
1+45	26.6399	128.71	| Q | | | V	|	|	|	|
1+50	27.3996	110.31	| Q | | | V	|	|	|	|
1+55	28.0536	94.96	| Q | | | V	|	|	|	|
2+ 0	28.6288	83.52	| Q | | | V	|	|	|	|
2+ 5	29.1322	73.09	| Q | | | V	|	|	|	|
2+10	29.5714	63.77	| Q | | | V	|	|	|	|
2+15	29.9559	55.84	| Q | | | V	|	|	|	|
2+20	30.2891	48.38	| Q | | | V	|	|	|	|
2+25	30.5778	41.92	| Q | | | V	|	|	|	|
2+30	30.8242	35.78	| Q | | | V	|	|	|	|
2+35	31.0296	29.82	|Q | | | V	|	|	|	|
2+40	31.2052	25.51	|Q | | | V	|	|	|	|
2+45	31.3530	21.45	|Q | | | V	|	|	|	|
2+50	31.4711	17.16	|Q | | | V	|	|	|	|
2+55	31.5627	13.29	Q | | | V	|	|	|	|
3+ 0	31.6273	9.39	Q | | | V	|	|	|	|
3+ 5	31.6831	8.10	Q | | | V	|	|	|	|

3+10	31.7345	7.46	Q				V
3+15	31.7817	6.85	Q				V
3+20	31.8260	6.42	Q				V
3+25	31.8668	5.93	Q				V
3+30	31.9014	5.03	Q				V
3+35	31.9329	4.56	Q				V
3+40	31.9634	4.43	Q				V
3+45	31.9949	4.58	Q				V
3+50	32.0260	4.51	Q				V
3+55	32.0543	4.11	Q				V
4+ 0	32.0768	3.27	Q				V
4+ 5	32.0936	2.44	Q				V
4+10	32.1077	2.05	Q				V
4+15	32.1188	1.62	Q				V
4+20	32.1266	1.13	Q				V
4+25	32.1327	0.89	Q				V
4+30	32.1369	0.61	Q				V
4+35	32.1379	0.14	Q				V
4+40	32.1381	0.04	Q				V

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
Rational Hydrology Study Date: 10/27/14 File:AREABOFF10.out

TPM 36564 W.O. 2014-0213
AREA B OFF-SITE UNDEVELOPED CONDITIONS
10-YEAR STORM
FILE: AREABOFF10.RRV

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 4010

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Beaumont] area used.
10 year storm 10 minute intensity = 2.300(In/Hr)
10 year storm 60 minute intensity = 0.890(In/Hr)
100 year storm 10 minute intensity = 3.410(In/Hr)
100 year storm 60 minute intensity = 1.320(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.890(In/Hr)
Slope of intensity duration curve = 0.5300

++

Process from Point/Station 31.000 to Point/Station 32.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 605.000(Ft.)
Top (of initial area) elevation = 2824.000(Ft.)
Bottom (of initial area) elevation = 2655.000(Ft.)
Difference in elevation = 169.000(Ft.)
Slope = 0.27934 s(percent)= 27.93
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.866 min.
Rainfall intensity = 2.452(In/Hr) for a 10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.843
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2) = 89.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 7.878(CFS)
Total initial stream area = 3.810(Ac.)
Pervious area fraction = 1.000

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Process from Point/Station 32.000 to Point/Station 33.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****

```
Top of natural channel elevation =   2655.000(Ft.)
End of natural channel elevation =   2605.000(Ft.)
Length of natural channel  =   508.000(Ft.)
Estimated mean flow rate at midpoint of channel =     13.492(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   8.47(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0984
Corrected/adjusted channel slope =  0.0984
Travel time =    1.00 min.     TC =    9.87  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.840
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  89.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.317(In/Hr) for a    10.0 year storm
Subarea runoff =     10.571(CFS) for      5.430(Ac.)
Total runoff =     18.449(CFS)        Total area =       9.240(Ac.)


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Process from Point/Station       33.000 to Point/Station       34.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------
Top of natural channel elevation =   2605.000(Ft.)
End of natural channel elevation =   2548.000(Ft.)
Length of natural channel  =   788.000(Ft.)
Estimated mean flow rate at midpoint of channel =     38.745(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   9.68(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0723
Corrected/adjusted channel slope =  0.0723
Travel time =    1.36 min.     TC =   11.22  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.833
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.950
RI index for soil(AMC 2)  =  88.45
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.164(In/Hr) for a    10.0 year storm
Subarea runoff =     36.645(CFS) for     20.330(Ac.)
Total runoff =     55.094(CFS)        Total area =      29.570(Ac.)


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Process from Point/Station       34.000 to Point/Station       35.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
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```
Top of natural channel elevation =   2548.000(Ft.)
End of natural channel elevation =   2454.000(Ft.)
Length of natural channel  =  2180.000(Ft.)
Estimated mean flow rate at midpoint of channel =     93.857(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   9.67(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0431
Corrected/adjusted channel slope =  0.0431
Travel time =    3.76 min.     TC =   14.98  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.811
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.200
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.800
RI index for soil(AMC 2)  =  86.80
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.857(In/Hr) for a    10.0 year storm
Subarea runoff =     62.693(CFS) for     41.610(Ac.)
Total runoff =    117.787(CFS)       Total area =      71.180(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       16.000 to Point/Station       17.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   995.000(Ft.)
Top (of initial area) elevation =  3043.500(Ft.)
Bottom (of initial area) elevation =  2864.000(Ft.)
Difference in elevation =   179.500(Ft.)
Slope =    0.18040  s(percent)=      18.04
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.807 min.
Rainfall intensity =      2.107(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.835
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  89.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =     17.495(CFS)
Total initial stream area =        9.950(Ac.)
Pervious area fraction = 1.000


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Process from Point/Station       17.000 to Point/Station       18.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   2864.000(Ft.)
End of natural channel elevation =   2748.000(Ft.)
Length of natural channel  =  1285.000(Ft.)
Estimated mean flow rate at midpoint of channel =     35.175(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  10.52(Ft/s)

Correction to map slope used on extremely rugged channels with
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drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0903
Corrected/adjusted channel slope =  0.0903
Travel time =    2.04 min.     TC =   13.84  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.829
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  89.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.936(In/Hr) for a    10.0 year storm
Subarea runoff =     32.295(CFS) for     20.110(Ac.)
Total runoff =     49.790(CFS)        Total area =      30.060(Ac.)


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Process from Point/Station       18.000 to Point/Station       19.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of natural channel elevation =   2748.000(Ft.)
End of natural channel elevation =   2620.000(Ft.)
Length of natural channel  =  1525.000(Ft.)
Estimated mean flow rate at midpoint of channel =     87.340(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  13.21(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0839
Corrected/adjusted channel slope =  0.0839
Travel time =    1.92 min.     TC =   15.77  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.821
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.950
RI index for soil(AMC 2)  =  88.45
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.807(In/Hr) for a    10.0 year storm
Subarea runoff =     67.261(CFS) for     45.340(Ac.)
Total runoff =    117.052(CFS)        Total area =      75.400(Ac.)


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Process from Point/Station       19.000 to Point/Station       20.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of natural channel elevation =   2620.000(Ft.)
End of natural channel elevation =   2470.000(Ft.)
Length of natural channel  =  2685.000(Ft.)
Estimated mean flow rate at midpoint of channel =    183.619(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  13.50(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
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       Normal channel slope =  0.0559
Corrected/adjusted channel slope =  0.0559
Travel time =    3.31 min.     TC =   19.08  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.801
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.200
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.800
RI index for soil(AMC 2)  =  86.80
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.633(In/Hr) for a    10.0 year storm
Subarea runoff =    112.144(CFS) for     85.760(Ac.)
Total runoff =    229.196(CFS)        Total area =     161.160(Ac.)


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Process from Point/Station       20.000 to Point/Station       36.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of natural channel elevation =   2470.000(Ft.)
End of natural channel elevation =   2446.000(Ft.)
Length of natural channel  =   857.000(Ft.)
Estimated mean flow rate at midpoint of channel =    234.764(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  10.32(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0280
Corrected/adjusted channel slope =  0.0280
Travel time =    1.38 min.     TC =   20.47  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.741
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.840
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.160
RI index for soil(AMC 2)  =  79.76
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.574(In/Hr) for a    10.0 year storm
Subarea runoff =      9.128(CFS) for      7.830(Ac.)
Total runoff =    238.324(CFS)        Total area =     168.990(Ac.)


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Process from Point/Station       21.000 to Point/Station       22.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
Initial area flow distance =  1000.000(Ft.)
Top (of initial area) elevation =  2940.000(Ft.)
Bottom (of initial area) elevation =  2720.000(Ft.)
Difference in elevation =   220.000(Ft.)
Slope =    0.22000  s(percent)=      22.00
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.371 min.
Rainfall intensity =      2.149(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.836
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
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Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  89.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =     16.814(CFS)
Total initial stream area =        9.360(Ac.)
Pervious area fraction = 1.000


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Process from Point/Station       22.000 to Point/Station       23.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   2720.000(Ft.)
End of natural channel elevation =   2616.000(Ft.)
Length of natural channel  =  1020.000(Ft.)
Estimated mean flow rate at midpoint of channel =     28.984(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  10.59(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.1020
Corrected/adjusted channel slope =  0.1020
Travel time =    1.61 min.     TC =   12.98  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.832
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  89.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      2.004(In/Hr) for a    10.0 year storm
Subarea runoff =     22.579(CFS) for     13.550(Ac.)
Total runoff =     39.393(CFS)        Total area =      22.910(Ac.)


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Process from Point/Station       23.000 to Point/Station       24.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
________________________________________________________________________
Top of natural channel elevation =   2616.000(Ft.)
End of natural channel elevation =   2576.000(Ft.)
Length of natural channel  =   475.000(Ft.)
Estimated mean flow rate at midpoint of channel =     57.344(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  11.69(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0842
Corrected/adjusted channel slope =  0.0842
Travel time =    0.68 min.     TC =   13.65  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.826
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.950
```

```
RI index for soil(AMC 2)  =  88.45
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.950(In/Hr) for a    10.0 year storm
Subarea runoff =     33.649(CFS) for     20.880(Ac.)
Total runoff =     73.042(CFS)        Total area =      43.790(Ac.)


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Process from Point/Station       24.000 to Point/Station       25.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of natural channel elevation =   2576.000(Ft.)
End of natural channel elevation =      0.000(Ft.)
Length of natural channel  =  2459.000(Ft.)
Estimated mean flow rate at midpoint of channel =     86.294(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =  46.49(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  1.0476
Corrected/adjusted channel slope =  1.0476
Travel time =    0.88 min.     TC =   14.53  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.804
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.310
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.690
RI index for soil(AMC 2)  =  85.59
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.887(In/Hr) for a    10.0 year storm
Subarea runoff =     24.114(CFS) for     15.890(Ac.)
Total runoff =     97.156(CFS)        Total area =      59.680(Ac.)


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Process from Point/Station       25.000 to Point/Station       37.000
**** NATURAL CHANNEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of natural channel elevation =   2459.000(Ft.)
End of natural channel elevation =   2442.000(Ft.)
Length of natural channel  =   464.000(Ft.)
Estimated mean flow rate at midpoint of channel =    106.615(CFS)

Natural valley channel type used
L.A. County flood control district formula for channel velocity:
 Velocity(ft/s) = (7 + 8(q(English Units)^.352)(slope^0.5)
Velocity using mean channel flow =   9.26(Ft/s)

Correction to map slope used on extremely rugged channels with
drops and waterfalls (Plate D-6.2)
       Normal channel slope =  0.0366
Corrected/adjusted channel slope =  0.0366
Travel time =    0.83 min.     TC =   15.37  min.


 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.769
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.720
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.280
RI index for soil(AMC 2)  =  81.08
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Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.832(In/Hr) for a    10.0 year storm
Subarea runoff =     16.375(CFS) for     11.620(Ac.)
Total runoff =    113.532(CFS)        Total area =      71.300(Ac.)
End of computations, total study area =          311.47 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  87.2
```

10-Year Storm – Developed Conditions

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
Rational Hydrology Study Date: 10/29/14 File:AREAADEV10.out

TPM 36564 W.O. 2014-0213
WATERSHED A DEVELOPED CONDITIONS
10-YEAR 1-HOUR STORM
FILE: AREAADEV10.RRV

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 4010

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Beaumont] area used.
10 year storm 10 minute intensity = 2.300(In/Hr)
10 year storm 60 minute intensity = 0.890(In/Hr)
100 year storm 10 minute intensity = 3.410(In/Hr)
100 year storm 60 minute intensity = 1.320(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.890(In/Hr)
Slope of intensity duration curve = 0.5300

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Process from Point/Station 81.000 to Point/Station 82.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****

Rainfall intensity = 1.108(In/Hr) for a 10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.731
Decimal fraction soil group A = 0.120
Decimal fraction soil group B = 0.110
Decimal fraction soil group C = 0.410
Decimal fraction soil group D = 0.360
RI index for soil(AMC 2) = 83.92
Pervious area fraction = 1.000; Impervious fraction = 0.000
User specified values are as follows:
TC = 39.70 min. Rain intensity = 1.11(In/Hr)
Total area = 568.30(Ac.) Total runoff = 808.90(CFS)

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Process from Point/Station 82.000 to Point/Station 83.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 2510.000(Ft.)
Downstream point/station elevation = 2457.000(Ft.)
Pipe length = 410.00(Ft.) Manning's N = 0.014
No. of pipes = 3 Required pipe flow = 808.900(CFS)
Nearest computed pipe diameter = 39.00(In.)
Calculated individual pipe flow = 269.633(CFS)

```
Normal flow depth in pipe =   31.22(In.)
Flow top width inside pipe =   31.17(In.)
Critical depth could not be calculated.
Pipe flow velocity =     37.87(Ft/s)
Travel time through pipe =    0.18 min.
Time of concentration (TC) =    39.88 min.


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Process from Point/Station       82.000 to Point/Station       83.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =    568.300(Ac.)
Runoff from this stream =    808.900(CFS)
Time of concentration =   39.88 min.
Rainfall intensity =     1.105(In/Hr)


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Process from Point/Station       95.100 to Point/Station       99.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
______________________________________________________________________________
Rainfall intensity =      1.553(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.750
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.720
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.280
RI index for soil(AMC 2)  =  81.08
Pervious area fraction =  1.000; Impervious fraction =  0.000
User specified values are as follows:
TC =  21.00 min.  Rain intensity =       1.55(In/Hr)
Total area =       121.61(Ac.)  Total runoff =    243.40(CFS)


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Process from Point/Station       99.000 to Point/Station       83.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2548.000(Ft.)
Downstream point/station elevation =  2457.000(Ft.)
Pipe length  =   740.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =   243.400(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =   243.400(CFS)
Normal flow depth in pipe =   31.03(In.)
Flow top width inside pipe =   24.83(In.)
Critical depth could not be calculated.
Pipe flow velocity =     37.57(Ft/s)
Travel time through pipe =    0.33 min.
Time of concentration (TC) =    21.33 min.


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Process from Point/Station       99.000 to Point/Station       83.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =    121.610(Ac.)
Runoff from this stream =    243.400(CFS)
Time of concentration =   21.33 min.
Rainfall intensity =     1.540(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1      808.900     39.88                1.105
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2      243.400     21.33                 1.540
Largest stream flow has longer time of concentration
Qp =    808.900 + sum of
          Qb         Ia/Ib
         243.400 *    0.718 =    174.689
Qp =    983.589

Total of 2 streams to confluence:
Flow rates before confluence point:
     808.900     243.400
Area of streams before confluence:
      568.300      121.610
Results of confluence:
Total flow rate =    983.589(CFS)
Time of concentration =    39.880 min.
Effective stream area after confluence =    689.910(Ac.)


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Process from Point/Station       83.000 to Point/Station       84.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2457.000(Ft.)
Downstream point/station elevation =  2455.600(Ft.)
Pipe length  =   100.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =   983.589(CFS)
Nearest computed pipe diameter  =     93.00(In.)
Calculated individual pipe flow  =   983.589(CFS)
Normal flow depth in pipe =   75.56(In.)
Flow top width inside pipe =   72.60(In.)
Critical depth could not be calculated.
Pipe flow velocity =     23.96(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =    39.95 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       84.000 to Point/Station       85.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2455.600(Ft.)
Downstream point elevation =  2447.000(Ft.)
Channel length thru subarea  =  1700.000(Ft.)
Channel base width     =   12.000(Ft.)
Slope or 'Z' of left channel bank =   1.500
Slope or 'Z' of right channel bank =   1.500
Estimated mean flow rate at midpoint of channel =    990.269(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    9.000(Ft.)
Flow(q) thru subarea =    990.269(CFS)
Depth of flow =   4.001(Ft.), Average velocity =  13.749(Ft/s)
Channel flow top width =   24.003(Ft.)
Flow Velocity =   13.75(Ft/s)
Travel time  =    2.06 min.
Time of concentration =   42.01 min.

Sub-Channel No. 1 Critical depth =      4.813(Ft.)
  '     '       '     Critical flow top width =     26.438(Ft.)
  '     '       '     Critical flow velocity=   10.707(Ft/s)
  '     '       '     Critical flow area =     92.490(Sq.Ft)

 Adding area flow to channel
SINGLE FAMILY (1 Acre Lot)
Runoff Coefficient = 0.616
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.500
RI index for soil(AMC 2)  =  65.50
Pervious area fraction =  0.800; Impervious fraction =  0.200
Rainfall intensity =      1.075(In/Hr) for a    10.0 year storm
```

```
Subarea runoff =     13.300(CFS) for     20.100(Ac.)
Total runoff =    996.889(CFS)        Total area =     710.010(Ac.)
Depth of flow =   4.015(Ft.), Average velocity =  13.774(Ft/s)

Sub-Channel No. 1 Critical depth =      4.875(Ft.)
  '     '       '     Critical flow top width =     26.625(Ft.)
  '     '       '     Critical flow velocity=   10.588(Ft/s)
  '     '       '     Critical flow area =     94.148(Sq.Ft)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       85.000 to Point/Station       85.100
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2447.000(Ft.)
Downstream point elevation =  2440.000(Ft.)
Channel length thru subarea  =   200.000(Ft.)
Channel base width     =   12.000(Ft.)
Slope or 'Z' of left channel bank =   1.500
Slope or 'Z' of right channel bank =   1.500
Manning's 'N'    = 0.015
Maximum depth of channel  =    9.000(Ft.)
Flow(q) thru subarea =    996.889(CFS)
Depth of flow =   2.354(Ft.), Average velocity =  27.267(Ft/s)
Channel flow top width =   19.062(Ft.)
Flow Velocity =   27.27(Ft/s)
Travel time  =    0.12 min.
Time of concentration =   42.13 min.

Sub-Channel No. 1 Critical depth =      4.875(Ft.)
  '     '       '     Critical flow top width =     26.625(Ft.)
  '     '       '     Critical flow velocity=   10.588(Ft/s)
  '     '       '     Critical flow area =     94.148(Sq.Ft)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       85.100 to Point/Station       86.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2440.000(Ft.)
Downstream point/station elevation =  2438.000(Ft.)
Pipe length  =   120.00(Ft.)   Manning's N = 0.013
No. of pipes = 2  Required pipe flow  =   996.889(CFS)
Nearest computed pipe diameter  =     69.00(In.)
Calculated individual pipe flow  =   498.444(CFS)
Normal flow depth in pipe =   57.94(In.)
Flow top width inside pipe =   50.63(In.)
Critical depth could not be calculated.
Pipe flow velocity =     21.40(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =    42.23 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       85.100 to Point/Station       86.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =    710.010(Ac.)
Runoff from this stream =    996.889(CFS)
Time of concentration =   42.23 min.
Rainfall intensity =     1.072(In/Hr)


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Process from Point/Station       86.000 to Point/Station       86.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
________________________________________________________________________
Rainfall intensity =      1.103(In/Hr) for a    10.0 year storm
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COMMERCIAL subarea type
Runoff Coefficient = 0.864
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.580
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.420
RI index for soil(AMC 2)  =  63.98
Pervious area fraction =  0.100; Impervious fraction =  0.900
User specified values are as follows:
TC =  40.00 min.  Rain intensity =       1.10(In/Hr)
Total area =        60.70(Ac.)  Total runoff =     21.00(CFS)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       86.100 to Point/Station       86.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2439.200(Ft.)
Downstream point/station elevation =  2438.000(Ft.)
Pipe length  =   400.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    21.000(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    21.000(CFS)
Normal flow depth in pipe =   23.02(In.)
Flow top width inside pipe =   25.36(In.)
Critical Depth =   18.68(In.)
Pipe flow velocity =      5.20(Ft/s)
Travel time through pipe =    1.28 min.
Time of concentration (TC) =    41.28 min.


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Process from Point/Station       86.100 to Point/Station       86.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     60.700(Ac.)
Runoff from this stream =     21.000(CFS)
Time of concentration =   41.28 min.
Rainfall intensity =     1.085(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1      996.889     42.23                1.072
2       21.000     41.28                1.085
Largest stream flow has longer time of concentration
Qp =    996.889 + sum of
          Qb         Ia/Ib
          21.000 *    0.988 =     20.750
Qp =   1017.638

Total of 2 streams to confluence:
Flow rates before confluence point:
     996.889      21.000
Area of streams before confluence:
      710.010       60.700
Results of confluence:
Total flow rate =   1017.638(CFS)
Time of concentration =    42.226 min.
Effective stream area after confluence =    770.710(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       86.000 to Point/Station       87.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2438.000(Ft.)
Downstream point/station elevation =  2434.000(Ft.)
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```
Pipe length  =   140.00(Ft.)   Manning's N = 0.013
No. of pipes = 2  Required pipe flow  =  1017.638(CFS)
Nearest computed pipe diameter  =     63.00(In.)
Calculated individual pipe flow  =   508.819(CFS)
Normal flow depth in pipe =   52.50(In.)
Flow top width inside pipe =   46.96(In.)
Critical depth could not be calculated.
Pipe flow velocity =     26.39(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =    42.31 min.


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Process from Point/Station       87.000 to Point/Station       88.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2434.000(Ft.)
Downstream point elevation =  2395.000(Ft.)
Channel length thru subarea  =  1000.000(Ft.)
Channel base width     =   12.000(Ft.)
Slope or 'Z' of left channel bank =   1.500
Slope or 'Z' of right channel bank =   1.500
Estimated mean flow rate at midpoint of channel =   1019.200(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    9.000(Ft.)
Flow(q) thru subarea =   1019.200(CFS)
Depth of flow =   2.312(Ft.), Average velocity =  28.502(Ft/s)
Channel flow top width =   18.935(Ft.)
Flow Velocity =   28.50(Ft/s)
Travel time  =    0.58 min.
Time of concentration =   42.90 min.

Sub-Channel No. 1 Critical depth =      4.938(Ft.)
  '     '       '     Critical flow top width =     26.813(Ft.)
  '     '       '     Critical flow velocity=   10.637(Ft/s)
  '     '       '     Critical flow area =     95.818(Sq.Ft)

 Adding area flow to channel
SINGLE FAMILY (1 Acre Lot)
Runoff Coefficient = 0.602
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.580
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.420
RI index for soil(AMC 2)  =  63.98
Pervious area fraction =  0.800; Impervious fraction =  0.200
Rainfall intensity =      1.063(In/Hr) for a    10.0 year storm
Subarea runoff =      3.072(CFS) for      4.800(Ac.)
Total runoff =   1020.711(CFS)        Total area =     775.510(Ac.)
Depth of flow =   2.314(Ft.), Average velocity =  28.515(Ft/s)

Sub-Channel No. 1 Critical depth =      4.938(Ft.)
  '     '       '     Critical flow top width =     26.813(Ft.)
  '     '       '     Critical flow velocity=   10.653(Ft/s)
  '     '       '     Critical flow area =     95.818(Sq.Ft)



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       88.000 to Point/Station       89.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2395.000(Ft.)
Downstream point/station elevation =  2390.000(Ft.)
Pipe length  =   170.00(Ft.)   Manning's N = 0.013
No. of pipes = 2  Required pipe flow  =  1020.711(CFS)
Nearest computed pipe diameter  =     63.00(In.)
Calculated individual pipe flow  =   510.355(CFS)
Normal flow depth in pipe =   51.84(In.)
Flow top width inside pipe =   48.10(In.)
Critical depth could not be calculated.
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Pipe flow velocity =     26.79(Ft/s)
Travel time through pipe =    0.11 min.
Time of concentration (TC) =    43.01 min.


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Process from Point/Station       88.000 to Point/Station       89.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =    775.510(Ac.)
Runoff from this stream =   1020.711(CFS)
Time of concentration =   43.01 min.
Rainfall intensity =     1.062(In/Hr)


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Process from Point/Station       89.100 to Point/Station       89.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
______________________________________________________________________________
Rainfall intensity =      1.075(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.864
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.500
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.500
RI index for soil(AMC 2)  =  65.50
Pervious area fraction =  0.100; Impervious fraction =  0.900
User specified values are as follows:
TC =  42.00 min.  Rain intensity =       1.08(In/Hr)
Total area =        43.30(Ac.)  Total runoff =      9.90(CFS)


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Process from Point/Station       89.100 to Point/Station       89.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  2422.000(Ft.)
Downstream point/station elevation =  2390.000(Ft.)
Pipe length  =   400.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.900(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     9.900(CFS)
Normal flow depth in pipe =    9.66(In.)
Flow top width inside pipe =    9.51(In.)
Critical depth could not be calculated.
Pipe flow velocity =     14.63(Ft/s)
Travel time through pipe =    0.46 min.
Time of concentration (TC) =    42.46 min.


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Process from Point/Station       89.100 to Point/Station       89.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     43.300(Ac.)
Runoff from this stream =      9.900(CFS)
Time of concentration =   42.46 min.
Rainfall intensity =     1.069(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1     1020.711     43.01                1.062
2        9.900     42.46                1.069
Largest stream flow has longer time of concentration
Qp =   1020.711 + sum of
```

```
          Qb         Ia/Ib
           9.900 *    0.993 =      9.833
Qp =   1030.543

Total of 2 streams to confluence:
Flow rates before confluence point:
    1020.711       9.900
Area of streams before confluence:
      775.510       43.300
Results of confluence:
Total flow rate =   1030.543(CFS)
Time of concentration =    43.005 min.
Effective stream area after confluence =    818.810(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       89.000 to Point/Station       90.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2390.000(Ft.)
Downstream point/station elevation =  2380.000(Ft.)
Pipe length  =   140.00(Ft.)   Manning's N = 0.013
No. of pipes = 2  Required pipe flow  =  1030.543(CFS)
Nearest computed pipe diameter  =     54.00(In.)
Calculated individual pipe flow  =   515.272(CFS)
Normal flow depth in pipe =   43.31(In.)
Flow top width inside pipe =   43.03(In.)
Critical depth could not be calculated.
Pipe flow velocity =     37.67(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =    43.07 min.
End of computations, total study area =          818.81 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.880
Area averaged RI index number =  80.5
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Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2004 Version 7.0
Rational Hydrology Study Date: 10/29/14 File:AREABDEV10.out

TPM 36564 W.O. 2014-0213
WATERSHED B DEVELOPED CONDITIONS
10-YEAR 1-HOUR STORM
FILE: AREABDEV10.RRV

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 4010

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Beaumont] area used.
10 year storm 10 minute intensity = 2.300(In/Hr)
10 year storm 60 minute intensity = 0.890(In/Hr)
100 year storm 10 minute intensity = 3.410(In/Hr)
100 year storm 60 minute intensity = 1.320(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.890(In/Hr)
Slope of intensity duration curve = 0.5300

++

Process from Point/Station 31.000 to Point/Station 35.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****

Rainfall intensity = 1.903(In/Hr) for a 10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.819
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.130
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.870
RI index for soil(AMC 2) = 87.57
Pervious area fraction = 1.000; Impervious fraction = 0.000
User specified values are as follows:
TC = 14.30 min. Rain intensity = 1.90(In/Hr)
Total area = 71.18(Ac.) Total runoff = 117.80(CFS)

++

Process from Point/Station 35.000 to Point/Station 41.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 2452.000(Ft.)
Downstream point elevation = 2440.000(Ft.)
Channel length thru subarea = 560.000(Ft.)
Channel base width = 6.000(Ft.)
Slope or 'Z' of left channel bank = 1.500
Slope or 'Z' of right channel bank = 1.500

```
Estimated mean flow rate at midpoint of channel =    121.976(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    5.000(Ft.)
Flow(q) thru subarea =    121.976(CFS)
Depth of flow =   1.172(Ft.), Average velocity =  13.411(Ft/s)
Channel flow top width =    9.517(Ft.)
Flow Velocity =   13.41(Ft/s)
Travel time  =    0.70 min.
Time of concentration =   15.00 min.

Sub-Channel No. 1 Critical depth =      1.969(Ft.)
  '     '       '     Critical flow top width =     11.906(Ft.)
  '     '       '     Critical flow velocity=    6.920(Ft/s)
  '     '       '     Critical flow area =     17.626(Sq.Ft)

 Adding area flow to channel
SINGLE FAMILY (1 Acre Lot)
Runoff Coefficient = 0.738
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.200
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.800
RI index for soil(AMC 2)  =  71.20
Pervious area fraction =  0.800; Impervious fraction =  0.200
Rainfall intensity =      1.856(In/Hr) for a    10.0 year storm
Subarea runoff =      8.299(CFS) for      6.060(Ac.)
Total runoff =    126.099(CFS)        Total area =      77.240(Ac.)
Depth of flow =   1.194(Ft.), Average velocity =  13.548(Ft/s)

Sub-Channel No. 1 Critical depth =      2.000(Ft.)
  '     '       '     Critical flow top width =     12.000(Ft.)
  '     '       '     Critical flow velocity=    7.005(Ft/s)
  '     '       '     Critical flow area =     18.000(Sq.Ft)



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       41.000 to Point/Station       42.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  2440.000(Ft.)
Downstream point/station elevation =  2434.000(Ft.)
Pipe length  =   200.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =   126.099(CFS)
Nearest computed pipe diameter  =     39.00(In.)
Calculated individual pipe flow  =   126.099(CFS)
Normal flow depth in pipe =   28.45(In.)
Flow top width inside pipe =   34.65(In.)
Critical depth could not be calculated.
Pipe flow velocity =     19.46(Ft/s)
Travel time through pipe =    0.17 min.
Time of concentration (TC) =    15.17 min.


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Process from Point/Station       42.000 to Point/Station       36.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2434.000(Ft.)
Downstream point elevation =  2432.200(Ft.)
Channel length thru subarea  =   180.000(Ft.)
Channel base width     =   10.000(Ft.)
Slope or 'Z' of left channel bank =   0.000
Slope or 'Z' of right channel bank =   0.000
Manning's 'N'    = 0.015
Maximum depth of channel  =    6.000(Ft.)
Flow(q) thru subarea =    126.099(CFS)
Depth of flow =   1.265(Ft.), Average velocity =   9.969(Ft/s)
Channel flow top width =   10.000(Ft.)
Flow Velocity =    9.97(Ft/s)
Travel time  =    0.30 min.
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Time of concentration =   15.47 min.

Sub-Channel No. 1 Critical depth =      1.703(Ft.)
  '     '       '     Critical flow top width =     10.000(Ft.)
  '     '       '     Critical flow velocity=    7.404(Ft/s)
  '     '       '     Critical flow area =     17.031(Sq.Ft)



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       42.000 to Point/Station       36.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     77.240(Ac.)
Runoff from this stream =    126.099(CFS)
Time of concentration =   15.47 min.
Rainfall intensity =     1.826(In/Hr)


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Process from Point/Station       36.000 to Point/Station       36.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
________________________________________________________________________
Rainfall intensity =      1.619(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.798
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.220
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.780
RI index for soil(AMC 2)  =  86.58
Pervious area fraction =  1.000; Impervious fraction =  0.000
User specified values are as follows:
TC =  19.41 min.  Rain intensity =       1.62(In/Hr)
Total area =       168.99(Ac.)  Total runoff =    238.30(CFS)


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Process from Point/Station       36.000 to Point/Station       36.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =    168.990(Ac.)
Runoff from this stream =    238.300(CFS)
Time of concentration =   19.41 min.
Rainfall intensity =     1.619(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1      126.099     15.47                 1.826
2      238.300     19.41                 1.619
Largest stream flow has longer time of concentration
Qp =    238.300 + sum of
          Qb         Ia/Ib
         126.099 *    0.887 =    111.804
Qp =    350.104

Total of 2 streams to confluence:
Flow rates before confluence point:
     126.099     238.300
Area of streams before confluence:
       77.240      168.990
Results of confluence:
Total flow rate =    350.104(CFS)
Time of concentration =    19.410 min.
Effective stream area after confluence =    246.230(Ac.)
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Process from Point/Station       36.000 to Point/Station       37.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  2432.200(Ft.)
Downstream point elevation =  2429.800(Ft.)
Channel length thru subarea  =   240.000(Ft.)
Channel base width     =   10.000(Ft.)
Slope or 'Z' of left channel bank =   0.000
Slope or 'Z' of right channel bank =   0.000
Manning's 'N'    = 0.015
Maximum depth of channel  =    6.000(Ft.)
Flow(q) thru subarea =    350.104(CFS)
Depth of flow =   2.510(Ft.), Average velocity =  13.950(Ft/s)
Channel flow top width =   10.000(Ft.)
Flow Velocity =   13.95(Ft/s)
Travel time  =    0.29 min.
Time of concentration =   19.70 min.

Sub-Channel No. 1 Critical depth =      3.375(Ft.)
  '     '       '     Critical flow top width =     10.000(Ft.)
  '     '       '     Critical flow velocity=   10.373(Ft/s)
  '     '       '     Critical flow area =     33.750(Sq.Ft)



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Process from Point/Station       36.000 to Point/Station       37.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =    246.230(Ac.)
Runoff from this stream =    350.104(CFS)
Time of concentration =   19.70 min.
Rainfall intensity =     1.606(In/Hr)


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Process from Point/Station       37.000 to Point/Station       37.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
______________________________________________________________________________
Rainfall intensity =      1.862(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.809
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.240
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.760
RI index for soil(AMC 2)  =  86.36
Pervious area fraction =  1.000; Impervious fraction =  0.000
User specified values are as follows:
TC =  14.90 min.  Rain intensity =       1.86(In/Hr)
Total area =        71.30(Ac.)  Total runoff =    113.50(CFS)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       37.000 to Point/Station       37.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     71.300(Ac.)
Runoff from this stream =    113.500(CFS)
Time of concentration =   14.90 min.
Rainfall intensity =     1.862(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)
```

```
1      350.104     19.70                1.606
2      113.500     14.90                1.862
Largest stream flow has longer time of concentration
Qp =    350.104 + sum of
          Qb         Ia/Ib
         113.500 *    0.863 =     97.894
Qp =    447.998

Total of 2 streams to confluence:
Flow rates before confluence point:
     350.104     113.500
Area of streams before confluence:
      246.230       71.300
Results of confluence:
Total flow rate =    447.998(CFS)
Time of concentration =    19.697 min.
Effective stream area after confluence =    317.530(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       37.000 to Point/Station       42.100
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2429.800(Ft.)
Downstream point elevation =  2414.400(Ft.)
Channel length thru subarea  =   700.000(Ft.)
Channel base width     =   10.000(Ft.)
Slope or 'Z' of left channel bank =   0.000
Slope or 'Z' of right channel bank =   0.000
Manning's 'N'    = 0.015
Maximum depth of channel  =    6.000(Ft.)
Flow(q) thru subarea =    447.998(CFS)
Depth of flow =   2.267(Ft.), Average velocity =  19.763(Ft/s)
Channel flow top width =   10.000(Ft.)
Flow Velocity =   19.76(Ft/s)
Travel time  =    0.59 min.
Time of concentration =   20.29 min.

Sub-Channel No. 1 Critical depth =      3.969(Ft.)
  '     '       '     Critical flow top width =     10.000(Ft.)
  '     '       '     Critical flow velocity=   11.288(Ft/s)
  '     '       '     Critical flow area =     39.688(Sq.Ft)



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       42.100 to Point/Station       43.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  2414.400(Ft.)
Downstream point elevation =  2400.300(Ft.)
Channel length thru subarea  =   440.000(Ft.)
Channel base width     =   10.000(Ft.)
Slope or 'Z' of left channel bank =   0.000
Slope or 'Z' of right channel bank =   0.000
Manning's 'N'    = 0.015
Maximum depth of channel  =    6.000(Ft.)
Flow(q) thru subarea =    447.998(CFS)
Depth of flow =   1.994(Ft.), Average velocity =  22.464(Ft/s)
Channel flow top width =   10.000(Ft.)
Flow Velocity =   22.46(Ft/s)
Travel time  =    0.33 min.
Time of concentration =   20.61 min.

Sub-Channel No. 1 Critical depth =      3.969(Ft.)
  '     '       '     Critical flow top width =     10.000(Ft.)
  '     '       '     Critical flow velocity=   11.288(Ft/s)
  '     '       '     Critical flow area =     39.688(Sq.Ft)

End of computations, total study area =          317.53 (Ac.)
The following figures may
```

be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.996
Area averaged RI index number = 86.5

SECTION 3 - Hydraulics Calculations

Water Surface and Pressure Gradient Hydraulic for Storm Drain

Line-A and Lateral-A1

Line-B and Line-B1

Line-A and Lateral-A1

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	2	0	.000	6.000	12.000			.00										
CD	2	2	0	.000	6.000	10.000			.00										
CD	3	4	1		4.000														
CD	4	2	0	.000	7.000	16.000			.00										
CD	5	4	1		2.500														
CD	6	1	0	.000	12.000	6.000	1.500	1.500	.00										
CD	7	1	0	.000	16.000	7.000	1.500	1.500	.00										
CD	8	2	0	.000	10.000	6.000			.00										
CD	9	4	3		4.500														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
TPM 36564 W.O. 14-0213
HEADING LINE NO 2 IS -
LINE A AND CHANNEL-100 YEAR SRORM W/ BULKED OFFSITE Q
HEADING LINE NO 3 IS -
FILE:LINE_A.WSW

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	380.400	1	386.400

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1140.000	387.900	1	.014	.000	.000	.000	0

ELEMENT NO 3 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1150.000	388.450	1	5	0	.014	9.900	.000	390.500	.000	90.000	.000

RADIUS	ANGLE
.000	.001

ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1295.460	397.100	1	.014	.000	.000	.000	0

ELEMENT NO 5 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	1339.420	399.200	6	.014	.000	.000

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1848.860	424.200	6	.014	.000	.000	.000	0

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2250.000	432.200	6	.014	.000	.000	.000	0

ELEMENT NO 8 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	2311.810	433.400	4	.014	.000	.000

```
ELEMENT NO   9 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               2410.000  439.300    4              .014                           .000     .000      .000     0
ELEMENT NO  10 IS A JUNCTION         *         *     *     *                  *                  *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                               2420.000  439.900    4     5     0   .014    14.600      .000   440.000      .000  90.000     .000
                                                                                                RADIUS    ANGLE
                                                                                                  .000    .000
                                                  W S P G W                                                                PAGE NO   3
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  11 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               2521.810  446.000    4              .014                           .000     .000      .000     0
ELEMENT NO  12 IS A TRANSITION       *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               2564.630  446.200    7              .014                           .000     .000
ELEMENT NO  13 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               2700.000  446.900    7              .014                           .000     .000      .000     0
ELEMENT NO  14 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               3500.000  450.900    7              .014                           .000     .000      .000     0
ELEMENT NO  15 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               4439.400  455.600    7              .014                           .000     .000      .000     0
ELEMENT NO  16 IS A TRANSITION       *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               4489.400  455.800    2              .014                           .000     .000
ELEMENT NO  17 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               4650.000  475.800    2              .014                           .000     .000      .000     0
ELEMENT NO  18 IS A JUNCTION         *         *     *     *                  *                  *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                               4654.120  476.200    2     3     0   .014   262.600      .000   477.600      .000  45.000     .000
                                                                                                RADIUS    ANGLE
                                                                                                  .000    .000
ELEMENT NO  19 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               4942.680  510.000    2              .014                           .000     .000      .000     0
ELEMENT NO  20 IS A SYSTEM HEADWORKS                 *                     *
                    U/S DATA   STATION    INVERT  SECT                                   W S ELEV
                               4942.680  510.000    2                                        .000
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Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11- 4-2014 Time: 8:46:27

TPM 36564 W.O. 14-0213

LINE A AND CHANNEL-100 YEAR SRORM W/ BULKED OFFSITE Q

FILE:LINE_A.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	380.400	3.083	383.483	1419.60	38.37	22.86	406.34	.00	7.58	12.00	6.000	12.000	.00	0 .0
140.000	.0536					.0497	6.96	3.08	3.85	3.02	.014	.00	.00	RECTANG
1140.000	387.900	3.124	391.024	1419.60	37.87	22.27	413.30	.00	7.58	12.00	6.000	12.000	.00	0 .0
JUNCT STR	.0550					.0494	.49	3.12	3.78		.014	.00	.00	RECTANG
1150.000	388.450	3.081	391.531	1409.70	38.13	22.57	414.10	.00	7.54	12.00	6.000	12.000	.00	0 .0
145.460	.0595					.0469	6.83	3.08	3.83	2.90	.014	.00	.00	RECTANG
1295.460	397.100	3.224	400.324	1409.70	36.43	20.61	420.94	.00	7.54	12.00	6.000	12.000	.00	0 .0
TRANS STR	.0478					.0433	1.90	3.22	3.58		.014	.00	.00	RECTANG
1339.420	399.200	3.482	402.682	1409.70	36.07	20.20	422.88	.00	7.13	16.45	12.000	6.000	1.50	0 .0
124.312	.0491					.0413	5.13	3.48	4.12	3.36	.014	.00	1.50	TRAP
1463.732	405.300	3.545	408.845	1409.70	35.14	19.17	428.02	.00	7.13	16.63	12.000	6.000	1.50	0 .0
139.640	.0491					.0374	5.23	3.54	3.99	3.36	.014	.00	1.50	TRAP
1603.372	412.153	3.661	415.814	1409.70	33.50	17.43	433.25	.00	7.13	16.98	12.000	6.000	1.50	0 .0
90.500	.0491					.0329	2.98	3.66	3.75	3.36	.014	.00	1.50	TRAP
1693.871	416.594	3.781	420.375	1409.70	31.95	15.85	436.22	.00	7.13	17.34	12.000	6.000	1.50	0 .0
65.321	.0491					.0289	1.89	3.78	3.53	3.36	.014	.00	1.50	TRAP
1759.193	419.800	3.904	423.704	1409.70	30.46	14.41	438.11	.00	7.13	17.71	12.000	6.000	1.50	0 .0
49.995	.0491					.0254	1.27	3.90	3.32	3.36	.014	.00	1.50	TRAP

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11- 4-2014 Time: 8:46:27

TPM 36564 W.O. 14-0213

LINE A AND CHANNEL-100 YEAR SRORM W/ BULKED OFFSITE Q

FILE:LINE_A.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1809.187	422.253	4.030	426.283	1409.70	29.04	13.10	439.38	.00	7.13	18.09	12.000	6.000	1.50	0 .0
39.673	.0491				.0223	.89	4.03	3.12	3.36	.014	.00	1.50		TRAP
1848.860	424.200	4.160	428.360	1409.70	27.69	11.91	440.27	.00	7.13	18.48	12.000	6.000	1.50	0 .0
401.140	.0199				.0220	8.83	4.16	2.94	4.21	.014	.00	1.50		TRAP
2250.000	432.200	4.056	436.256	1409.70	28.76	12.84	449.10	.00	7.13	18.17	12.000	6.000	1.50	0 .0
TRANS STR	.0194				.0276	1.71	4.06	3.09		.014	.00	1.50		TRAP
2311.810	433.400	2.834	436.234	1409.70	31.08	15.00	451.24	.00	6.23	16.00	7.000	16.000	.00	0 .0
39.786	.0601				.0300	1.19	2.83	3.25	2.30	.014	.00	.00		RECTANG
2351.596	435.791	2.969	438.760	1409.70	29.68	13.68	452.44	.00	6.23	16.00	7.000	16.000	.00	0 .0
32.283	.0601				.0261	.84	2.97	3.04	2.30	.014	.00	.00		RECTANG
2383.880	437.730	3.114	440.844	1409.70	28.30	12.43	453.28	.00	6.23	16.00	7.000	16.000	.00	0 .0
26.120	.0601				.0226	.59	3.11	2.83	2.30	.014	.00	.00		RECTANG
2410.000	439.300	3.266	442.566	1409.70	26.98	11.30	453.87	.00	6.23	16.00	7.000	16.000	.00	0 .0
JUNCT STR	.0600				.0209	.21	3.27	2.63		.014	.00	.00		RECTANG
2420.000	439.900	3.253	443.153	1395.10	26.80	11.15	454.31	.00	6.18	16.00	7.000	16.000	.00	0 .0
.445	.0599				.0208	.01	3.25	2.62	2.29	.014	.00	.00		RECTANG
2420.445	439.927	3.256	443.183	1395.10	26.78	11.13	454.32	.00	6.18	16.00	7.000	16.000	.00	0 .0
21.079	.0599				.0194	.41	3.26	2.62	2.29	.014	.00	.00		RECTANG

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11- 4-2014 Time: 8:46:27

TPM 36564 W.O. 14-0213

LINE A AND CHANNEL-100 YEAR SRORM W/ BULKED OFFSITE Q

FILE:LINE_A.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2441.524	441.190	3.415	444.605	1395.10	25.53	10.12	454.73	.00	6.18	16.00	7.000	16.000	.00	0 .0
17.517	.0599					.0169	.30	3.42	2.43	2.29	.014	.00	.00	RECTANG
2459.041	442.239	3.582	445.821	1395.10	24.34	9.20	455.02	.00	6.18	16.00	7.000	16.000	.00	0 .0
14.636	.0599					.0147	.22	3.58	2.27	2.29	.014	.00	.00	RECTANG
2473.677	443.116	3.757	446.873	1395.10	23.21	8.37	455.24	.00	6.18	16.00	7.000	16.000	.00	0 .0
12.250	.0599					.0128	.16	3.76	2.11	2.29	.014	.00	.00	RECTANG
2485.927	443.850	3.940	447.790	1395.10	22.13	7.61	455.40	.00	6.18	16.00	7.000	16.000	.00	0 .0
10.234	.0599					.0112	.11	3.94	1.96	2.29	.014	.00	.00	RECTANG
2496.161	444.463	4.132	448.595	1395.10	21.10	6.91	455.51	.00	6.18	16.00	7.000	16.000	.00	0 .0
8.504	.0599					.0097	.08	4.13	1.83	2.29	.014	.00	.00	RECTANG
2504.665	444.973	4.334	449.307	1395.10	20.12	6.29	455.59	.00	6.18	16.00	7.000	16.000	.00	0 .0
6.996	.0599					.0085	.06	4.33	1.70	2.29	.014	.00	.00	RECTANG
2511.661	445.392	4.545	449.937	1395.10	19.18	5.71	455.65	.00	6.18	16.00	7.000	16.000	.00	0 .0
5.667	.0599					.0074	.04	4.55	1.59	2.29	.014	.00	.00	RECTANG
2517.328	445.731	4.767	450.499	1395.10	18.29	5.19	455.69	.00	6.18	16.00	7.000	16.000	.00	0 .0
4.482	.0599					.0065	.03	4.77	1.48	2.29	.014	.00	.00	RECTANG
2521.810	446.000	5.000	451.000	1395.10	17.44	4.72	455.72	.00	6.18	16.00	7.000	16.000	.00	0 .0
TRANS STR	.0047					.0057	.25	5.00	1.37		.014	.00	.00	RECTANG

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11- 4-2014 Time: 8:46:27

TPM 36564 W.O. 14-0213

LINE A AND CHANNEL-100 YEAR SRORM W/ BULKED OFFSITE Q

FILE:LINE_A.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2564.630	446.200	5.488	451.688	1395.10	16.69	4.32	456.01	.00	6.86	23.46	16.000	7.000	1.50	0 .0
135.370	.0052					.0055	.74	5.49	1.56	5.55	.014	.00	1.50	TRAP
2700.000	446.900	5.459	452.359	1395.10	16.83	4.40	456.76	.00	6.86	23.38	16.000	7.000	1.50	0 .0
184.746	.0050					.0057	1.06	5.46	1.57	5.60	.014	.00	1.50	TRAP
2884.746	447.824	5.372	453.195	1395.10	17.25	4.62	457.81	.00	6.86	23.12	16.000	7.000	1.50	0 .0
223.462	.0050					.0063	1.41	5.37	1.62	5.60	.014	.00	1.50	TRAP
3108.208	448.941	5.207	454.148	1395.10	18.09	5.08	459.23	.00	6.86	22.62	16.000	7.000	1.50	0 .0
158.151	.0050					.0072	1.14	5.21	1.73	5.60	.014	.00	1.50	TRAP
3266.359	449.732	5.047	454.779	1395.10	18.97	5.59	460.37	.00	6.86	22.14	16.000	7.000	1.50	0 .0
126.352	.0050					.0082	1.03	5.05	1.83	5.60	.014	.00	1.50	TRAP
3392.711	450.364	4.891	455.254	1395.10	19.90	6.15	461.40	.00	6.86	21.67	16.000	7.000	1.50	0 .0
107.289	.0050					.0093	1.00	4.89	1.95	5.60	.014	.00	1.50	TRAP
3500.000	450.900	4.738	455.638	1395.10	20.87	6.76	462.40	.00	6.86	21.22	16.000	7.000	1.50	0 .0
87.628	.0050					.0105	.92	4.74	2.07	5.59	.014	.00	1.50	TRAP
3587.629	451.338	4.601	455.940	1395.10	21.81	7.39	463.33	.00	6.86	20.80	16.000	7.000	1.50	0 .0
85.692	.0050					.0119	1.02	4.60	2.19	5.59	.014	.00	1.50	TRAP
3673.321	451.767	4.457	456.224	1395.10	22.87	8.13	464.35	.00	6.86	20.37	16.000	7.000	1.50	0 .0
78.312	.0050					.0136	1.06	4.46	2.33	5.59	.014	.00	1.50	TRAP

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11- 4-2014 Time: 8:46:27

TPM 36564 W.O. 14-0213

LINE A AND CHANNEL-100 YEAR SRORM W/ BULKED OFFSITE Q

FILE:LINE_A.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
3751.633	452.159	4.316	456.475	1395.10	23.99	8.94	465.41	.00	6.86	19.95	16.000	7.000	1.50	0 .0
72.401	.0050					.0155	1.12	4.32	2.48	5.59	.014	.00	1.50	TRAP
3824.035	452.521	4.179	456.700	1395.10	25.16	9.83	466.53	.00	6.86	19.54	16.000	7.000	1.50	0 .0
67.511	.0050					.0176	1.19	4.18	2.63	5.59	.014	.00	1.50	TRAP
3891.546	452.859	4.045	456.904	1395.10	26.39	10.81	467.72	.00	6.86	19.14	16.000	7.000	1.50	0 .0
63.359	.0050					.0200	1.27	4.05	2.80	5.59	.014	.00	1.50	TRAP
3954.905	453.176	3.915	457.091	1395.10	27.68	11.90	468.99	.00	6.86	18.75	16.000	7.000	1.50	0 .0
59.760	.0050					.0228	1.36	3.92	2.97	5.59	.014	.00	1.50	TRAP
4014.665	453.475	3.789	457.264	1395.10	29.03	13.09	470.35	.00	6.86	18.37	16.000	7.000	1.50	0 .0
56.585	.0050					.0260	1.47	3.79	3.16	5.59	.014	.00	1.50	TRAP
4071.250	453.758	3.666	457.424	1395.10	30.45	14.39	471.82	.00	6.86	18.00	16.000	7.000	1.50	0 .0
53.746	.0050					.0296	1.59	3.67	3.36	5.59	.014	.00	1.50	TRAP
4124.996	454.027	3.546	457.573	1395.10	31.93	15.83	473.41	.00	6.86	17.64	16.000	7.000	1.50	0 .0
51.176	.0050					.0337	1.72	3.55	3.58	5.59	.014	.00	1.50	TRAP
4176.172	454.283	3.430	457.713	1395.10	33.49	17.42	475.13	.00	6.86	17.29	16.000	7.000	1.50	0 .0
48.826	.0050					.0384	1.87	3.43	3.80	5.59	.014	.00	1.50	TRAP
4224.998	454.527	3.317	457.844	1395.10	35.13	19.16	477.00	.00	6.86	16.95	16.000	7.000	1.50	0 .0
46.659	.0050					.0437	2.04	3.32	4.04	5.59	.014	.00	1.50	TRAP

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11- 4-2014 Time: 8:46:27

TPM 36564 W.O. 14-0213

LINE A AND CHANNEL-100 YEAR SRORM W/ BULKED OFFSITE Q

FILE:LINE_A.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
4271.656	454.761	3.207	457.967	1395.10	36.84 / 21.07 / .0498	479.04 / 2.22	.00 / 3.21	6.86 / 4.30	16.62 / 5.59	16.000 / .014	7.000 / .00	1.50 / 1.50	0 / TRAP
44.646	.0050												.0
4316.303	454.984	3.099	458.084	1395.10	38.64 / 23.18 / .0568	481.27 / 2.43	.00 / 3.10	6.86 / 4.57	16.30 / 5.59	16.000 / .014	7.000 / .00	1.50 / 1.50	0 / TRAP
42.766	.0050												.0
4359.068	455.198	2.995	458.193	1395.10	40.52 / 25.50 / .0647	483.69 / 2.65	.00 / 3.00	6.86 / 4.87	15.99 / 5.59	16.000 / .014	7.000 / .00	1.50 / 1.50	0 / TRAP
40.999	.0050												.0
4400.067	455.403	2.894	458.297	1395.10	42.50 / 28.05 / .0738	486.35 / 2.90	.00 / 2.89	6.86 / 5.18	15.68 / 5.59	16.000 / .014	7.000 / .00	1.50 / 1.50	0 / TRAP
39.333	.0050												.0
4439.400	455.600	2.796	458.396	1395.10	44.58 / 30.85 / .0847	489.25 / 4.24	.00 / 2.80	6.86 / 5.51	15.39	16.000 / .014	7.000 / .00	1.50 / 1.50	0 / TRAP
TRANS STR	.0040												.0
4489.400	455.800	2.906	458.706	1395.10	48.00 / 35.78 / .0875	494.48 / 4.27	.00 / 2.91	8.46 / 4.96	10.00 / 2.60	6.000 / .014	10.000 / .00	.00 / .00	0 / RECTANG
48.783	.1245												.0
4538.183	461.875	2.986	464.861	1395.10	46.72 / 33.89 / .0788	498.75 / 5.06	.00 / 2.99	8.46 / 4.76	10.00 / 2.60	6.000 / .014	10.000 / .00	.00 / .00	0 / RECTANG
64.211	.1245												.0
4602.394	469.871	3.132	473.003	1395.10	44.55 / 30.81 / .0689	503.82 / 3.28	.00 / 3.13	8.46 / 4.44	10.00 / 2.60	6.000 / .014	10.000 / .00	.00 / .00	0 / RECTANG
47.606	.1245												.0
4650.000	475.800	3.285	479.085	1395.10	42.47 / 28.01 / .0715	507.10 / .29	.00 / 3.28	8.46 / 4.13	10.00	6.000 / .014	10.000 / .00	.00 / .00	0 / RECTANG
JUNCT STR	.0971												.0

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11- 4-2014 Time: 8:46:27

TPM 36564 W.O. 14-0213

LINE A AND CHANNEL-100 YEAR SRORM W/ BULKED OFFSITE Q

FILE:LINE_A.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
4654.121	476.200	2.641	478.841	1132.50	42.89	28.56	507.40	.00	7.36	10.00	6.000	10.000	.00	0 .0
31.127	.1171					.0761	2.37	2.64	4.65	2.30	.014	.00	.00	RECTANG
4685.248	479.846	2.705	482.551	1132.50	41.87	27.22	509.77	.00	7.36	10.00	6.000	10.000	.00	0 .0
48.493	.1171					.0688	3.34	2.70	4.49	2.30	.014	.00	.00	RECTANG
4733.741	485.526	2.837	488.363	1132.50	39.92	24.75	513.11	.00	7.36	10.00	6.000	10.000	.00	0 .0
37.006	.1171					.0601	2.22	2.84	4.18	2.30	.014	.00	.00	RECTANG
4770.747	489.861	2.975	492.836	1132.50	38.07	22.50	515.34	.00	7.36	10.00	6.000	10.000	.00	0 .0
29.390	.1171					.0525	1.54	2.98	3.89	2.30	.014	.00	.00	RECTANG
4800.137	493.303	3.120	496.424	1132.50	36.29	20.45	516.88	.00	7.36	10.00	6.000	10.000	.00	0 .0
23.958	.1171					.0459	1.10	3.12	3.62	2.30	.014	.00	.00	RECTANG
4824.095	496.110	3.273	499.382	1132.50	34.60	18.59	517.98	.00	7.36	10.00	6.000	10.000	.00	0 .0
19.879	.1171					.0401	.80	3.27	3.37	2.30	.014	.00	.00	RECTANG
4843.974	498.438	3.432	501.871	1132.50	32.99	16.90	518.77	.00	7.36	10.00	6.000	10.000	.00	0 .0
16.698	.1171					.0351	.59	3.43	3.14	2.30	.014	.00	.00	RECTANG
4860.672	500.394	3.600	503.994	1132.50	31.46	15.37	519.36	.00	7.36	10.00	6.000	10.000	.00	0 .0
14.144	.1171					.0308	.44	3.60	2.92	2.30	.014	.00	.00	RECTANG
4874.815	502.051	3.776	505.826	1132.50	29.99	13.97	519.80	.00	7.36	10.00	6.000	10.000	.00	0 .0
12.044	.1171					.0270	.33	3.78	2.72	2.30	.014	.00	.00	RECTANG

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11- 4-2014 Time: 8:46:27

TPM 36564 W.O. 14-0213

LINE A AND CHANNEL-100 YEAR SRORM W/ BULKED OFFSITE Q

FILE:LINE_A.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
4886.860	503.462	3.960	507.421	1132.50	28.60	12.70	520.12	.00	7.36	10.00	6.000	10.000	.00	0 .0
10.286	.1171					.0237	.24	3.96	2.53	2.30	.014	.00	.00	RECTANG
4897.146	504.666	4.153	508.820	1132.50	27.27	11.55	520.37	.00	7.36	10.00	6.000	10.000	.00	0 .0
8.791	.1171					.0208	.18	4.15	2.36	2.30	.014	.00	.00	RECTANG
4905.937	505.696	4.356	510.052	1132.50	26.00	10.50	520.55	.00	7.36	10.00	6.000	10.000	.00	0 .0
7.501	.1171					.0183	.14	4.36	2.20	2.30	.014	.00	.00	RECTANG
4913.438	506.575	4.569	511.143	1132.50	24.79	9.54	520.69	.00	7.36	10.00	6.000	10.000	.00	0 .0
6.376	.1171					.0161	.10	4.57	2.04	2.30	.014	.00	.00	RECTANG
4919.814	507.322	4.792	512.113	1132.50	23.64	8.67	520.79	.00	7.36	10.00	6.000	10.000	.00	0 .0
5.386	.1171					.0141	.08	4.79	1.90	2.30	.014	.00	.00	RECTANG
4925.200	507.952	5.025	512.978	1132.50	22.54	7.89	520.86	.00	7.36	10.00	6.000	10.000	.00	0 .0
4.505	.1171					.0125	.06	5.03	1.77	2.30	.014	.00	.00	RECTANG
4929.705	508.480	5.271	513.751	1132.50	21.49	7.17	520.92	.00	7.36	10.00	6.000	10.000	.00	0 .0
3.716	.1171					.0110	.04	5.27	1.65	2.30	.014	.00	.00	RECTANG
4933.421	508.915	5.528	514.443	1132.50	20.49	6.52	520.96	.00	7.36	10.00	6.000	10.000	.00	0 .0
3.003	.1171					.0097	.03	5.53	1.54	2.30	.014	.00	.00	RECTANG
4936.424	509.267	5.798	515.065	1132.50	19.53	5.92	520.99	.00	7.36	10.00	6.000	10.000	.00	0 .0
2.354	.1171					.0085	.02	5.80	1.43	2.30	.014	.00	.00	RECTANG

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11- 4-2014 Time: 8:46:27

TPM 36564 W.O. 14-0213

LINE A AND CHANNEL-100 YEAR SRORM W/ BULKED OFFSITE Q

FILE:LINE_A.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
4938.778	509.543	6.081	515.624	1132.50	18.62	5.39	521.01	.00	7.36	10.00	6.000	10.000	.00	0 .0
1.760	.1171					.0075	.01	6.08	1.33	2.30	.014	.00	.00	RECTANG
4940.538	509.749	6.378	516.127	1132.50	17.76	4.90	521.02	.00	7.36	10.00	6.000	10.000	.00	0 .0
1.212	.1171					.0067	.01	6.38	1.24	2.30	.014	.00	.00	RECTANG
4941.750	509.891	6.689	516.580	1132.50	16.93	4.45	521.03	.00	7.36	10.00	6.000	10.000	.00	0 .0
.703	.1171					.0059	.00	6.69	1.15	2.30	.014	.00	.00	RECTANG
4942.453	509.973	7.015	516.989	1132.50	16.14	4.05	521.04	.00	7.36	10.00	6.000	10.000	.00	0 .0
.228	.1171					.0052	.00	7.02	1.07	2.30	.014	.00	.00	RECTANG
4942.680	510.000	7.359	517.359	1132.50	15.39	3.68	521.04	.00	7.36	10.00	6.000	10.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	2	4	1		5.000														
CD	3	4	1		4.000														
CD	4	4	1		4.500														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
TPM 36564 W.O. 14-0213
HEADING LINE NO 2 IS -
LATERAL- A1 YEAR SRORM W/ BULKED OFFSITE Q
HEADING LINE NO 3 IS -
FILE:LAT_A1.WSW

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	477.600	2	478.840

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1500.000	543.100	2	.013	.000	.000	.000	0

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1630.000	547.000	2	.013	.000	.000	.000	0

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1630.000	547.000	2	.000

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11- 4-2014 Time:10:19:15

TPM 36564 W.O. 14-0213

LATERAL- A1 YEAR SRORM W/ BULKED OFFSITE Q

FILE:LAT_A1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1000.000	477.600	2.109	479.709	340.80	43.31	29.13	508.84	.00	4.79	4.94	5.000	.000	.00	1 .0
93.675	.1310				.1218	11.41	2.11	6.05	2.08	.013	.00	.00		PIPE
1093.675	489.871	2.133	492.004	340.80	42.63	28.22	520.23	.00	4.79	4.95	5.000	.000	.00	1 .0
130.433	.1310				.1119	14.60	2.13	5.91	2.08	.013	.00	.00		PIPE
1224.108	506.958	2.212	509.170	340.80	40.65	25.66	534.83	.00	4.79	4.97	5.000	.000	.00	1 .0
68.974	.1310				.0984	6.79	2.21	5.51	2.08	.013	.00	.00		PIPE
1293.082	515.994	2.294	518.288	340.80	38.76	23.33	541.61	.00	4.79	4.98	5.000	.000	.00	1 .0
45.713	.1310				.0865	3.95	2.29	5.14	2.08	.013	.00	.00		PIPE
1338.795	521.982	2.380	524.362	340.80	36.95	21.21	545.57	.00	4.79	4.99	5.000	.000	.00	1 .0
33.475	.1310				.0761	2.55	2.38	4.79	2.08	.013	.00	.00		PIPE
1372.270	526.367	2.470	528.837	340.80	35.23	19.28	548.11	.00	4.79	5.00	5.000	.000	.00	1 .0
25.902	.1310				.0670	1.74	2.47	4.46	2.08	.013	.00	.00		PIPE
1398.171	529.760	2.565	532.326	340.80	33.59	17.53	549.85	.00	4.79	5.00	5.000	.000	.00	1 .0
20.766	.1310				.0590	1.23	2.57	4.16	2.08	.013	.00	.00		PIPE
1418.938	532.481	2.664	535.145	340.80	32.03	15.93	551.08	.00	4.79	4.99	5.000	.000	.00	1 .0
17.032	.1310				.0521	.89	2.66	3.87	2.08	.013	.00	.00		PIPE
1435.970	534.712	2.768	537.480	340.80	30.54	14.48	551.96	.00	4.79	4.97	5.000	.000	.00	1 .0
14.191	.1310				.0460	.65	2.77	3.59	2.08	.013	.00	.00		PIPE

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11- 4-2014 Time:10:19:15

TPM 36564 W.O. 14-0213

LATERAL- A1 YEAR SRORM W/ BULKED OFFSITE Q

FILE:LAT_A1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1450.161	536.571	2.878	539.449	340.80	29.12	13.17	552.62	.00	4.79	4.94	5.000	.000	.00	1 .0
11.961	.1310					.0406	.49	2.88	3.33	2.08	.013	.00	.00	PIPE
1462.122	538.138	2.994	541.132	340.80	27.76	11.97	553.10	.00	4.79	4.90	5.000	.000	.00	1 .0
10.155	.1310					.0360	.37	2.99	3.09	2.08	.013	.00	.00	PIPE
1472.277	539.468	3.117	542.585	340.80	26.47	10.88	553.47	.00	4.79	4.85	5.000	.000	.00	1 .0
8.658	.1310					.0319	.28	3.12	2.86	2.08	.013	.00	.00	PIPE
1480.935	540.603	3.248	543.851	340.80	25.24	9.89	553.74	.00	4.79	4.77	5.000	.000	.00	1 .0
7.404	.1310					.0283	.21	3.25	2.64	2.08	.013	.00	.00	PIPE
1488.339	541.572	3.387	544.960	340.80	24.07	8.99	553.95	.00	4.79	4.67	5.000	.000	.00	1 .0
6.310	.1310					.0252	.16	3.39	2.44	2.08	.013	.00	.00	PIPE
1494.649	542.399	3.537	545.936	340.80	22.95	8.18	554.11	.00	4.79	4.55	5.000	.000	.00	1 .0
5.351	.1310					.0225	.12	3.54	2.24	2.08	.013	.00	.00	PIPE
1500.000	543.100	3.700	546.800	340.80	21.88	7.43	554.23	.00	4.79	4.39	5.000	.000	.00	1 .0
30.391	.0300					.0206	.63	3.70	2.05	3.25	.013	.00	.00	PIPE
1530.391	544.012	3.795	547.807	340.80	21.31	7.05	554.86	.00	4.79	4.28	5.000	.000	.00	1 .0
41.497	.0300					.0191	.79	3.80	1.94	3.25	.013	.00	.00	PIPE
1571.888	545.257	3.982	549.239	340.80	20.32	6.41	555.65	.00	4.79	4.03	5.000	.000	.00	1 .0
29.044	.0300					.0173	.50	3.98	1.75	3.25	.013	.00	.00	PIPE

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11- 4-2014 Time:10:19:15

TPM 36564 W.O. 14-0213

LATERAL- A1 YEAR SRORM W/ BULKED OFFSITE Q

FILE:LAT_A1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1600.932	546.128	4.195	550.323	340.80	19.38 / 5.83	556.15	.00	4.79	3.68	5.000	.000	.00	1 .0
19.710	.0300				.0158	.31	4.20	1.56	3.25	.013	.00	.00	PIPE
1620.642	546.719	4.446	551.165	340.80	18.47 / 5.30	556.46	.00	4.79	3.14	5.000	.000	.00	1 .0
9.358	.0300				.0151	.14	4.45	1.34	3.25	.013	.00	.00	PIPE
1630.000	547.000	4.789	551.789	340.80	17.61 / 4.82	556.61	.00	4.79	2.01	5.000	.000	.00	1 .0

Line-B and Line-B1

```
FILE: LINE_B.WSW                          W S P G W  - EDIT LISTING - Version 14.06              Date:11- 3-2014  Time: 5:14:44
                                     WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING                                PAGE    1
 CARD  SECT  CHN   NO OF  AVE PIER  HEIGHT 1  BASE    ZL    ZR   INV   Y(1)  Y(2)  Y(3)  Y(4)  Y(5)  Y(6)  Y(7)  Y(8)  Y(9)  Y(10)
 CODE   NO   TYPE PIER/PIP WIDTH    DIAMETER  WIDTH              DROP

 CD      1    4      2            7.500
 CD      2    4      1            5.000
 CD      3    4      1            4.500
 CD      4    4      2            4.500
 CD      5    4      1            2.500
 CD      6    1      0     .000  12.000    9.000   1.500  1.500    .00
 CD      7    1      0     .000   5.000    8.000   1.500  1.500    .00
 CD      8    2      0     .000   9.000   12.000                   .00
 CD      9    2      0     .000   7.000   10.000                   .00
                                                  W S P G W                                                          PAGE NO   1
                          WATER SURFACE PROFILE - TITLE CARD LISTING
HEADING LINE NO 1 IS -
                            TPM 36564    W.O. 14-0213
HEADING LINE NO 2 IS -
                             LINE B AND CHANNEL-100 YEAR SRORM W/ BULKED OFFSITE Q
HEADING LINE NO 3 IS -
                             FILE:LINE_B.WSW
                                                  W S P G W                                                          PAGE NO   2
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO   1 IS A SYSTEM OUTLET     *         *     *
                    U/S DATA   STATION    INVERT  SECT                                    W S ELEV
                               1000.000  400.000    8                                       406.000
 ELEMENT NO   2 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               1345.600  408.300    8              .014                           .000     .000      .000     0
 ELEMENT NO   3 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               2140.000  427.360    8              .014                           .000     .000      .000     0
 ELEMENT NO   4 IS A JUNCTION          *         *     *     *                *                   *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                               2150.000  427.600    8     2     0   .014   245.900      .000   428.000      .000  40.000     .000
                                                                                                RADIUS    ANGLE
                                                                                                  .000    .000
 ELEMENT NO   5 IS A TRANSITION        *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS   ANGLE
                               2200.000  428.700    8              .014                           .000     .000
 ELEMENT NO   6 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               2275.670  430.600    8              .014                           .000     .000      .000     0
 ELEMENT NO   7 IS A REACH             *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                               2400.000  431.600    8              .014                           .000     .000      .000     0
 ELEMENT NO   8 IS A JUNCTION          *         *     *     *                *                   *                *
                    U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                               2430.000  431.900    9     2     0   .014   269.600      .000   432.000      .000  30.000     .000
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                                                                                                  RADIUS    ANGLE
                                                                                                    .000    .000
ELEMENT NO   9 IS A REACH            *         *     *
                    U/S DATA   STATION    INVERT  SECT              N                           RADIUS    ANGLE     ANG PT  MAN H
                               2480.000  434.000    9              .014                            .000     .000      .000     0
ELEMENT NO  10 IS A SYSTEM HEADWORKS                  *                      *
                    U/S DATA   STATION    INVERT  SECT                                   W S ELEV
                               2480.000  434.000    9                                       .000
                                                      W S P G W                                                    PAGE NO   3
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
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Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11- 3-2014 Time: 5:14:46

TPM 36564 W.O. 14-0213

LINE B AND CHANNEL-100 YEAR SRORM W/ BULKED OFFSITE Q

FILE:LINE_B.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	400.000	3.225	403.225	1037.30	26.81	11.16	414.38	.00	6.15	12.00	9.000	12.000	.00	0 .0
345.600	.0240					.0233	8.07	3.22	2.63	3.21	.014	.00	.00	RECTANG
1345.600	408.300	3.264	411.564	1037.30	26.48	10.89	422.45	.00	6.15	12.00	9.000	12.000	.00	0 .0
163.040	.0240					.0225	3.67	3.26	2.58	3.21	.014	.00	.00	RECTANG
1508.640	412.212	3.307	415.519	1037.30	26.14	10.61	426.13	.00	6.15	12.00	9.000	12.000	.00	0 .0
243.523	.0240					.0207	5.04	3.31	2.53	3.21	.014	.00	.00	RECTANG
1752.162	418.055	3.469	421.523	1037.30	24.92	9.64	431.17	.00	6.15	12.00	9.000	12.000	.00	0 .0
119.468	.0240					.0181	2.16	3.47	2.36	3.21	.014	.00	.00	RECTANG
1871.630	420.921	3.638	424.559	1037.30	23.76	8.77	433.33	.00	6.15	12.00	9.000	12.000	.00	0 .0
75.528	.0240					.0158	1.19	3.64	2.20	3.21	.014	.00	.00	RECTANG
1947.158	422.733	3.815	426.549	1037.30	22.66	7.97	434.52	.00	6.15	12.00	9.000	12.000	.00	0 .0
52.860	.0240					.0138	.73	3.82	2.04	3.21	.014	.00	.00	RECTANG
2000.018	424.001	4.002	428.003	1037.30	21.60	7.25	435.25	.00	6.15	12.00	9.000	12.000	.00	0 .0
38.909	.0240					.0121	.47	4.00	1.90	3.21	.014	.00	.00	RECTANG
2038.927	424.935	4.197	429.132	1037.30	20.60	6.59	435.72	.00	6.15	12.00	9.000	12.000	.00	0 .0
29.376	.0240					.0106	.31	4.20	1.77	3.21	.014	.00	.00	RECTANG
2068.303	425.640	4.402	430.042	1037.30	19.64	5.99	436.03	.00	6.15	12.00	9.000	12.000	.00	0 .0
22.388	.0240					.0093	.21	4.40	1.65	3.21	.014	.00	.00	RECTANG

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11- 3-2014 Time: 5:14:46

TPM 36564 W.O. 14-0213

LINE B AND CHANNEL-100 YEAR SRORM W/ BULKED OFFSITE Q

FILE:LINE_B.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
2090.691	426.177	4.617	430.794	1037.30	18.72	5.44	436.24	.00	6.15	12.00	9.000	12.000	.00	0 .0
16.996	.0240				.0081	.14	4.62	1.54	3.21	.014	.00	.00		RECTANG
2107.688	426.585	4.842	431.427	1037.30	17.85	4.95	436.38	.00	6.15	12.00	9.000	12.000	.00	0 .0
12.672	.0240				.0071	.09	4.84	1.43	3.21	.014	.00	.00		RECTANG
2120.359	426.889	5.078	431.967	1037.30	17.02	4.50	436.47	.00	6.15	12.00	9.000	12.000	.00	0 .0
9.092	.0240				.0063	.06	5.08	1.33	3.21	.014	.00	.00		RECTANG
2129.451	427.107	5.326	432.433	1037.30	16.23	4.09	436.52	.00	6.15	12.00	9.000	12.000	.00	0 .0
6.052	.0240				.0055	.03	5.33	1.24	3.21	.014	.00	.00		RECTANG
2135.504	427.252	5.586	432.838	1037.30	15.47	3.72	436.56	.00	6.15	12.00	9.000	12.000	.00	0 .0
3.415	.0240				.0048	.02	5.59	1.15	3.21	.014	.00	.00		RECTANG
2138.918	427.334	5.859	433.193	1037.30	14.75	3.38	436.57	.00	6.15	12.00	9.000	12.000	.00	0 .0
1.082	.0240				.0043	.00	5.86	1.07	3.21	.014	.00	.00		RECTANG
2140.000	427.360	6.146	433.506	1037.30	14.07	3.07	436.58	.00	6.15	12.00	9.000	12.000	.00	0 .0
JUNCT STR	.0240				.0026	.03	6.15	1.00			.014	.00	.00	RECTANG
2150.000	427.600	8.023	435.623	791.40	8.22	1.05	436.67	.00	5.13	12.00	9.000	12.000	.00	0 .0
TRANS STR	.0220						8.02	.51			.014	.00	.00	RECTANG
2200.000	428.700	3.350	432.050	791.40	19.69	6.02	438.07	.00	5.13	12.00	9.000	12.000	.00	0 .0
19.052	.0251				.0119	.23	3.35	1.90	2.62	.014	.00	.00		RECTANG

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11- 3-2014 Time: 5:14:46

TPM 36564 W.O. 14-0213

LINE B AND CHANNEL-100 YEAR SRORM W/ BULKED OFFSITE Q

FILE:LINE_B.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2219.052	429.178	3.452	432.631	791.40	19.10	5.67	438.30	.00	5.13	12.00	9.000	12.000	.00	0 .0
23.989	.0251					.0107	.26	3.45	1.81	2.62	.014	.00	.00	RECTANG
2243.042	429.781	3.621	433.402	791.40	18.21	5.15	438.55	.00	5.13	12.00	9.000	12.000	.00	0 .0
18.460	.0251					.0093	.17	3.62	1.69	2.62	.014	.00	.00	RECTANG
2261.501	430.244	3.798	434.042	791.40	17.37	4.68	438.72	.00	5.13	12.00	9.000	12.000	.00	0 .0
14.169	.0251					.0081	.12	3.80	1.57	2.62	.014	.00	.00	RECTANG
2275.670	430.600	3.983	434.583	791.40	16.56	4.26	438.84	.00	5.13	12.00	9.000	12.000	.00	0 .0
124.330	.0080					.0074	.92	3.98	1.46	3.90	.014	.00	.00	RECTANG
2400.000	431.600	4.055	435.655	791.40	16.26	4.11	439.76	.00	5.13	12.00	9.000	12.000	.00	0 .0
JUNCT STR	.0100					.0107	.32	4.06	1.42		.014	.00	.00	RECTANG
2430.000	431.900	2.804	434.704	521.80	18.61	5.38	440.08	.00	4.39	10.00	7.000	10.000	.00	0 .0
5.229	.0420					.0137	.07	2.80	1.96	1.93	.014	.00	.00	RECTANG
2435.228	432.120	2.858	434.977	521.80	18.26	5.18	440.15	.00	4.39	10.00	7.000	10.000	.00	0 .0
11.223	.0420					.0125	.14	2.86	1.90	1.93	.014	.00	.00	RECTANG
2446.451	432.591	2.997	435.588	521.80	17.41	4.71	440.29	.00	4.39	10.00	7.000	10.000	.00	0 .0
9.058	.0420					.0109	.10	3.00	1.77	1.93	.014	.00	.00	RECTANG
2455.509	432.971	3.143	436.115	521.80	16.60	4.28	440.39	.00	4.39	10.00	7.000	10.000	.00	0 .0
7.257	.0420					.0095	.07	3.14	1.65	1.93	.014	.00	.00	RECTANG

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11- 3-2014 Time: 5:14:46

TPM 36564 W.O. 14-0213

LINE B AND CHANNEL-100 YEAR SRORM W/ BULKED OFFSITE Q

FILE:LINE_B.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2462.765	433.276	3.297	436.573	521.80	15.83	3.89	440.46	.00	4.39	10.00	7.000	10.000	.00	0 .0
5.726	.0420					.0083	.05	3.30	1.54	1.93	.014	.00	.00	RECTANG
2468.491	433.517	3.458	436.974	521.80	15.09	3.54	440.51	.00	4.39	10.00	7.000	10.000	.00	0 .0
4.402	.0420					.0073	.03	3.46	1.43	1.93	.014	.00	.00	RECTANG
2472.893	433.702	3.627	437.328	521.80	14.39	3.21	440.54	.00	4.39	10.00	7.000	10.000	.00	0 .0
3.237	.0420					.0064	.02	3.63	1.33	1.93	.014	.00	.00	RECTANG
2476.130	433.837	3.804	437.641	521.80	13.72	2.92	440.56	.00	4.39	10.00	7.000	10.000	.00	0 .0
2.199	.0420					.0056	.01	3.80	1.24	1.93	.014	.00	.00	RECTANG
2478.330	433.930	3.989	437.919	521.80	13.08	2.66	440.58	.00	4.39	10.00	7.000	10.000	.00	0 .0
1.263	.0420					.0049	.01	3.99	1.15	1.93	.014	.00	.00	RECTANG
2479.592	433.983	4.184	438.167	521.80	12.47	2.42	440.58	.00	4.39	10.00	7.000	10.000	.00	0 .0
.408	.0420					.0043	.00	4.18	1.07	1.93	.014	.00	.00	RECTANG
2480.000	434.000	4.389	438.389	521.80	11.89	2.19	440.58	.00	4.39	10.00	7.000	10.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	2	4	1		5.000														
CD	3	4	1		4.500														
CD	4	4	2		4.500														
CD	5	4	1		2.500														
CD	6	1	0	.000	12.000	9.000	1.500	1.500	.00										
CD	7	1	0	.000	4.000	8.000	1.500	1.500	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

TPM 36564 W.O. 14-0213

HEADING LINE NO 2 IS -

LINE B AND CHANNEL-100 YEAR SRORM W/ BULKED OFFSITE Q

HEADING LINE NO 3 IS -

FILE:LINE_B1.WSW

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	2430.000	431.900	2	434.700

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2553.400	432.000	2	.014	.000	.000	.000	0

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2748.000	441.000	2	.014	.000	.000	.000	0

ELEMENT NO 4 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	2800.000	443.900	7	.014	.000	.000

ELEMENT NO 5 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	3262.430	453.100	7	.014	.000	.000	.000	0

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	3306.900	454.000	7	.014	.000	.000	.000	0

ELEMENT NO 7 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	3306.900	454.000	7	.000

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11- 3-2014 Time: 5:31:41

TPM 36564 W.O. 14-0213

LINE B AND CHANNEL-100 YEAR SRORM W/ BULKED OFFSITE Q

FILE:LINE_B1.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2430.000	431.900	3.495	435.395	269.60	18.39	5.25	440.65	.00	4.53	4.59	5.000	.000	.00	1 .0
14.042	.0008					.0185	.26	3.50	1.81	5.00	.014	.00	.00	PIPE
2444.042	431.911	3.395	435.306	269.60	18.99	5.60	440.91	.00	4.53	4.67	5.000	.000	.00	1 .0
21.416	.0008					.0204	.44	3.40	1.92	5.00	.014	.00	.00	PIPE
2465.458	431.929	3.255	435.184	269.60	19.92	6.16	441.35	.00	4.53	4.77	5.000	.000	.00	1 .0
21.823	.0008					.0230	.50	3.26	2.08	5.00	.014	.00	.00	PIPE
2487.281	431.946	3.123	435.070	269.60	20.89	6.78	441.85	.00	4.53	4.84	5.000	.000	.00	1 .0
22.078	.0008					.0259	.57	3.12	2.26	5.00	.014	.00	.00	PIPE
2509.359	431.964	3.000	434.964	269.60	21.91	7.46	442.42	.00	4.53	4.90	5.000	.000	.00	1 .0
22.091	.0008					.0293	.65	3.00	2.44	5.00	.014	.00	.00	PIPE
2531.449	431.982	2.884	434.866	269.60	22.98	8.20	443.07	.00	4.53	4.94	5.000	.000	.00	1 .0
21.950	.0008					.0332	.73	2.88	2.63	5.00	.014	.00	.00	PIPE
2553.400	432.000	2.774	434.774	269.60	24.10	9.02	443.80	.00	4.53	4.97	5.000	.000	.00	1 .0
43.796	.0462					.0336	1.47	2.77	2.83	2.55	.014	.00	.00	PIPE
2597.195	434.026	2.858	436.884	269.60	23.23	8.38	445.26	.00	4.53	4.95	5.000	.000	.00	1 .0
40.141	.0462					.0301	1.21	2.86	2.67	2.55	.014	.00	.00	PIPE
2637.336	435.882	2.973	438.855	269.60	22.15	7.62	446.47	.00	4.53	4.91	5.000	.000	.00	1 .0
29.134	.0462					.0267	.78	2.97	2.48	2.55	.014	.00	.00	PIPE

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11- 3-2014 Time: 5:31:41

TPM 36564 W.O. 14-0213

LINE B AND CHANNEL-100 YEAR SRORM W/ BULKED OFFSITE Q

FILE:LINE_B1.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2666.471	437.229	3.095	440.325	269.60	21.12	6.93	447.25	.00	4.53	4.86	5.000	.000	.00	1 .0
22.132	.0462					.0236	.52	3.10	2.30	2.55	.014	.00	.00	PIPE
2688.603	438.253	3.224	441.477	269.60	20.14	6.30	447.77	.00	4.53	4.79	5.000	.000	.00	1 .0
17.189	.0462					.0210	.36	3.22	2.12	2.55	.014	.00	.00	PIPE
2705.792	439.048	3.362	442.410	269.60	19.20	5.72	448.13	.00	4.53	4.69	5.000	.000	.00	1 .0
13.500	.0462					.0187	.25	3.36	1.96	2.55	.014	.00	.00	PIPE
2719.292	439.672	3.510	443.182	269.60	18.31	5.20	448.39	.00	4.53	4.57	5.000	.000	.00	1 .0
10.580	.0462					.0167	.18	3.51	1.80	2.55	.014	.00	.00	PIPE
2729.872	440.162	3.670	443.832	269.60	17.45	4.73	448.56	.00	4.53	4.42	5.000	.000	.00	1 .0
8.174	.0462					.0149	.12	3.67	1.65	2.55	.014	.00	.00	PIPE
2738.047	440.540	3.844	444.384	269.60	16.64	4.30	448.68	.00	4.53	4.22	5.000	.000	.00	1 .0
6.004	.0462					.0134	.08	3.84	1.50	2.55	.014	.00	.00	PIPE
2744.051	440.817	4.038	444.855	269.60	15.87	3.91	448.76	.00	4.53	3.94	5.000	.000	.00	1 .0
3.949	.0462					.0122	.05	4.04	1.35	2.55	.014	.00	.00	PIPE
2748.000	441.000	4.259	445.259	269.60	15.13	3.55	448.81	.00	4.53	3.55	5.000	.000	.00	1 .0
TRANS STR	.0558					.0157	.81	4.26	1.19		.014	.00	.00	PIPE
2800.000	443.900	1.563	445.463	269.60	16.68	4.32	449.78	.00	2.74	12.69	4.000	8.000	1.50	0 .0
94.398	.0199					.0195	1.84	1.56	2.60	1.56	.014	.00	1.50	TRAP

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11- 3-2014 Time: 5:31:41

TPM 36564 W.O. 14-0213

LINE B AND CHANNEL-100 YEAR SRORM W/ BULKED OFFSITE Q

FILE:LINE_B1.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2894.398	445.778	1.569	447.347	269.60	16.60	4.28	451.63	.00	2.74	12.71	4.000	8.000	1.50	0 .0
189.419	.0199					.0182	3.44	1.57	2.59	1.56	.014	.00	1.50	TRAP
3083.817	449.547	1.631	451.177	269.60	15.83	3.89	455.07	.00	2.74	12.89	4.000	8.000	1.50	0 .0
71.450	.0199					.0158	1.13	1.63	2.43	1.56	.014	.00	1.50	TRAP
3155.267	450.968	1.695	452.663	269.60	15.09	3.54	456.20	.00	2.74	13.08	4.000	8.000	1.50	0 .0
42.016	.0199					.0138	.58	1.69	2.28	1.56	.014	.00	1.50	TRAP
3197.282	451.804	1.761	453.565	269.60	14.39	3.21	456.78	.00	2.74	13.28	4.000	8.000	1.50	0 .0
28.569	.0199					.0121	.34	1.76	2.13	1.56	.014	.00	1.50	TRAP
3225.852	452.372	1.829	454.201	269.60	13.72	2.92	457.12	.00	2.74	13.49	4.000	8.000	1.50	0 .0
20.822	.0199					.0105	.22	1.83	2.00	1.56	.014	.00	1.50	TRAP
3246.674	452.787	1.900	454.686	269.60	13.08	2.66	457.34	.00	2.74	13.70	4.000	8.000	1.50	0 .0
15.756	.0199					.0092	.14	1.90	1.88	1.56	.014	.00	1.50	TRAP
3262.430	453.100	1.972	455.073	269.60	12.47	2.42	457.49	.00	2.74	13.92	4.000	8.000	1.50	0 .0
.010	.0202					.0086	.00	1.97	1.76	1.55	.014	.00	1.50	TRAP
3262.440	453.100	1.972	455.073	269.60	12.47	2.42	457.49	.00	2.74	13.92	4.000	8.000	1.50	0 .0
11.823	.0202					.0080	.09	1.97	1.76	1.55	.014	.00	1.50	TRAP
3274.262	453.339	2.048	455.387	269.60	11.89	2.20	457.58	.00	2.74	14.14	4.000	8.000	1.50	0 .0
9.226	.0202					.0070	.06	2.05	1.66	1.55	.014	.00	1.50	TRAP

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date:11- 3-2014 Time: 5:31:41

TPM 36564 W.O. 14-0213

LINE B AND CHANNEL-100 YEAR SRORM W/ BULKED OFFSITE Q

FILE:LINE_B1.WSW

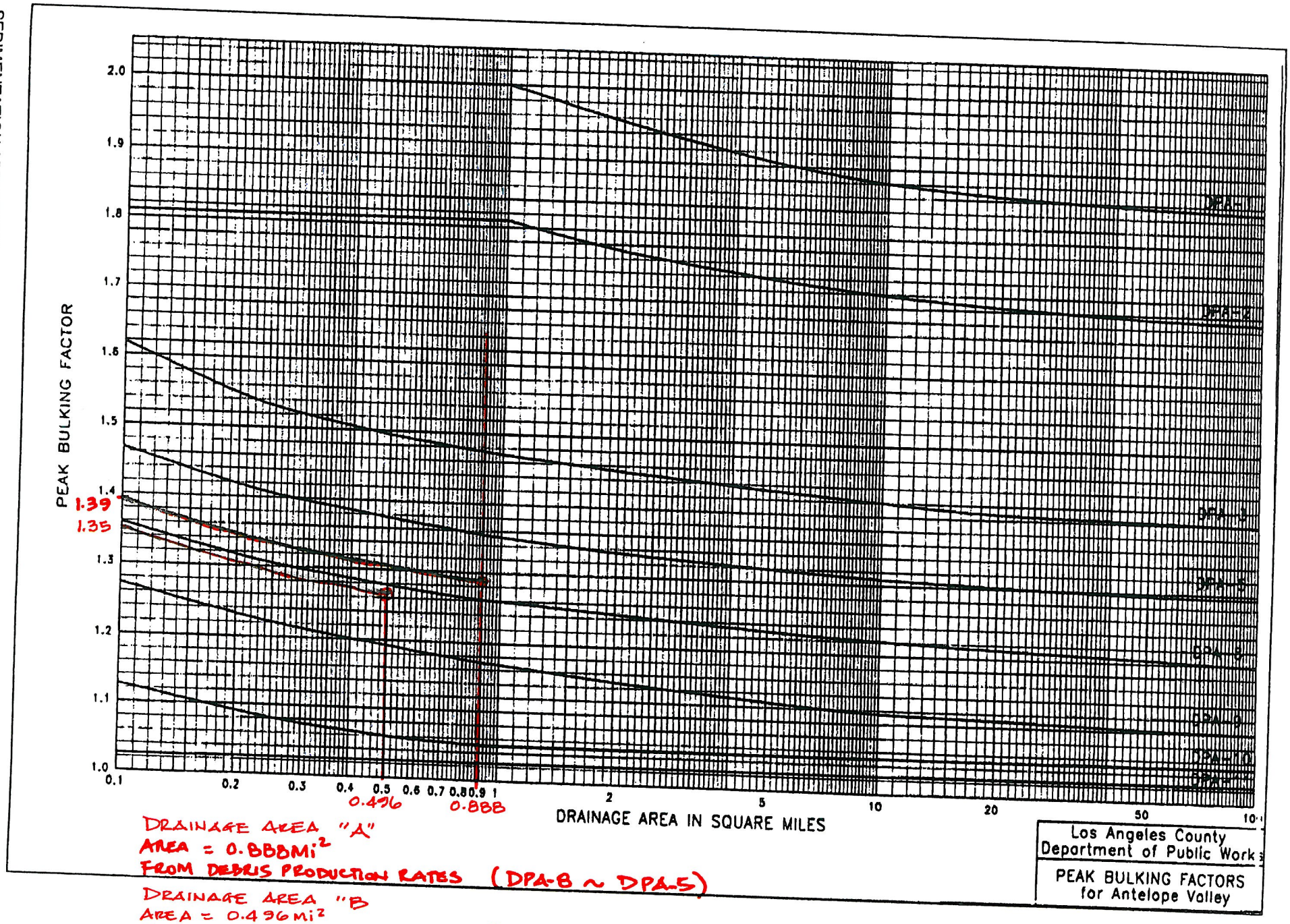
Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL / Type Ch	No Wth Prs/Pip
3283.488	453.526	2.125	455.651	269.60	11.34	2.00	457.65	.00	2.74	14.38	4.000	8.000	1.50	0 .0
7.188	.0202				.0061	.04	2.13	1.55	1.55	.014	.00	1.50	TRAP	
3290.676	453.672	2.205	455.877	269.60	10.81	1.81	457.69	.00	2.74	14.62	4.000	8.000	1.50	0 .0
5.538	.0202				.0054	.03	2.21	1.46	1.55	.014	.00	1.50	TRAP	
3296.214	453.784	2.288	456.072	269.60	10.31	1.65	457.72	.00	2.74	14.86	4.000	8.000	1.50	0 .0
4.168	.0202				.0047	.02	2.29	1.37	1.55	.014	.00	1.50	TRAP	
3300.382	453.868	2.373	456.241	269.60	9.83	1.50	457.74	.00	2.74	15.12	4.000	8.000	1.50	0 .0
3.008	.0202				.0041	.01	2.37	1.29	1.55	.014	.00	1.50	TRAP	
3303.390	453.929	2.461	456.390	269.60	9.37	1.36	457.75	.00	2.74	15.38	4.000	8.000	1.50	0 .0
2.010	.0202				.0036	.01	2.46	1.21	1.55	.014	.00	1.50	TRAP	
3305.400	453.970	2.551	456.521	269.60	8.93	1.24	457.76	.00	2.74	15.65	4.000	8.000	1.50	0 .0
1.136	.0202				.0031	.00	2.55	1.13	1.55	.014	.00	1.50	TRAP	
3306.536	453.993	2.645	456.637	269.60	8.52	1.13	457.76	.00	2.74	15.93	4.000	8.000	1.50	0 .0
.364	.0202				.0027	.00	2.64	1.07	1.55	.014	.00	1.50	TRAP	
3306.900	454.000	2.742	456.742	269.60	8.12	1.02	457.77	.00	2.74	16.23	4.000	8.000	1.50	0 .0

Off-Site Storm Runoff Bulking Factor Calculation

TPM 36564

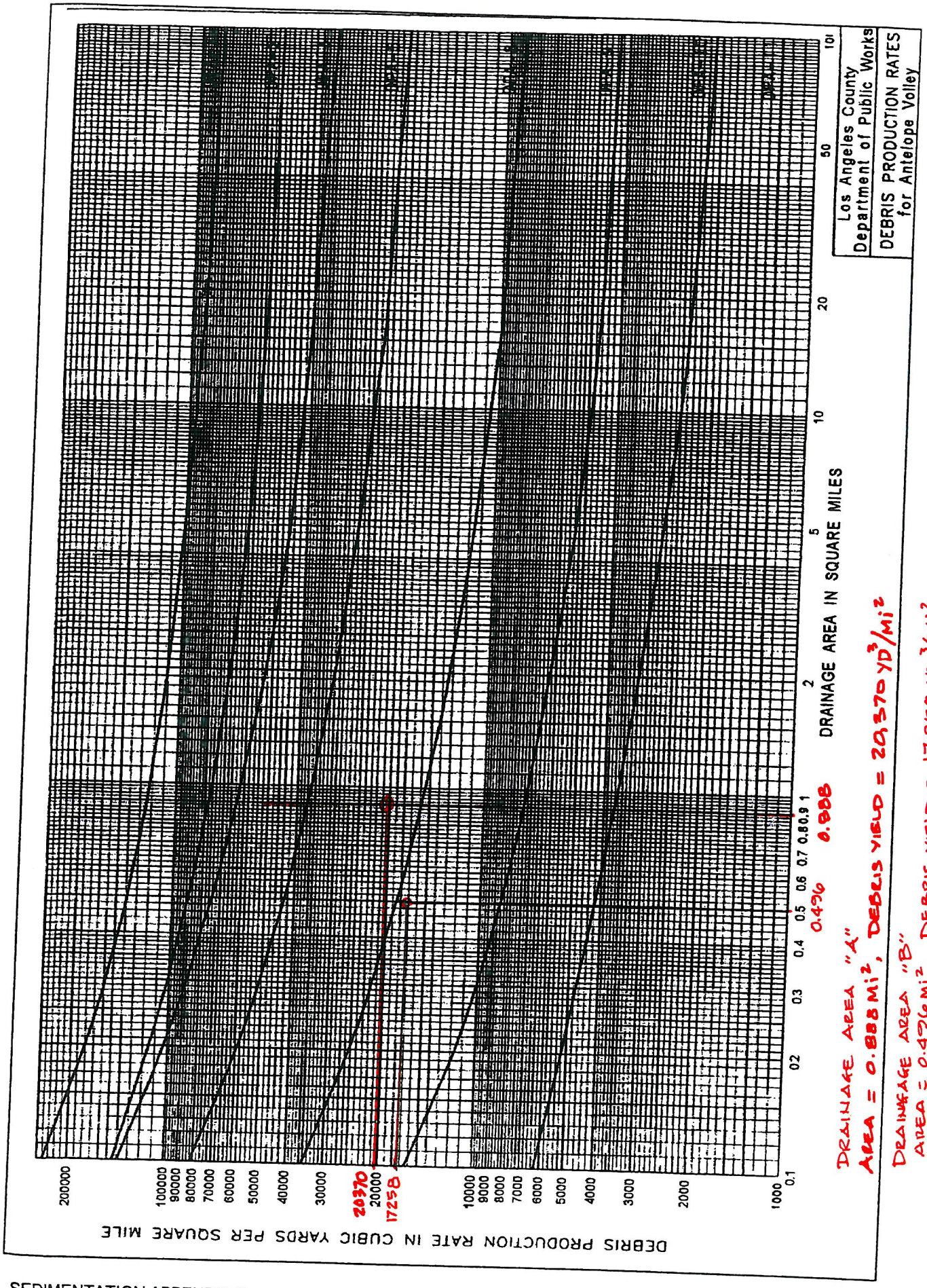
SUMMARY OF BULKING FACTORS

	Area Square Miles	Bulking Factor
Overall Project	1.384	1.38
Drainage Area "A"	0.888	1.390
Drainage Area "B"	0.496	1.350



DRAINAGE AREA "A"
AREA = 0.888Mi²
FROM DEBRIS PRODUCTION RATES (DPA-8 ~ DPA-5)

DRAINAGE AREA "B"
AREA = 0.496Mi²
FROM DEBRIS PRODUCTION RATES (DPA-9 ~ DPA-8)


DEBRIS PRODUCTION RATE IN CUBIC YARDS PER SQUARE MILE
DRAINAGE AREA IN SQUARE MILES
Los Angeles County
Department of Public Works
DEBRIS PRODUCTION RATES
for Antelope Valley
20370
17258
0.496
0.888
DRAINAGE AREA "A"
AREA = 0.888 Mi², DEBRIS YIELD = 20,370 YD³/Mi²
DRAINAGE AREA "B"
AREA = 0.496 Mi², DEBRIS YIELD = 17,258 YD³/Mi²

Debris Yield Methodology

The U.S. Army Corps of Engineers, Los Angeles District Debris Method was selected to determine the sediment yield for the study watershed. The Los Angeles District Method for prediction of Debris Yield was developed to provide a systematic approach for determining the debris yield from a single flood event. The method was developed using data form coastal-draining, mountainous, Southern California watersheds with a high proportion of their area in steep, mountainous terrain. It is intended to estimate debris yield for flood events greater than those with a 5-year recurrence.

The sediment load for two locations was calculated separately. Since both watersheds are less than 3.0 square miles, the use of the following equation is appropriate.

$$\textbf{Log Dy=0.65(Log P) + 0.18(Log A) + 0.62(Log RR) + 0.12(FF)}$$

Where:

Dy = Unit Debris Yield (yd^3/mi^2)
P = Maximum 1-Hour Precipitation (inches, taken to two places after the decimal point, times 100)
RR = Relief Ratio (ft/mi)
A = Drainage Area (ac)
FF = Non-dimensional Fire Factor

The maximum 1-hour precipitation (P) for a specific flood event is determined by the Riverside County Hydrology Manual based upon the project location and storm frequency. The Relief Ratio (RR) is defined as the ratio of the elevation difference (ft) between the highest and lowest points in the watershed to the longest watercourse (mi). The Fire Factor (FF) is a non-dimensional factor for the subject watershed, which is determined to be 6.5 to be conservative,

Page 17, Debris Method, published by U.S. Army Corps of Engineers, Los Angeles District (Updated February, 2000). Computational results are presented in worksheet 1.1 and 1.2.

Worksheet 1.1 Debris Yield (Sediment Load) Estimation for Drainage Area "A"

Since the watershed is less than 3.0 square miles, the use of the following equation is appropriate.

Log Dy=0.65(Log P) + 0.18(Log A) + 0.62(Log RR) + 0.12(FF)

Where:

Dy = Unit Debris Yield (yd^3/mi^2)

P = Maximum 1-Hour Precipitation (inches, taken to two places after the decimal point, times 100)

RR = Relief Ratio (ft/mi)

A = Drainage Area (ac)

FF = Non-dimensional Fire Factor

Step 1. Determine the maximum 1-hour precipitation (P) applicable to the flood event and multiply by 100.

From Riverside County Hydrology Manual, the maximum 1-hour precipitation for this site is approximately 1.30 inches. The maximum 1-hour precipitation multiplied by 100 is 130.

Step 2. Draw the drainage boundary and determine the area of the watershed (A) in mi^2 and acre.

From the drainage area exhibit, the area of the watershed was determined to be 568.3 acres, or 0.888 mi^2.

Step 3. Determine the relief ratio (RR) of the watershed.

Locate the highest point in the watershed at the end of the longest watercourse (3,876 ft), and the lowest point (2,508 ft) at the watershed downstream; determine the difference between these two in feet. Next, determine the length of the longest watercourse (15,270

ft), in miles (2.89 mi). Express the difference between the high and low elevations (in ft) and the length of the longest watercourse (in mi) as a ratio. For drainage area "A"

3,876 – 2,508 = 1,368 ft, divided by 2.89 mi = 473.4 ft/mi.

Step 4. Determine the Fire Factor (FF) for the subject watershed.

FF is determined to be 6.5 to be conservative.

Step 5. Determine the Adjustment-Transposition Factor (A-T).

The A-T Factor is assumed to be 1.00.

Step 6. Calculate the Log (Base 10) of the factors P, RR, and A. FF and A-T are dimensionless and are used as is.

From STEP 1, Log (P) = Log (130) = 2.114

From STEP 2, Log (A) = Log (568.3) = 2.7546

From STEP 3, Log (RR) = Log (473.4) = 2.6752

From STEP 4, FF = 6.50

From STEP 5, A-T = 1.00

Step 7. Apply Equation 1 for this watershed. Solve for unit debris yield using the above values:

Log Dy = 0.65 (Log P) + 0.18 (Log A) + 0.62 (Log RR) + 0.12 (FF)

Log Dy = 0.65 (2.114) + 0.18 (2.7546) + 0.62 (2.6752) + 0.12 (6.50)

Log Dy = 1.374 + 0.496 + 1.659 + 0.780

Log Dy = 4.309

Step 8. Calculate the antilog of Dy.

AntiLog Dy = 20,370 yd^3/mi^2

Step 9. Multiply the resulting Dy by the A-T Factor to get the adjusted unit debris yield for the project.

Adjusted Dy = 1.0 (20,370) = 20,370 yd^3/mi^2

Step 10. Multiply the adjusted unit debris yield by the drainage area to determine the volume of debris.

20,370 yd^3/mi^2 x 0.888 mi^2 = total debris yield of 18,089 yd^3= 488,403 ft^3 = 11.21 ac-ft.

Worksheet 1.1 Debris Yield (Sediment Load) Estimation for Drainage Area "B"

Since the watershed is less than 3.0 square miles, the use of the following equation is appropriate.

Log Dy=0.65(Log P) + 0.18(Log A) + 0.62(Log RR) + 0.12(FF)

Where:

Dy = Unit Debris Yield (yd^3/mi^2)

P = Maximum 1-Hour Precipitation (inches, taken to two places after the decimal point, times 100)

RR = Relief Ratio (ft/mi)

A = Drainage Area (ac)

FF = Non-dimensional Fire Factor

Step 1. Determine the maximum 1-hour precipitation (P) applicable to the flood event and multiply by 100.

From Riverside County Hydrology Manual, the maximum 1-hour precipitation for this site is approximately 1.30 inches. The maximum 1-hour precipitation multiplied by 100 is 130.

Step 2. Draw the drainage boundary and determine the area of the watershed (A) in mi^2 and acre.

From the drainage area exhibit, the area of the watershed was determined to be 317.5 acres, or 0.496 mi^2.

Step 3. Determine the relief ratio (RR) of the watershed.

Locate the highest point in the watershed at the end of the longest watercourse (3,044 ft), and the lowest point (2,446 ft) at the watershed downstream; determine the difference between these two in feet. Next, determine the length of the longest watercourse (7,320 ft), in miles (1.39 mi). Express the difference between the high and low elevations (in ft) and the length of the longest watercourse (in mi) as a ratio. For drainage area "B"

3,044 – 2,446 = 598 ft, divided by 1.39 mi = 430 ft/mi.

Step 4. Determine the Fire Factor (FF) for the subject watershed.

FF is determined to be 6.5 to be conservative.

Step 5. Determine the Adjustment-Transposition Factor (A-T).

The A-T Factor is assumed to be 1.00.

Step 6. Calculate the Log (Base 10) of the factors P, RR, and A. FF and A-T are dimensionless and are used as is.

From STEP 1, Log (P) = Log (130) = 2.114

From STEP 2, Log (A) = Log (317.5) = 2.502

From STEP 3, Log (RR) = Log (430) = 2.6335

From STEP 4, FF = 6.50

From STEP 5, A-T = 1.00

Step 7. Apply Equation 1 for this watershed. Solve for unit debris yield using the above values:

Log Dy = 0.65 (Log P) + 0.18 (Log A) + 0.62 (Log RR) + 0.12 (FF)

Log Dy = 0.65 (2.114) + 0.18 (2.502) + 0.62 (2.6335) + 0.12 (6.50)

Log Dy = 1.374 + 0.450 + 1.633 + 0.780

Log Dy = 4.237

Step 8. Calculate the antilog of Dy.

AntiLog Dy = 17,258 yd^3/mi^2

Step 9. Multiply the resulting Dy by the A-T Factor to get the adjusted unit debris yield for the project.

Adjusted Dy = 1.0 (17,258) = 17,258 yd^3/mi^2

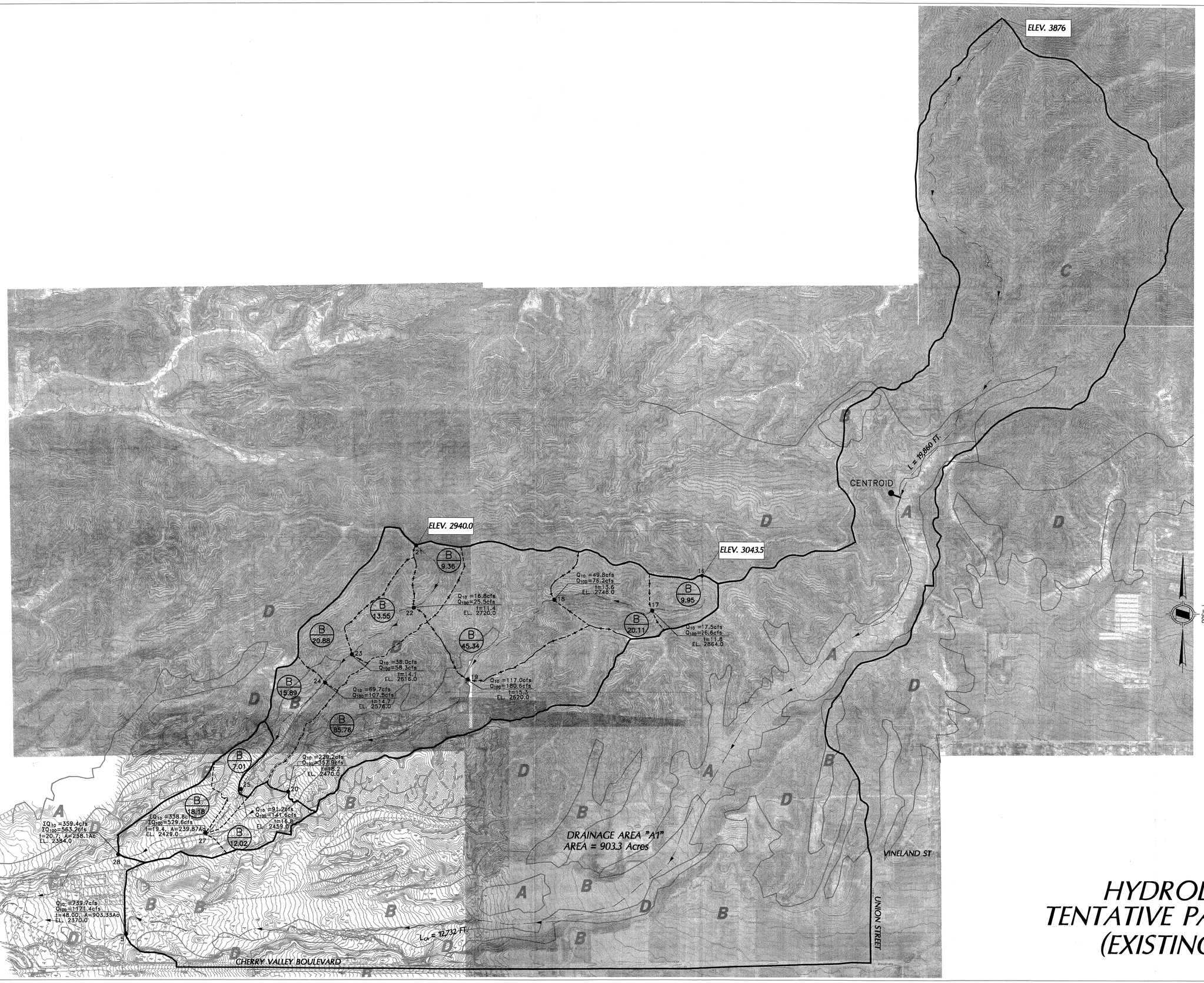
Step 10. Multiply the adjusted unit debris yield by the drainage area to determine the volume of debris.

17,258 yd^3/mi^2 x 0.496 mi^2 = total debris yield of 8,560 yd^3= 231,120 ft^3 = 5.31 ac-ft.

SECTION 4 - APPENDIX A

Off-Site Hydrology Map – Existing Conditions

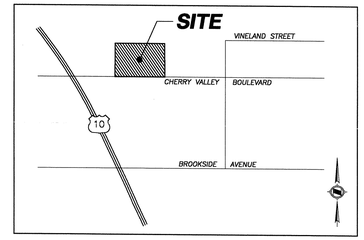
Off-Site Hydrology Map – Developed Conditions



LEGEND

- MAJOR DRAINAGE BOUNDARY
- MINOR DRAINAGE BOUNDARY
- 100 — NODE NUMBER
- A / 1.0 — AREA DESIGNATION / AREA ACREAGE (IN ACRES)
- Q_{100}=8.0cfs, t=15.0 — PEAK FLOW RATE / TIME OF CONCENTRATION
- ΣQ_{100}=10.0cfs, t=15.0 — PEAK CONFLUENCE FLOW RATE / TIME OF CONCENTRATION
- FLOW LINE
- SOIL GROUP BOUNDARY

VICINITY MAP



PREPARED FOR:

TSG CHERRY VALLEY, LP
8951 RESEARCH DRIVE
IRVINE, CA. 92618
(949) 417-1396

PREPARED BY:

500 250 0 500 1500
GRAPHIC SCALE 1"=500'

HYDROLOGY MAP FOR TENTATIVE PARCEL MAP 36564 (EXISTING CONDITION)

WO: 3079-4 HYDROLOGY MAP FOR TENTATIVE PARCEL MAP 36093 (EXISTING CONDITION)

PLOTTED BY: Joanna Swiatkowska DATE: Sep. 25, 2013 09:35:33 AM FILE: F:\01186\Engineering\SY_Hydrology\TPM 36093\2013-June- Hydrology-Alt2-TT36564\EX CHERRY 36093.dwg

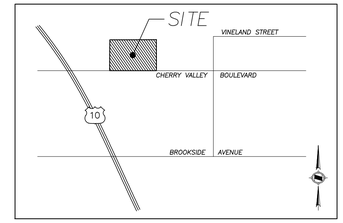
RECEIVED
OCT 14 2013



LEGEND

- MAJOR DRAINAGE BOUNDARY
- MINOR DRAINAGE BOUNDARY
- 100 — NODE NUMBER
- A / 1.0 — AREA DESIGNATION / AREA ACREAGE (IN ACRES)
- Q_{10} =8.0cfs t=15.0 — 10-YEAR PEAK FLOW RATE / TIME OF CONCENTRATION
- Q_{100}=12.0cfs t=15.0 — 100-YEAR PEAK FLOW RATE / TIME OF CONCENTRATION
- FLOW LINE
- SOIL GROUP BOUNDARY

VICINITY MAP



PREPARED FOR:
TSG CHERRY VALLEY, LP
8951 RESEARCH DRIVE
IRVINE, CA. 92618
(949) 417-1396

500 250 0 500 1500
GRAPHIC SCALE 1"=500'

HYDROLOGY MAP
FOR TENTATIVE PARCEL MAP 36564
(OFFSITE – PROPOSED CONDITION)

PLOTTED BY: DJ Arellano DATE: Nov. 07, 2014 08:45:27 AM FILE: G:\2014\14-0213\HYD\Off-Site Hydrology_Proposed_offsite.dwg

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G.4 - Yucaipa Valley Water District Off-Site Waterline and Sewer Main Memo

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Yucaipa Valley Water District
12770 Second Street • P. O. Box 730 • Yucaipa, California 92399-0730
(909) 797-5117 • Fax: (909) 797-6381 • www.yvwd.dst.ca.us

Expires April 16, 2016

Preliminary Project Service Evaluation

Date: **November 16, 2015**

Project: **PM 36564**

Applicant: **Shopoff Realty Investments, L.P.**
2 Park Plaza, Suite 700
Irvine, CA 92614

Location: **Northeast of Cherry Valley Boulevard & I-10 FWY**

APN: **407-220-004, 007, 008, 009, 014, 016, 017, 413-270-012, 013**

In response to requests for development related "will serve" letters, the Yucaipa Valley Water District has implemented a policy to issue Preliminary Project Service Evaluation to identify the preliminary requirements associated with residential, commercial and institutional development projects. Since the proposed Project concepts have not been fully developed, this letter provides only the basic requirements for water, wastewater and non-potable water service. The final requirements for the Project will be included in a **"development agreement"** which is required prior to the issuance of any grading or building permits by the permitting agency.

Preliminary General Requirements: The District has not received all of the necessary information to fully evaluate the proposed project at this time. Therefore the Applicant should be aware that the following partial list of conditions is not representative of the final requirements and conditions for this Project.

1. The issuance of this Preliminary Project Service Evaluation is not a typical "Will Serve" or conditions letter and may not be used to record final subdivision maps, to obtain building permits, or to acquire vested rights regarding water and/or sewer service. Issuance of water and/or sewer service is contingent upon the proposed development meeting the requirements of the Yucaipa Valley Water District which will be provided to the Applicant in a development agreement which shall be executed prior to the issuance of any grading or building permits related to this Project.
2. The District recognizes that service conditions, market environment, environmental factors and regulatory requirements continuously change. Therefore, this Preliminary Project Service Evaluation will expire 6 months from the date of this letter. Approved water and

Directors and Officers

KENNETH P. MUÑOZ Division 1 | BRUCE GRANLUND Division 2 | JAY BOGH Division 3 | LONNI GRANLUND Division 4 | THOMAS SHALHOUB Division 5 | JOSEPH B. ZOBA General Manager and Secretary

2. The District recognizes that service conditions, market environment, environmental factors and regulatory requirements continuously change. Therefore, this Preliminary Project Service Evaluation will expire 6 months from the date of this letter. Approved water and wastewater plans also expire one year after their respective approval. The Applicant will need to resubmit water (potable and non-potable) and wastewater plans for re-evaluation one year after the plans have been approved.

3. All standard District procedures, which include payment of fees and obtaining necessary Certificates of Compliance, are to be met. Fees in effect at time of payment shall prevail (current fee schedule attached). The Applicant should schedule a meeting to discuss the current fee schedule and payment requirements.

4. The Applicant must comply with the most current rules, regulations, policies, design criteria, and construction standards of this District, as they are amended or may hereafter be amended, whether written or otherwise in effect at the time of construction.

5. The District has adopted Resolution No. 11-2008 a *Strategic Plan for a Sustainable Future*.
    a. This document requires the purchase and delivery of supplemental water supplies prior to receiving building permits as well as other conditions not contained in the Preliminary Project Service Evaluation or the development agreement.
    b. This document also requires developers to comply with the rules and regulations for non-potable use and distribution. Refer to Yucaipa Valley Water District Ordinance No. 52-2006

6. The District will require a deposit of $1,000 for the preparation of a systematic hydraulic network analysis. This analysis will be conducted after receiving the required deposit and written fire flow requirements for the Project. The systematic hydraulic network analysis must be completed prior to the execution of the Developers Agreement.

7. The Yucaipa Valley Water District provides potable water, non-potable water and wastewater service. The Project will require all three services be provided as a bundled service. The Applicant should be prepared to design connections to utilize all three services.

8. Within the service area of the Yucaipa Valley Water District are other water related facilities owned by private companies and the State of California. It is the responsibility of the Applicant to determine the impact of these facilities upon the proposed Project.

9. Slopes, walls, and structure overhangs are not allowed within any existing or proposed water or sewer easements. All existing and proposed sewer and water easements shall be a minimum of 20-feet wide with all-weather roadway surfaces and consistent with the latest District standards. Adequate separation must be maintained at all times to insure the integrity of all existing facilities.

10. The Applicant should review *the Yucaipa Valley Water Districts Standards and Drawings for Water and Sewer Facilities* to become familiar with general design and service requirements.

11. The Yucaipa Valley Water District will not allow existing or proposed water or wastewater facilities within the proximity of on-site storm water detention basins without adequate

mitigation and protection. The Applicant should coordinate the location of the on-site detention basins with the Engineering Department.

12. The Yucaipa Valley Water District has not reviewed the projected potable water, non-potable water or wastewater demand projections for this Project. The anticipated system demands will modify the preliminary requirements for on-site and off-site facilities. The Applicant should schedule a meeting with a representative from the Engineering Department to discuss this issue.

13. The Yucaipa Valley Water District has not reviewed the projected fire flow requirements for this Project. The fire flow demands will modify the preliminary requirements for on-site and off-site facilities. The Applicant should schedule a meeting with a representative from the Engineering Department to discuss this issue.

14. To properly conduct a review of the proposed infrastructure needed for this Project, the Applicant shall provide utility drawings for other facilities/infrastructure that may cause interference with the existing/proposed water and wastewater facilities. These conflicts may include, but not be limited to detention basins, storm drains, electricity, gas, cable, etc.

15. All permits related to water and wastewater facilities by other entities shall be at the expense of the Applicant.

16. The Applicant will be responsible for all fees and charges as established by the District for this Project. Including, but not limited to, the advanced payment of the time and material charges associated with plan check and inspection of water related facilities. Plan check and inspection charges are usually 15% of the facility construction cost and the Applicant shall be fully responsible for the actual cost of said services provided by the District.

17. The Applicant shall be responsible for ensuring the property is within the service boundary of the Yucaipa Valley Water District prior to the approval of a development agreement with the Yucaipa Valley Water District. All costs related to annexation proceedings shall be the responsibility of the Applicant.

18. This Preliminary Project Service Evaluation does not provide a vested right, guarantee or commitment of water or wastewater related services from the District.

19. The District reserves the right to deny water and/or wastewater service to the Project if any of the conditions contained in this letter and/or the development agreement are not satisfied.

20. Each parcel must front the District facility which serves it.

Preliminary Potable Water and Non-Potable Water Requirements: The District has not received all of the necessary information to fully evaluate the proposed Project at this time. Therefore the Applicant should be aware that the following partial list of conditions is not representative of the final requirements and conditions for this Project.

21. Potable water will need to be extended on-site and off-site to meet the needs of this project.

22. Recycled water will also need to be extended on-site and off-site to meet the needs of this project.

23. Provide the District with a recycled reservoir site of the appropriate size and proper elevation.

Preliminary Wastewater Requirements: The District has not received all of the necessary information to fully evaluate the proposed Project at this time. Therefore the Applicant should be aware that the following partial list of conditions is not representative of the final requirements and conditions for this Project.

24. On-site and off-site sewer infrastructure will be required to meets the needs of this project.

25. A contribution of $1,500.00 per EDU for downstream upgrades will be a requirement of this project.

Preliminary Site Specific Project Requirements: The District has not received all of the necessary information to fully evaluate the proposed Project at this time. Therefore the Applicant should be aware that the following partial list of conditions is not representative of the final requirements and conditions for this Project.

I have read and acknowledge the preliminary requirements in this Preliminary Project Service Evaluation letter and understand that final requirements will be determined in a Development Agreement. This letter will expire six months from the date of this letter.

_____ _____

(applicant) Date

Should you have any questions or to schedule a meeting to discuss your Project, please contact me at 797-5118.

Sincerely,

_____ _____

Brent Anton, Engineering Manager Date

ALBERT A. WEBB ASSOCIATES

Corporate Headquarters
3788 McCray Street | Riverside, CA 92506 | T: 951.686.1070 | F: 951.788.1256

Desert Region
36-951 Cook Street #103 | Palm Desert, CA 92211 | T: 760.568.5005 | F: 760.568.3443

WO: 2013-0206

November 20, 2013

Mr. Patrick Watson
Krieger & Stewart, Incorporated
3602 University Avenue
Riverside, CA 92501
Tel: 951-684-6900
Fax: 951-684-6986

RE: Interstate 10 Gateway Center Project – Memo for Proposed Offsite Waterline & Sewer Main, Yucaipa Valley Water District (YVWD)

Dear Mr. Watson:

Pursuant to the 10-23-13 meeting and discussions with Yucaipa Valley Water District (YVWD), Albert A. Webb Associates have prepared the memo for proposed offsite water and sewer improvements requested by YVWD.

Offsite Sewer Main

Per YVWD's record drawing AD 20-36, Calimesa Boulevard Interceptor Sewer – Schedule 5, the existing 8" diameter gravity sewer main and the 6" diameter sewer force main turn easterly at (MH #206) located approximately 2,250 feet south of Singleton Road intersection. From the topography MH #206 is the low spot of Calimesa Boulevard between Singleton Road and Cherry Valley Boulevard. The invert of MH #206 is 2264.54 feet. The depth of sewer main is approximately 10 feet. The MH #206 is proposed connection point if the slope works for offsite sewer main (See Figure 1 for reference). The vertical difference will be verified as the project goes.

We noticed there is an existing sewer in Calimesa Boulevard south of MH #206 to serve Calimesa Country Club (Trailer Park) located approximately 1,300 feet south of MH #206. However the size, slope and condition of said existing sewer are unknown. If said existing sewer has capacity, the connection point might be moved southerly to the MH in front of Trailer Park.

Based on the Draft Water Supply Assessment (DWSA) dated 10-8-2013, an 8-inch diameter gravity sewer main (minimum slope of 0.0040) has sufficient capacity to serve the project's 61 equivalent dwelling units (EDU).

CVAR_10908

Offsite Potable Water Pipeline

Per YVWD's Zone 12 Backbone Potable Water Pipelines exhibit dated 01/21/10, a 24" diameter water pipeline has been installed in Calimesa Boulevard from Singleton Road to approximately 2,700 feet southerly where the 24" diameter water pipe turns westerly crossing under the I-10 Freeway. The Connection is proposed at the angle point where the 24" diameter water pipeline turns. (See Figure 1 for reference).

Based on the Draft Water Supply Assessment (DWSA) dated 10-8-2013 and the latest building floor plans an 8-inch diameter water pipeline has sufficient capacity to serve 61 equivalent dwelling units (EDU). However the fire flow needed for the building will exceed the water pipeline capacity.

Considering an internal sprinkler system for the warehouse 4,000 gallon per minute (gpm) of fire flow with 4-hour duration will be required. The needed pipe size is 16-inch diameter with maximum velocity of 6.38 feet per second (fps).

The Shopoff Group (TSG) will process and get official conditions.

Offsite Non-Potable Water Facilities

No offsite non-potable facility is required at this time. However TSG will share the non-potable water facility costs upon agreement with YVWD.

Should you have any questions, please contact me at (951) 248-4329.

Sincerely,
ALBERT A. WEBB ASSOCIATES



Joseph Caldwell, P.E., QSD, QSP,
Director- Stormwater Engineering



Siming Zhang, P.E
Senior Engineer

Enclose: Figure 1 and Figure 2

Copy to:
Brent Anton, YVWD
Oscar Uranga, TSG
Brian Rupp, TSG

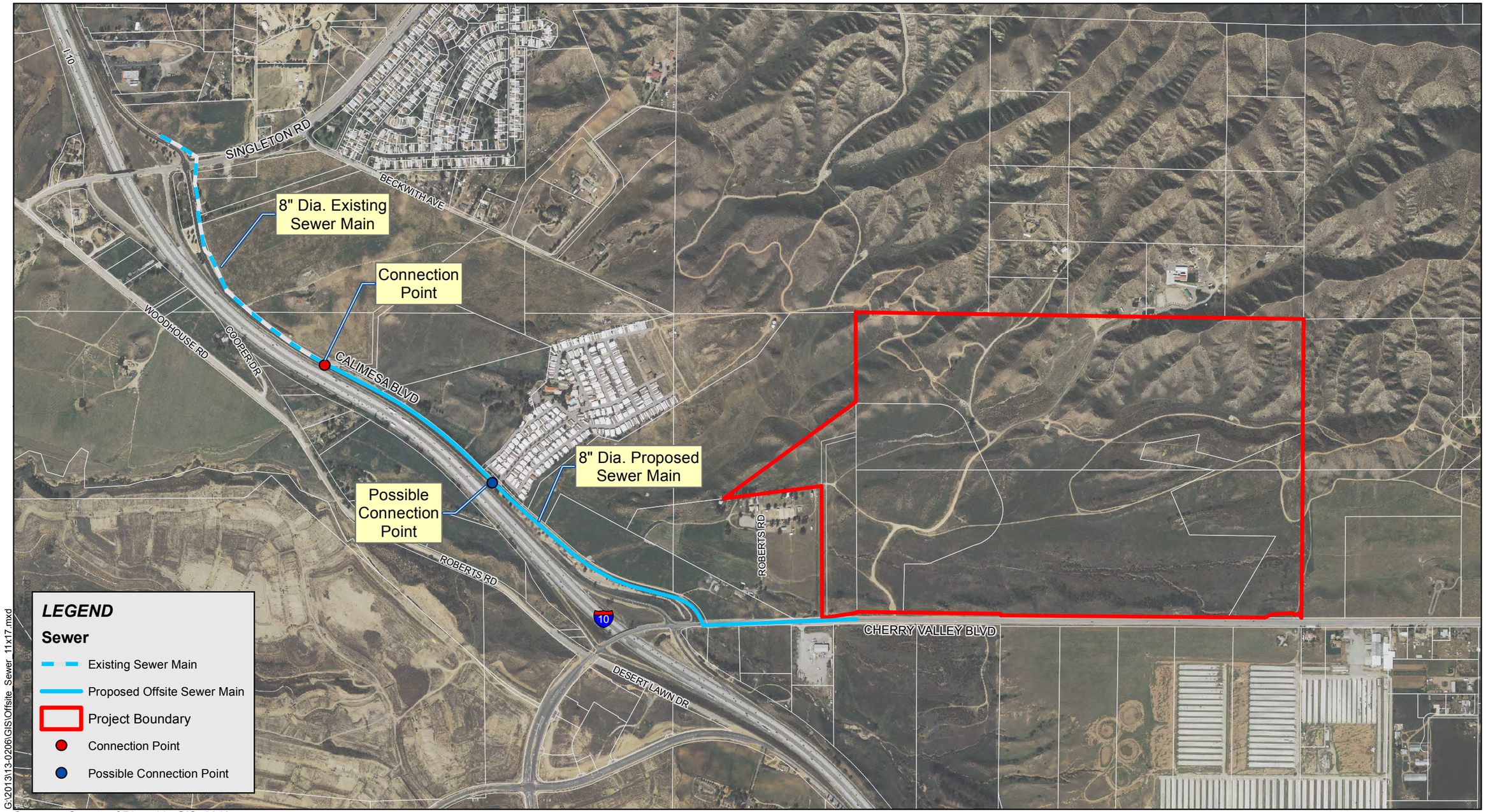
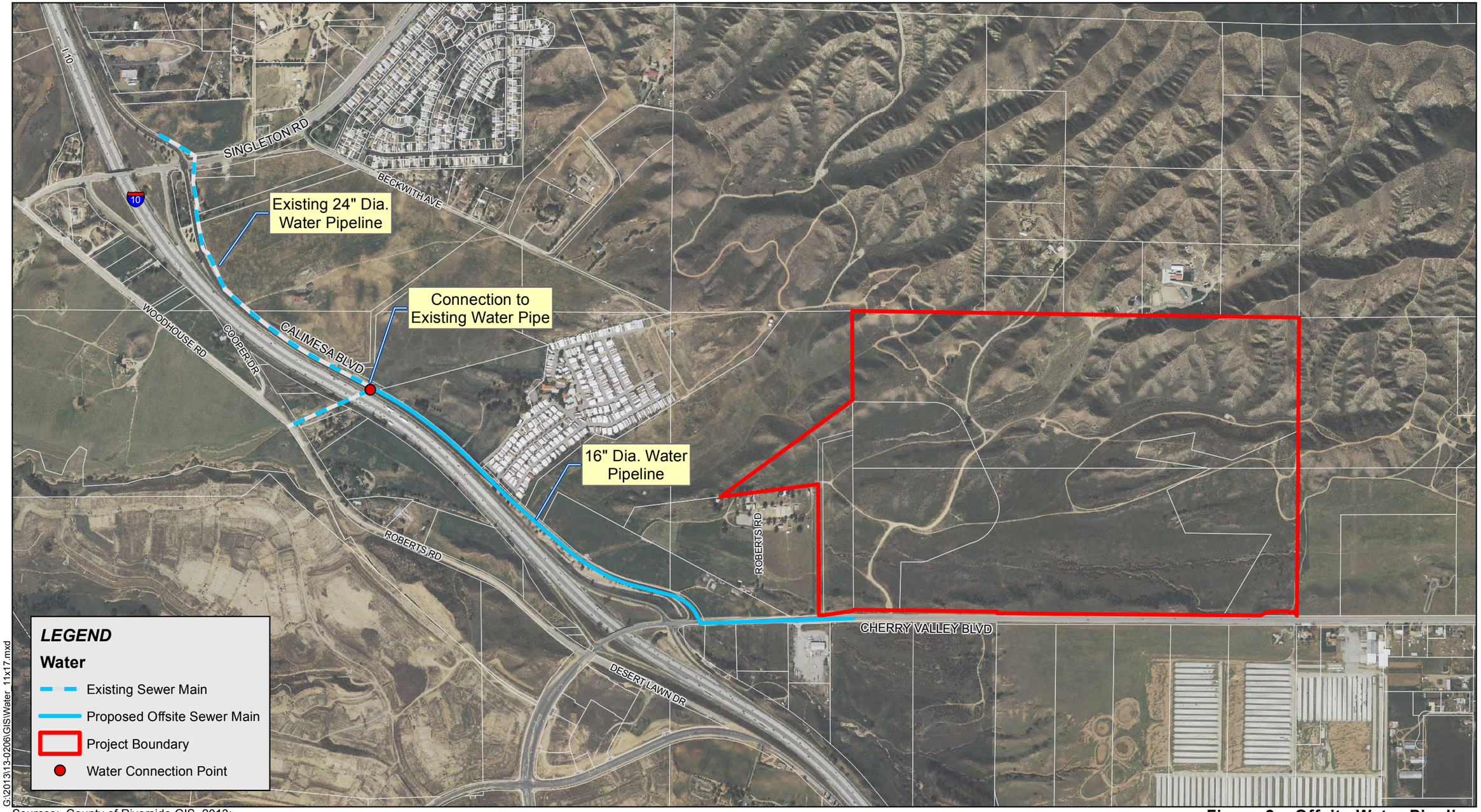


Figure 1 – Offsite Sewer Main
The Shopoff Group
Cherry Valley Gateway

Albert A. WEBB Associates

CVAR_10910



Sources: County of Riverside GIS, 2013;
Eagle Aerial, March 2012.

0 500 1,000 1,500 2,000 Feet

N W WEBB E S

Figure 2 – Offsite Water Pipeline
The Shopoff Group
Cherry Valley Gateway

Appendix H: Noise

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Noise Impact Analysis
San Gorgonio Crossing
Riverside County, California

Prepared for:
Shopoff Realty Investments, L.P.
2 Park Plaza, Suite 700
Irvine, CA 92614

Contact: Oscar Uranga, PMP – Assistant Project Manager

Prepared by:
FirstCarbon Solutions
621 E. Carnegie Drive, Suite 100
San Bernardino, CA 92408
909.884.2255

Contact: Philip Ault, Noise & Air Quality Scientist

Report Date: June 1, 2015

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LIST OF ACRONYMS AND ABBREVIATIONS

ADT	average daily traffic
ANSI	American National Standards Institute
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
FCS	FirstCarbon Solutions
dB	decibel
dBA	A-weighted decibel
dBA/DD	A-weighted decibel per each doubling of distance
DOT	Department of Transportation
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
Hz	Hertz
L_{dn}	Day-Night Average Sound Level
L_{eq}	Equivalent Sound Level
L_{max}	Maximum Noise Level
L_{min}	Minimum Noise Level
LV	Vibration Level
OSHA	Occupational Safety and Health Administration
PPV	peak particle velocity
rms	root mean square
SEL	Single Event Level
sq ft	square feet
VdB	LV at 1 micro inch per second

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SECTION 1: INTRODUCTION

1.1 - Purpose of Analysis and Study Objectives

This Noise Impact Analysis was prepared by FirstCarbon Solutions (FCS) to evaluate the potential for construction and operational activities associated with the San Gorgonio Crossing (proposed project) to result in offsite and onsite noise impacts. The following is provided in this report:

- A description of the study area, project site, and proposed project.
- Information regarding the fundamentals of noise.
- Information regarding the fundamentals of vibration.
- A description of the local noise guidelines and standards.
- A description of the existing noise environment.
- An analysis of the potential short-term construction-related noise and vibration impacts from the proposed project.
- An analysis of long-term operations-related noise and vibration impacts from the proposed project.
- Mitigation measures to reduce impacts associated with the project.
- Evaluation of a Residential Alternative.

1.2 - Project Location and Study Area

The proposed project is located in Township 2 south, Range 1 west, Section 30, along the north side of Cherry Valley Boulevard and east of the Interstate 10 Freeway (I-10), between the Cities of Calimesa and Beaumont, and is primarily located in an unincorporated area of the County of Riverside, California (See Exhibit 1: Regional Location Map). Approximately 17 acres of the westernmost portion of the project is located within the City of Calimesa. Most of the land around the project site is vacant and in unincorporated areas of Riverside County (See Exhibit 2: Local Vicinity Map).

The proposed project site has regional access via Cherry Valley Boulevard to the I-10 Freeway, and local access via Cherry Valley Boulevard, Brookside Avenue, and Oak Valley Parkway east, toward the unincorporated community of Cherry Valley and the City of Beaumont, and west toward the City of Calimesa.

1.3 - Proposed Project

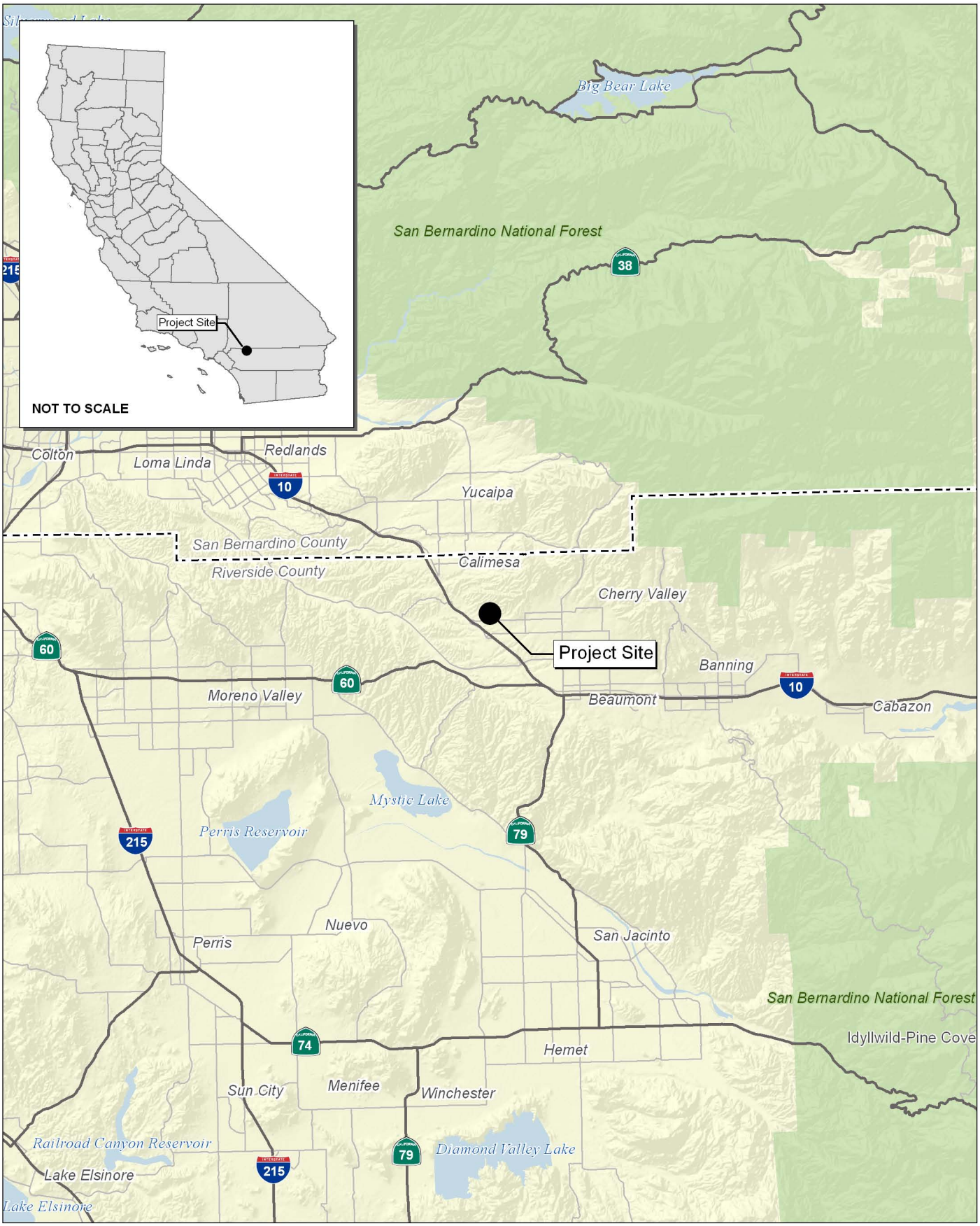
The proposed San Gorgonio Crossing Project site totals approximately 230 gross acres, of which approximately 155 acres would be included within the developed portion of the Project (Exhibit 3). The remaining approximate 75 acres would remain as natural open space (approximately 32 percent of the Project site). The Project consists of two (2) industrial buildings which will have sizes of approximately 811,000 square feet and 1,012,760 square feet for a total of approximately 1,823,760 square feet of floor area. The two industrial buildings would include 30,000 square feet of office space.

1.4 - Existing Land Use and Sensitive Receptors

The State of California defines sensitive receptors as those land uses that require serenity or are otherwise adversely affected by noise events or conditions. Schools, libraries, churches, hospitals, and residential uses make up the majority of these areas.

The project site is bordered by the City of Calimesa to the west and northwest. The areas to the south, east, and the north of the project site are within unincorporated Riverside County. The area to the northeast, north, and northwest of the site primarily consists of rolling hills with a few scattered rural residences. Most of the surrounding area is currently in a predominantly undeveloped state. A mobile-home park (Rancho Calimesa) is located approximately 0.26 miles west of the site, off Calimesa Boulevard. The I-10 Freeway is located approximately 0.35 mile southwest of the project site. Land to the south consists of scattered vacant parcels, a truck services business, and the inactive Sunny Cal Egg Ranch. The Sunny Cal Egg Ranch site has been approved as a planned community development that would comprise approximately 560 residential units at buildout. East of the project site is a mix of properties used for agriculture purposes and large-lot, rural single-family development.

Additional uses in the vicinity of the project site include a residential neighborhood east of the I-10 Freeway, directly south of Brookside Avenue, and north of the Oak Valley Golf Club. In addition, the PGA Golf Course and several developing residential neighborhoods, as well as the approved Oak Valley Specific Plan (approximately 4,000 residential units), are located across the I-10 Freeway, to the west.



Source: Census 2000 Data, The CaSIL, MBA GIS 2013.

NORTH

5 2.5 0 5 Miles

Michael Brandman Associates

Exhibit 1
Regional Location Map

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TSG CHERRY VALLEY LP • I-10 GATEWAY CENTER
NOISE ANALYSIS REPORT
CVAR_10922

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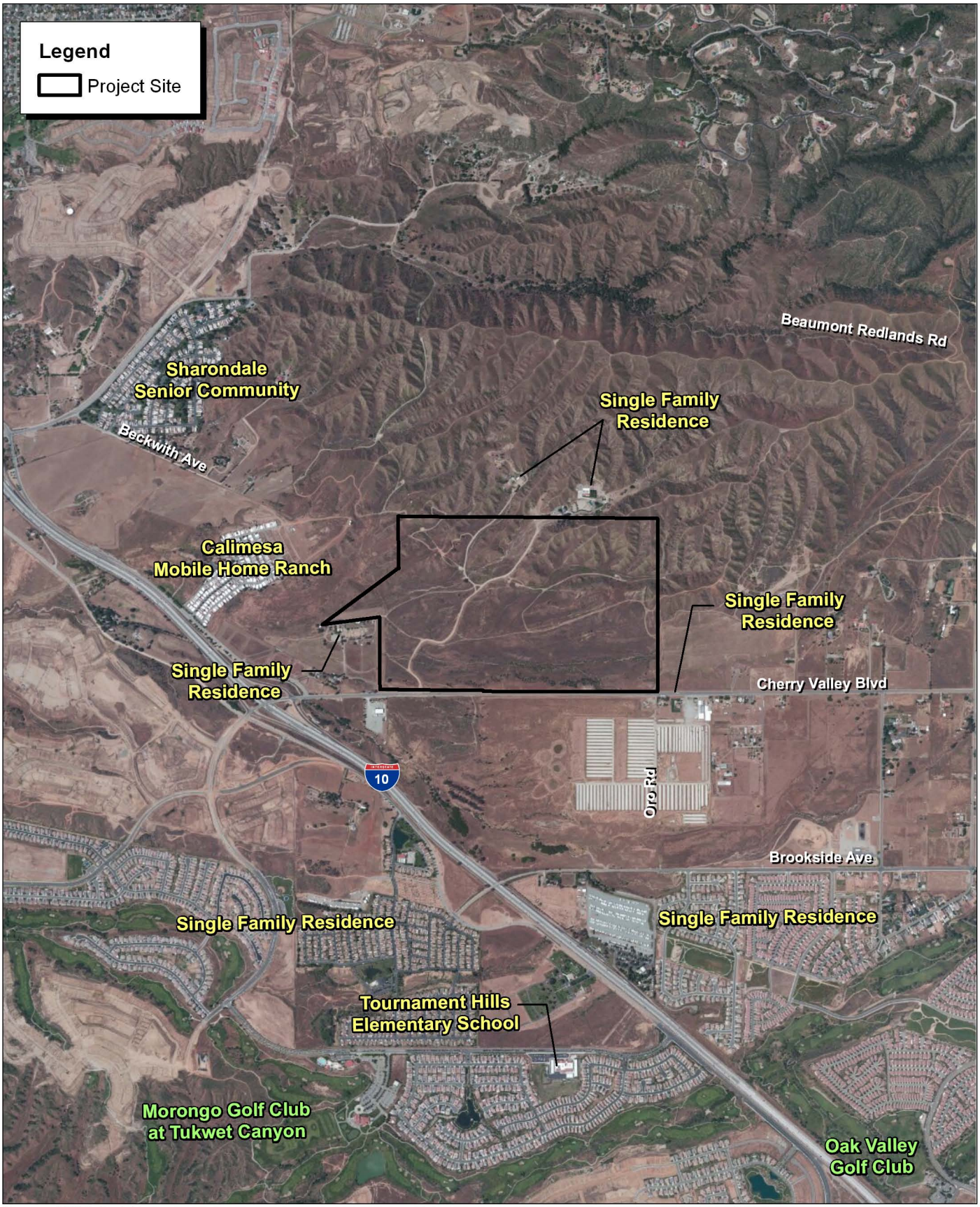

Source: ESRI Aerial Imagery.

NORTH

2,000 1,000 0 2,000

Feet

Michael Brandman Associates

Exhibit 2
Local Vicinity Map
Aerial Base

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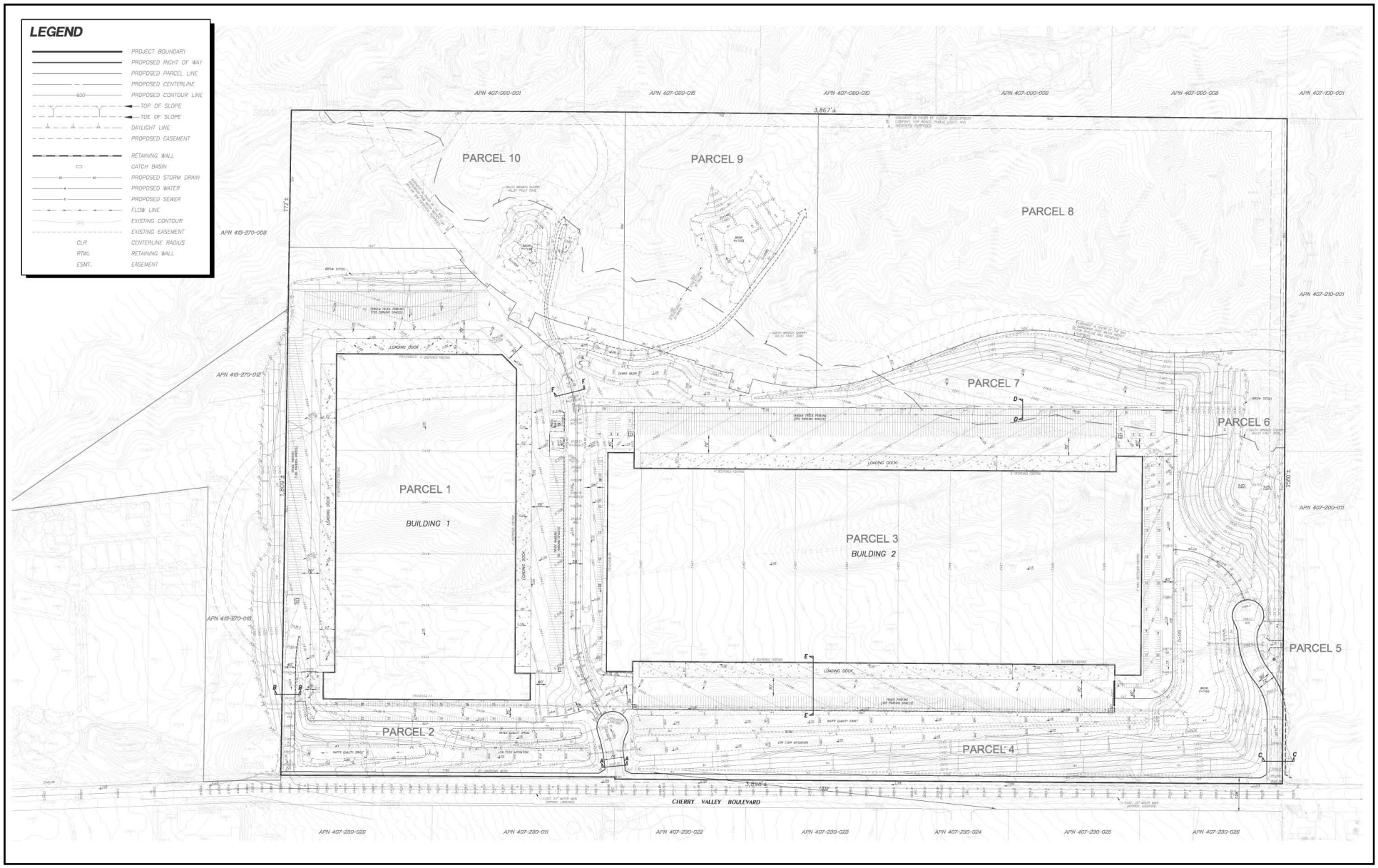

Source: Hunsaker & Associates, February 2013.

NORTH

Michael Brandman Associates

34260005 • 06/2013 | 3_proposed_project_site_plan.cdr

Exhibit 3
Proposed Project (Site Plan)

TSG CHERRY VALLEY LP • I-10 GATEWAY CENTER
NOISE ANALYSIS REPORT

CVAR_10926

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SECTION 2: NOISE AND VIBRATION FUNDAMENTALS

2.1 - Characteristics of Noise

Noise is defined as unwanted sound. Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Sound is produced by the vibration of sound pressure waves in the air. Sound pressure levels are used to measure the intensity of sound and are described in terms of decibels. The decibel (dB) is a logarithmic unit, which expresses the ratio of the sound pressure level being measured to a standard reference level. The 0 point on the dB scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Changes of 3 dB or less are only perceptible in laboratory environments. Audible increases in noise levels generally refer to a change of 3 dB or more, as this level has been found to be barely perceptible to the human ear in outdoor environments. Only audible changes in existing ambient or background noise levels are considered potentially significant.

A-weighted decibels (dBA) approximate the subjective response of the human ear to a broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies that are audible to the human ear.

Because decibels are logarithmic units they cannot be added or subtracted by ordinary arithmetic means. For example, if one noise source produces a noise level of 70 dB, the addition of another noise source with the same noise level would not produce 140 dB; rather, they would combine to produce a noise level of 73 dB.

2.1.1 - Noise Descriptors

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. Equivalent continuous sound level (L_{eq}) is the total sound energy of time-varying noise over a sample period. However, the predominant rating scales for human communities in the State of California are the L_{eq} and community noise equivalent level (CNEL) or the day-night average level (L_{dn}) based on A-weighted decibels (dBA). CNEL is the time-varying noise over a 24-hour period, with a 5 dBA weighting factor applied to the hourly L_{eq} for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and a 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale but without the adjustment for events occurring during the evening hours. CNEL and L_{dn} are within one dBA of each other and are normally exchangeable. The noise adjustments are added to the noise events occurring during the more sensitive hours.

Other noise rating scales of importance when assessing the annoyance factor include the maximum noise level (L_{max}), which is the highest exponential time-averaged sound level that occurs during a stated time period. The noise environments discussed in this analysis are specified in terms of maximum levels denoted by L_{max} for short-term noise impacts. L_{max} reflects peak operating conditions and addresses the annoying aspects of intermittent noise.

2.1.2 - Tone Noise

A pure tone noise is a noise produced at a single frequency and laboratory tests have shown the humans are more perceptible to changes in noise levels of a pure tone (Caltrans 1998). For a noise source to contain a "pure tone," there must be a significantly higher A-weighted sound energy in a given frequency band than in the neighboring bands, thereby causing the noise source to "stand out" against other noise sources. A pure tone occurs if the sound pressure level in the one-third octave band with the tone exceeds the average of the sound pressure levels of the two contagious one-third octave bands by: 5 dB for center frequencies of 500 Hertz (Hz) and above; by 8 dB for center frequencies between 160 and 400 Hz; and by 15 dB for center frequencies of 125 Hz or less.

2.1.3 - Noise Propagation

From the noise source to the receiver, noise changes both in level and frequency spectrum. The most obvious is the decrease in noise as the distance from the source increases. The manner in which noise reduces with distance depends on whether the source is a point or line source as well as ground absorption, atmospheric effects and refraction, and shielding by natural and manmade features. Sound from point sources, such as an air conditioning condenser, a piece of construction equipment, or an idling truck, radiates uniformly outward as it travels away from the source in a spherical pattern.

The attenuation or sound drop-off rate is dependent on the conditions of the land between the noise source and receiver. To account for this ground-effect attenuation (absorption), two types of site conditions are commonly used in noise models: soft-site and hard-site conditions. Soft-site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. For point sources, a drop-off rate of 7.5 dBA per each doubling of the distance (dBA/DD) is typically observed over soft ground with landscaping, as compared with a 6 dBA/DD drop-off rate over hard ground such as asphalt, concrete, stone and very hard packed earth. For line sources, such as traffic noise on a roadway, a 4.5 dBA/DD is typically observed for soft-site conditions compared to the 3 dBA/DD drop-off rate for hard-site conditions.

2.1.4 - Traffic Noise

The level of traffic noise depends on the three primary factors: (1) the volume of the traffic, (2) the speed of the traffic, and (3) the number of trucks in the flow of traffic. Generally, the loudness of traffic noise is increased by heavier traffic volumes, higher speeds, and greater number of trucks. Vehicle noise is a combination of the noise produced by the engine, exhaust, and tires. Because of the logarithmic nature of noise levels, a doubling of the traffic volume (assuming that the speed and truck mix do not change) results in a noise level increase of 3 dBA. Based on the Federal Highway Administration (FHWA) community noise assessment criteria, this change is "barely perceptible;" for reference a doubling of perceived noise levels would require an increase of approximately 10 dBA. The truck mix on a given roadway also has an effect on community noise levels. As the number of heavy trucks increases and becomes a larger percentage of the vehicle mix, adjacent noise levels increase.

2.1.5 - Stationary Noise

A stationary noise producer is any entity in a fixed location that emits noise. Examples of stationary noise sources include machinery, engines, energy production, and other mechanical or powered equipment and activities such as loading and unloading or public assembly that may occur at commercial, industrial, manufacturing, or institutional facilities. Furthermore, while noise generated by the use of motor vehicles over public roads is preempted from local regulation, the County considers the use of these vehicles to be a stationary noise source when operated on private property such as at a truck terminal or warehousing facility. The emitted noise from the producer can be mitigated to acceptable levels either at the source or on the adjacent property through the use of proper planning, setbacks, blockwalls, acoustic-rated windows, dense landscaping, or by changing the location of the noise producer.

The effects of stationary noise depend on factors such as characteristics of the equipment and operations, distance and pathway between the generator and receptor, and weather. Stationary noise sources may be regulated at the point of manufacture (e.g., equipment or engines), with limitations on the hours of operation, or with provision of intervening structures, barriers or topography.

Construction activities are a common source of stationary noise. Construction-period noise levels are higher than background ambient noise levels but eventually cease once construction is complete. Construction is performed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on each construction site and, therefore, would change the noise levels as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction related noise ranges to be categorized by work phase. Table 1 shows typical noise levels of construction equipment as measured at a distance of 50 feet from the operating equipment.

Table 1: Typical Construction Equipment Maximum Noise Levels, L_{max}

Type of Equipment	Impact Device? (Yes/No)	Specification Maximum Sound Levels for Analysis (dBA at 50 feet)
Impact Pile Driver	Yes	95
Auger Drill Rig	No	85
Vibratory Pile Driver	No	95
Jackhammers	Yes	85
Pneumatic Tools	No	85
Pumps	No	77
Scrapers	No	85
Cranes	No	85
Portable Generators	No	82

Table 1 (cont.): Typical Construction Equipment Maximum Noise Levels, L_{max}

Type of Equipment	Impact Device? (Yes/No)	Specification Maximum Sound Levels for Analysis (dBA at 50 feet)
Rollers	No	85
Dozers	No	85
Tractors	No	84
Front-End Loaders	No	80
Backhoe	No	80
Excavators	No	85
Graders	No	85
Air Compressors	No	80
Dump Truck	No	84
Concrete Mixer Truck	No	85
Pickup Truck	No	55
Source: FHWA, 2006. Highway Construction Noise Handbook, August.		

2.2 - Characteristics of Vibration

Groundborne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. The effects of groundborne vibrations typically only cause a nuisance to people, but in extreme cases, excessive groundborne vibration has the potential to cause structural damage to buildings. Although groundborne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. Groundborne noise is an effect of groundborne vibration and only exists indoors, since it is produced from noise radiated from the motion of the walls and floors of a room and may consist of the rattling of windows or dishes on shelves.

2.2.1 - Vibration Descriptors

Several different methods are used to quantify vibration amplitude such as the maximum instantaneous peak in the vibrations velocity, which is known as the peak particle velocity (PPV) or the root mean square (rms) amplitude of the vibration velocity. Because of the typically small amplitudes of vibrations, vibration velocity is often expressed in decibels, is denoted as L_v, and is based on the reference quantity of 1 micro inch per second. To distinguish vibration levels from noise levels, the unit is written as "VdB."

2.2.2 - Vibration Perception

Although groundborne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. When assessing

annoyance from groundborne vibration, vibration is typically expressed as root mean square (rms) velocity in units of decibels of 1 micro-inch per second, with the unit written in Vdb. Typically, developed areas are continuously affected by vibration velocities of 50 VdB or lower. Human perception to vibration starts at levels as low as 67 VdB. Annoyance due to vibration in residential settings starts at approximately 70 VdB.

2.2.3 - Vibration Sources

Offsite sources that may produce perceptible vibrations are usually caused by construction equipment, steel-wheeled trains, and traffic on rough roads, while smooth roads rarely produce perceptible groundborne noise or vibration. Construction activities, such as blasting, pile driving and operating heavy earthmoving equipment, are common sources of groundborne vibration. Construction vibration impacts on building structures are generally assessed in terms of peak particle velocity (PPV). Typical vibration source levels from construction equipment are shown in Table 2.

Table 2: Vibration Levels of Construction Equipment

Construction Equipment	PPV at 25 Feet (inches/second)	RMS Velocity in Decibels (VdB) at 25 Feet
Water Trucks	0.001	57
Scraper	0.002	58
Bulldozer – small	0.003	58
Jackhammer	0.035	79
Concrete Mixer	0.046	81
Concrete Pump	0.046	81
Paver	0.046	81
Pickup Truck	0.046	81
Auger Drill Rig	0.051	82
Backhoe	0.051	82
Crane (Mobile)	0.051	82
Excavator	0.051	82
Grader	0.051	82
Loader	0.051	82
Loaded Trucks	0.076	86
Bulldozer - Large	0.089	87
Caisson drilling	0.089	87
Vibratory Roller (small)	0.101	88
Compactor	0.138	90
Clam shovel drop	0.202	94
Vibratory Roller (large)	0.210	94

Table 2 (cont.): Vibration Levels of Construction Equipment

Construction Equipment	PPV at 25 Feet (inches/second)	RMS Velocity in Decibels (VdB) at 25 Feet
Pile Driver (impact-typical)	0.644	104
Pile Driver (impact-upper range)	1.518	112
Note: Source: Compilation of scientific and academic literature, generated by FTA and FHWA.		

2.2.4 - Vibration Propagation

The propagation of groundborne vibration is not as simple to model as airborne noise. This is because noise in the air travels through a relatively uniform median, while groundborne vibrations travel through the earth, which may contain significant geological differences. Factors that influence groundborne vibration include the:

- Vibration source: type of activity or equipment, such as impact or mobile, and depth of vibration source;
- Vibration Path: soil type, rock layers, soil layering, depth to water table, and frost depth; and
- Vibration Receiver: foundation type, building construction, and acoustical absorption.

Among these factors that influence groundborne vibration, there are significant differences in the vibration characteristics when the source is underground compared to at the ground surface. In addition, soil conditions are known to have a strong influence on the levels of groundborne vibration. Among the most important factors are the stiffness and internal damping of the soil and the depth to bedrock. Vibration propagation is more efficient in stiff clay soils than in loose sandy soils, and shallow rock seems to concentrate the vibration energy close to the surface and can result in groundborne vibration problems at large distance from the source. Factors such as layering of the soil and depth to the water table can have significant effects on the propagation of groundborne vibration. Soft, loose, sandy soils tend to attenuate more vibration energy than hard, rocky materials. Vibration propagation through groundwater is more efficient than through sandy soils.

The vibration level (PPV) at a distance from a point source can generally be calculated using the vibration reference equation:

$$PPV = PPV_{ref} * (25/D)^n \text{ (in/sec)}$$

Where:

PPV_{ref} = reference measurement at 25 feet from vibration source
D = distance from equipment to the receptor
n = vibration attenuation rate through ground

According to Chapter 12 of the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment manual (2006), an "n" value of 1.5 is recommended to calculate vibration propagation through typical soil conditions.

SECTION 3: REGULATORY SETTING

Noise and vibration regulations are addressed through the efforts of various federal, state, and local government agencies. The agencies responsible for regulating noise are discussed below.

3.1 - Federal Regulations

The adverse impact of noise was officially recognized by the federal government in the Noise Control Act of 1972, which serves the three purposes listed below:

- Promulgating noise emission standards for interstate commerce.
- Assisting state and local abatement efforts.
- Promoting noise education and research.

The Federal Office of Noise Abatement and Control was initially tasked with implementing the Noise Control Act. However, the ONAC has since been eliminated, leaving the development of federal noise policies and programs to other federal agencies and interagency committees. For example, the Occupational Safety and Health Administration (OSHA) agency limits noise exposure of workers to 90 dB L_{eq} or less for 8 continuous hours or 105 dB L_{eq} or less for 1 continuous hour.

The Department of Transportation (DOT) assumed a significant role in noise control through its various operating agencies. The Federal Aviation Administration (FAA) regulates noise of aircraft and airports. Surface transportation system noise is regulated by a host of agencies, including the Federal Transit Administration (FTA). Transit noise is regulated by the federal Urban Mass Transit Administration, while freeways that are part of the interstate highway system are regulated by FHWA. Finally, the federal government actively advocates that local jurisdictions use their land use regulatory authority to arrange new development in such a way so that "noise sensitive" uses are either prohibited from being sited adjacent to a highway or, alternately that the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Since the federal government has preempted the setting of standards for noise levels that can be emitted by the transportation sources, the County of Riverside is restricted to regulating the noise generated by the transportation system through nuisance abatement ordinances and land use planning.

The Federal Transit Administration (FTA) has established industry accepted standards for vibration impact criteria and impact assessment. These guidelines are published in its *Transit Noise and Vibration Impact Assessment* document (FTA 2006). The FTA guidelines include thresholds for construction vibration impacts for various structural categories as shown in Table 3.

Table 3: Federal Transit Administration Construction Vibration Impact Criteria

Building Category	PPV (in/sec)	Approximate VdB
I. Reinforced – Concrete, Steel or Timber (no plaster)	0.5	102
II. Engineered Concrete and Masonry (no plaster)	0.3	98
III. Non Engineer Timber and Masonry Buildings	0.2	94
IV. Buildings Extremely Susceptible to Vibration Damage	0.12	90
Source: Federal Transit Administration, 2006. *Transit Noise and Vibration Impact Assessment*. May		

3.2 - State Regulations

Established in 1973, the California Department of Health Services Office of Noise Control was instrumental in developing regularity tools to control and abate noise for use by local agencies. One significant model is the "Land Use Compatibility for Community Noise Environments Matrix," which allows the local jurisdiction to delineate compatibility of sensitive uses with various incremental levels of noise (California Department of Health, Office of Noise Control 1976).

Title 24, Chapter 1, Article 4 of the California Administrative Code (California Noise Insulation Standards) requires noise insulation in new hotels, motels, apartment houses, and dwellings (other than single-family detached housing) that provides an annual average noise level of no more than 45 dBA CNEL. When such structures are located within a 60-dBA CNEL (or greater) exterior noise contour, an acoustical analysis is required to ensure that interior levels do not exceed the 45-dBA CNEL annual threshold. In addition, Title 21, Chapter 6, Article 1 of the California Administrative Code requires that all habitable rooms, hospitals, convalescent homes, and places of worship shall have an interior CNEL of 45 dB or less due to aircraft noise.

Government Code Section 65302 mandates that the legislative body of each county and city in California adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines published by the State Department of Health Services. The guidelines rank noise/land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable. The County of Riverside utilizes a version of these guidelines to evaluate potential noise/land use impacts.

The proposed project is also subject to review under the State of California Environmental Quality Act (CEQA). Appendix G of CEQA provides impact thresholds for potential noise and vibration impacts. The proposed project may result in a significant impact if it would result in any of the following conditions:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary increase in ambient noise levels in the project vicinity above levels existing without the project;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airstrip, expose people residing or working in the project area to excessive noise levels; and
- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

3.3 - Local Regulations

Riverside County and the City of Calimesa are the local agencies responsible for adopting and implementing policies as they relate to noise levels and the project's effect on surrounding land uses. Limits for construction noise and stationary noise sources are set forth in the Riverside County Code and the City of Calimesa Municipal Code and goals. Objectives and policies intended to guide land use planning decisions as they related to noise and vibration are provided in the County of Riverside General Plan Noise Element and the City of Calimesa General Plan Noise Element. Noise level limits and planning guidelines applicable to the proposed project are presented below.

3.3.1 - Riverside County Development Code

The generation of noise from one property to another is regulated in Riverside County by Ordinance 847, which establishes noise level limits based on land use categories. Private construction projects located within one-quarter of a mile from an inhabited dwelling, are exempt from these noise level limits provided that: construction does not occur between the hours of 6:00 p.m. and 6:00 a.m. during the months of June through September; or between the hours of 6:00 p.m. and 7:00 a.m. during the months of October through May.

If project construction occurs outside of these hours, construction activities will need to comply with the noise level limits that apply to the adjacent occupied properties. In this case, the site is surrounded by properties designated for very low-density residential development to the north, east and south; and properties designated for low density residential to the west, which lie within the City of Calimesa. For receiving residential land uses, noise level limits for activities occurring outside of the above listed hours must not exceed 55 dBA L_{max} between the hours of 6:00 p.m. and 10:00 p.m. The project is also prohibited from causing noise levels at receiving residential land uses that exceed 45 dBA L_{max} between the hours of 10:00 p.m. and 6:00 a.m. during the months of June through September, and between of 10:00 p.m. and 7:00 a.m. between the months of October through May.

Property maintenance, including, but not limited to, the operation of lawnmowers, leaf blowers, etc., is also exempt from Ordinance 847 provided such maintenance occurs between the hours of 7 a.m. and 8 p.m. Heating and air conditioning equipment; and safety, warning and alarm devices, including, but not limited to, house and car alarms, and other warning devices that are designed to protect the public health, safety, and welfare are also exempt from the ordinance.

3.3.2 - Riverside County General Plan Noise Element

The Riverside County General Plan Noise Element identifies noise impact criteria depending on the noise source. Impact criteria that apply to the proposed project include criteria for transportation noise impacts to noise sensitive land uses (e.g., an airport, freeway or arterial traffic noise in residential areas); and criteria that apply to stationary noise impacts to sensitive land uses (e.g. stationary noise impacting neighboring communities). The County of Riverside has also adopted noise criteria for land use planning purposes, as shown in Table 4. These criteria set outdoor noise level standards that are acceptable, conditionally acceptable, and unacceptable, for a variety of land uses. Transportation related noise as measured inside residential dwellings should not exceed 45 L_{dn} (or CNEL); and exterior noise levels due to transportation noise at a residential parcels should not exceed 65 L_{dn} (or CNEL). Industrial land uses are considered acceptable in noise environments with noise levels that reach up to 75 dBA CNEL and are considered conditionally acceptable in noise environments with noise levels that reach up to 80 dBA CNEL. The Environmental Impact Report prepared for the County of Riverside General Plan utilizes "an increase in long-term ambient noise by 5 dBA CNEL or more" to determine if the project would result in a substantial increase in long-term ambient noise levels. The County does not identify a threshold for temporary increases in noise.

Stationary Noise Sources

Noise levels at properties that contain a "habitable dwelling, hospital, school, library, or nursing home," must not exceed the following worst-case noise levels:

- 45 dBA L_{eq} (10-minute), between the hours of 10:00 p.m. and 7:00 a.m. (nighttime standard)
- 65 dBA L_{eq} (10-minute), between the hours of 7:00 a.m. and 10:00 p.m. (daytime standard)

Table 4: State of California Community Noise Exposure (dBA CNEL or L_{dn})

Land Use Category	55	60	65	70	75	80
Residential – Low-Density Single-Family, Duplex, and Mobile Homes						
Residential – Multi-Family						

Table 4 (cont.): State of California Community Noise Exposure (dBA CNEL or L_{dn})

Land Use Category	55	60	65	70	75	80
Transient Lodging – Hotels, Motels						
Schools, Libraries, Churches, Hospitals, Nursing Homes						
Auditoriums, Concert Halls, Amphitheaters						
Sports Arenas, Outdoor Spectator Sports						
Playgrounds, Neighborhood Parks						
Golf Courses, Riding Stables, Water Recreation, Cemeteries						
Office Buildings, Businesses, Commercial and Professional						
Industrial, Manufacturing, Utilities, Agriculture						

Table 4 (cont.): State of California Community Noise Exposure (dBA CNEL or L_{dn})

Land Use Category	55	60	65	70	75	80
Source: Governor's Office of Planning and Research. 2003. State of California General Plan Guidelines, Appendix C, Guidelines for the Preparation and Content of the Noise Element of the General Plan. October. Key:						
	Normally Acceptable: Specified land use is satisfactory based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.					
	Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice. Outdoor environment will seem noisy.					
	Normally Unacceptable: New construction and development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made with needed noise insulation features included in the design. Outdoor areas must be shielded.					
	Clearly Unacceptable: New construction or development should generally not be undertaken. Construction costs to make the indoor environment acceptable would be prohibitive and the outdoor environment would not be usable.					

3.3.3 - City of Calimesa Ordinance

Section 8.15.040 of the City of Calimesa Municipal Ordinance sets noise level limits for the emission of noise from one property to another. These limits vary depending on the zoning of the source property as well as the zoning of the affected properties. The project site is currently zoned Controlled Development Area (W-2) but is proposed to be rezoned to Industrial Park (I-P) as part of the proposed project. The adjacent property west of the site and land northwest of the site is located within the jurisdiction of the City of Calimesa are zoned Commercial Regional (CR) and Residential Low Medium (RLM) respectively. The noise level limits for each zoning district are presented in Table 5.

Table 5: City of Calimesa One-Hour Average Sound Level Limit

Zone	Applicable Limit One-Hour Average Sound Level (In dBA)	
R-1, R-T, R-2, R-R and S-P regulations with a density of five dwelling units or less per acre	7:00 a.m. to 10:00 p.m.	50
	10:00 p.m. to 7:00 a.m.	40
R-3, S-P and PRD regulations with a density of six or more dwelling units per acre	7:00 a.m. to 7:00 p.m.	55
	7:00 p.m. to 10:00 p.m.	50
	10:00 p.m. to 7:00 a.m.	45
C-P-S, C-P, C-O *Commercial Regional (CR) would fall into this zone*	7:00 a.m. to 7:00 p.m.	60
	7:00 p.m. to 10:00 p.m.	55
	10:00 p.m. to 7:00 a.m.	55

Table 5 (cont.): City of Calimesa One-Hour Average Sound Level Limit

Zone	Applicable Limit One-Hour Average Sound Level (In dBA)	
M *Light Industrial would fall into this zone*	7:00 a.m. to 10:00 p.m.	70
	10:00 p.m. to 7:00 a.m.	50
Note: Italic zones are from the recently updated City of Calimesa Land Use and Zoning Map, August 23,2010. They were added in the appropriate categories. Source: City of Calimesa Municipal Ordinance Section 8.15.040		

Ordinance 8.15.040(c) clarifies that when the source property and the receiver property are located in two different zoning districts, the noise level limit is equal to the arithmetic mean of the two standards. Therefore, the applicable noise level limit for project noise projected to land uses within the RLM zone is 45 dBA L_{eq} between the hours of 10:00 p.m. and 7:00 a.m. and 60 dBA L_{eq} between the hours of 7:00 a.m. and 10:00 p.m. and the applicable noise level limit for project noise projected to adjacent land zoned CR are is 52.5 dBA L_{eq} between the hours of 7:00 p.m. and 7:00 a.m. and 65 dBA L_{eq} between the hours of 7:00 a.m. and 7:00 p.m.

In order to reduce construction noise impacts, the City of Calimesa has adopted an ordinance that sets forth restrictions that apply to construction activities. With the exception of emergency work, Section 8.15.080 of the Ordinance prohibits any person, including the city, to operate any single or a combination of powered construction equipment at any construction site before 7:00 a.m. or after 7:00 p.m. It is also unlawful for any person, including the city, to operate any single or a combination of powered construction equipment at any construction site before 10:00 a.m. or after 5:00 p.m. on Saturdays and Sundays, January 1st, the last Monday in May, known as "Memorial Day," July 4th, the first Monday in September, Thanksgiving Day and December 25th. When January 1st, July 4th, or December 25th fall on a Sunday, operation any single or a combination of powered construction equipment at any construction site before 10:00 a.m. or after 5:00 p.m. on the following Monday is also prohibited.

Further, no such equipment, or a combination of equipment regardless of age or date of acquisition, shall be operated so as to cause noise at a level in excess of 75 dBA for more than eight hours during any 24-hour period when measured at or within the property lines of any property which is developed and used either in part or in whole for residential purposes. These sound levels shall be corrected for time duration as shown in Table 6.

Table 6: City of Calimesa Construction Noise Level Limits

Total Duration in 24 Hours	Decibel Level Allowance	Total Decibel Level
Up to 15 minutes	+15	90
Up to 30 minutes	+12	87
Up to 1 hour	+9	84
Up to 2 hours	+6	81
Up to 4 hours	+3	78
Up to 8 hours	0	75

3.3.4 - City of Calimesa General Plan Noise Element

The City of Calimesa General Plan Noise Element refers to noise/land use compatibility guidelines presented in the State Office of Noise Control "Guidelines for the Preparation and Content of Noise Elements of the General Plans." In reference to potential transportation noise to the proposed project, these guidelines state that industrial land uses are normally acceptable in environments with noise levels of up to 75 dBA CNEL/L_{dn} and conditionally acceptable in environments with noise levels of up to 80 dBA CNEL/L_{dn}.

Single family and mobile homes are considered to be normally acceptable in environments with noise levels of up to 60 dBA CNEL/L_{dn} and conditionally acceptable in environments with noise levels of up to 70 dBA CNEL/L_{dn}. Projects proposed in environments with noise levels that are considered to be conditionally acceptable must have a detailed analysis of the noise reduction requirements and include the necessary insulation features in the project design. Conventional construction, but with closed window and fresh air supply systems or air conditioning normally suffice.

The City of Calimesa has not established a threshold for what is considered to be a "substantial increase." Therefore, the County of Riverside's threshold will be used for the purposes of this analysis.

SECTION 4: EXISTING NOISE ENVIRONMENT

To determine the existing noise levels, five short-term noise measurements were taken at the project site and in the project vicinity. The following describes the measurement procedures, measurement locations, and the noise measurement results.

4.1 - Ambient Noise Levels

Five noise measurements were taken on the project site and in the site vicinity in order to obtain noise measurements of the current noise sources and to provide a baseline for any potential noise impacts that may be created by development of the proposed project. Field monitoring was conducted on May 30, 2013 between the hours of 10:30 a.m. and 11:45 a.m. The field survey noted that noise within the project area is generally characterized by highway and roadway traffic noise, light aircraft and birds.

Noise monitoring was performed using an Extech Model 407780 Type 2 integrating sound level meter. The Extech meter was programmed to record the sound pressure level at 1-second intervals for in A-weighted form. The sound level meter and microphone was mounted approximately five feet above the ground and equipped with a windscreen during all measurements. The sound level meter was calibrated before monitoring using an Extech calibrator, Model 407766. The noise level measurement equipment meets American National Standards Institute (ANSI) specifications for sound level meters (S1.4-1983 identified in Chapter 19.68.020.AA). At the start of the noise monitoring, the sky was clear with calm wind conditions ranging between 0 and 3 mph.

Noise measurement locations are shown in Exhibit 4. The results of the noise level measurements are provided in Table 7. Meter output sheets are included as Appendix B.

Table 7: Existing Noise Level Measurements

Site ID #	Description	L_{eq}	L_{min}	L_{max}
1	Northwest of the site east end of Calimesa Mobile Home Ranch	51.6	48.0	55.6
2	West of the site near single family home	68.2	52.9	83.7
3	North of the site near single family homes	46.3	41.4	51.8
4	Near Northwest corner of site	50.6	46.8	55.2
5	Southeast of the site near single family homes	68.8	43.1	85.4

Note:
The Site ID corresponds to locations shown in Exhibit 4.
Source: FirstCarbon Solutions 2013.

4.2 - Ambient Vibration Levels

Aside from seismic events, the greatest regular source of groundborne vibration at the project site and in the immediate vicinity is from heavy-duty vehicular travel on local roadways. Large trucks traveling at 55 miles per hour on a smooth roadway surface can generate groundborne vibration velocity levels of approximately 75 VdB at 25 feet, and these levels could reach up to approximately 80 VdB where trucks and buses pass over bumps in the road. In terms of PPV levels, a heavy-duty vehicle traveling at 55 miles per hour on a smooth roadway surface can result in a vibration level of approximately 0.04 inches per second at 25 feet.

4.3 - Existing Traffic Noise Levels

Existing traffic noise levels along selected roadway segments in the project vicinity were modeled using the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108). Site-specific information is entered, such as roadway traffic volumes, roadway active width, source-to-receiver distances, travel speed, noise source and receiver heights, and the percentages of automobiles, medium trucks, and heavy trucks that the traffic is made up of throughout the day, amongst other variables. The modeled average daily traffic (ADT) volumes were obtained by multiplying by a factor of ten the PM peak hour intersection traffic volumes from the Project-specific traffic study (Urban Crossroads 2014). The model inputs and outputs, including the 60 dBA, 65 dBA, and 70 dBA CNEL traffic noise contour distances, are provided in Appendix A of this report. A summary of the modeling results is shown in Table 8.

The modeling results show that traffic noise levels range up to 67 dBA CNEL at the southern limits of the Project site adjacent to Cherry Valley Boulevard. According to the County's land use compatibility guidelines, environments with noise levels of up to 70 dBA CNEL are considered "normally acceptable" for new office, business, and commercial land use development. For industrial, manufacturing, utilities, and agriculture land uses, environments with noise levels of up to 75 dBA CNEL are considered "normally acceptable."

Table 8: Existing Traffic Noise Levels

Roadway Segment	ADT	Center-line to 70 CNEL (feet)	Center-line to 65 CNEL (feet)	Center-line to 60 CNEL (feet)	CNEL (dBA) 50 feet from Centerline of Outermost Lane
Cherry Valley Boulevard - Calimesa Boulevard to Driveway 1	6,200	< 50	76	163	67.0
Cherry Valley Boulevard - Driveway 1 to Street 2	6,200	< 50	76	163	67.0
Cherry Valley Boulevard - Street 2 to Driveway 3	6,200	< 50	76	163	67.0
Cherry Valley Boulevard - Driveway 3 to Union Street	6,200	< 50	76	163	67.0
Cherry Valley Boulevard - Union Street to Nancy Street	5,000	< 50	< 50	101	63.9

Table 8 (cont.): Existing Traffic Noise Levels

Roadway Segment	ADT	Center-line to 70 CNEL (feet)	Center-line to 65 CNEL (feet)	Center-line to 60 CNEL (feet)	CNEL (dBA) 50 feet from Centerline of Outermost Lane
Cherry Valley Boulevard - Nancy Street to Beaumont Avenue	4,600	< 50	< 50	96	63.5
Union Street - South of Cherry Valley Boulevard	300	< 50	< 50	< 50	51.7
Nancy Street - South of Cherry Valley Boulevard	1,400	< 50	< 50	< 50	58.3
I-10 - north of Cherry Valley Boulevard interchange	6,800	79	151	315	68.7
I-10 - south of Cherry Valley Boulevard interchange	5,900	74	138	287	68.1
Note: ADT = Average Daily Traffic Source: FirstCarbon Solutions 2014.					

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Source: ESRI Aerial Imagery.

Michael Brandman Associates

NORTH

1,000 500 0 1,000

Feet

Exhibit 4
Noise Measurement Locations

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TSG CHERRY VALLEY LP • I-10 GATEWAY CENTER
NOISE ANALYSIS REPORT
CVAR_10946

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SECTION 5: PROJECT IMPACT ANALYSIS AND MITIGATION

5.1 - Construction Noise Impacts

Neither the City of Calimesa nor the County of Riverside have established a numerical threshold for what they consider a "substantial increase" in ambient noise levels for construction noise. The EIR prepared for the County of Riverside General Plan (2003) indicates that construction noise has the potential to significantly impact off-site sensitive receptors and that compliance with the County's noise ordinance construction hours would be required to reduce construction-related noise impacts to a less than significant level. The EIR also recommends several other measures to reduce construction noise impacts.

Project construction activities have the potential to cause short-term impacts to the rural single-family homes in the project area. Construction noise may also be audible at the Rancho Calimesa Mobile Home Ranch located west of the project site near the I-10 freeway.

Construction noise will vary depending on the construction process, type of equipment involved, location of the construction site with respect to sensitive receptors, the schedule proposed to carry out each task (e.g., hours and days of the week) and the duration of the construction work. Typical noise sources and noise levels associated with construction activities are shown in Table 1.

Both mobile and stationary construction equipment will be used on the site. Mobile equipment (e.g., loaders, graders, dozers) moves around a construction site performing tasks in a recurring manner. Stationary equipment (e.g., air compressor, generator, concrete saw) operates in a given location for an extended period of time to perform continuous or periodic operations.

The initial phase of project construction would involve mass grading which would be followed by fine grading, trenching, and paving activities. Construction of the proposed buildings would include building construction, architectural coatings application, and paving associated with buildings. The mass grading phase is widely recognized to be the loudest part of construction. Construction equipment that will be used during the mass grading phase will include scrapers, loaders backhoes, excavators, dozers, and trucks. Operational characteristics of this equipment when associated with mass grading are typified by short periods of full power operation followed by extended periods of operation at lower power, idling, or powered-off conditions. A typical cycle for these machines includes between 1 and 2 minutes of full power operation followed by 3 to 4 minutes of lower power. Blasting and the use of pile drivers are not anticipated.

A worst-case construction noise level was calculated using the Road Construction Noise Model (RCNM) provided by the FHWA. RCNM utilizes standard noise emission levels for many different types of equipment and includes utilization percentage, impact, and shielding parameters. The modeled scenario assumed the simultaneous use of some of the loudest types of heavy construction equipment, including two graders, one dozer and one scraper at reasonably expected distance from

each other. A 40 percent usage factor was assumed for each piece of equipment. Modeling output and modeling parameters and output are provided in Appendix C.

As shown in Table 9, project construction activities would result in temporary substantial increases in ambient noise levels at nearby sensitive receptors. These are worst-case noise levels that can be expected to lower at sensitive receptors as construction moves away from the property line. It should be noted that a ridgeline breaks the line of sight between the project site and the Calimesa Mobile Home Ranch and a deduction of 10 dBA was taken from construction noise calculations to take this intervening topography into consideration. Similarly, existing hills and ridgelines block the line of site from the homes north of the project site to the project, thus a deduction of 10 dBA was taken to account for this shielding. Potentially affected Sensitive Receptor locations are shown in Exhibit 2.

Table 9: Comparison of Existing Ambient and Construction Noise Levels

Sensitive Receptor[1]	Location - Distance/Direction from Site	Ambient Noise Level dBA L_{max}/L_{eq}	Construction Noise Level dBA L_{max}/L_{eq}	Temporary Increase due to Construction Noise dBA L_{max}/L_{eq}
East end of Mobile Home Ranch	City of Calimesa - 1500 feet northwest of nearest construction footprint	56/52$^{(NM1)}$	46[2]/47	0/0
Single family home	City of Calimesa - 850 feet west of nearest construction footprint	84/68$^{(NM2)}$	60/62	0/0
Single family home	County of Riverside - 1200 feet north of nearest construction footprint	52/46$^{(NM3)}$	47[2]/49	0/3
Single family home	County of Riverside - 1600 feet north of nearest construction footprint	52/46$^{(NM3)}$	45[2]/47	0/1
Single family home	City of Calimesa - 670 feet west of nearest construction footprint	55/51$^{(NM4)}$	63/64	8/13
Single family homes	County of Riverside - 110 feet to southeast of nearest project driveway construction area	85/69$^{(NM5)}$	78/78	0/9

Notes:
[1] Sensitive Receptor locations are shown in Exhibit 2.
[2] An extra 10 dB was deducted due to intervening topography.
NM = Noise Measurement Location

If construction does not occur between the hours of between the hours of 6:00 p.m. and 6:00 a.m. during the months of June through September; or between the hours of 6:00 p.m. and 7:00 a.m.

during the months of October through May it is exempt from the County of Riverside Noise Ordinance. As mentioned previously, Section 8.15.080 of the City of Calimesa Municipal Ordinance prohibits construction noise before 7:00 a.m. or after 7:00 p.m. Mondays through Fridays and before 10:00 a.m. or after 5:00 p.m. on Saturdays and Sundays, on holidays, and on the Monday following each holiday that falls on a Sunday. The City of Calimesa has also established noise level limits for construction activities (see Table 6). In this case, the applicable threshold is 75 dBA L_{eq} (8-hour).

The worst-case construction noise level expected at the City of Calimesa home located adjacent to the western project boundary is 64 dBA L_{eq}. This worst-case noise level is below the City's noise level limit for construction activities and can be expected to lower as construction moves away from the property line. In addition, such construction noise levels are unlikely to continue for eight continuous hours, because equipment would not remain operating all day at the nearest construction limits.

As shown in Table 9, construction activities would result in substantial temporary increases (an increase of more than 5 dBA) in ambient noise levels at the home within the City of Calimesa immediately west of the site when multiple pieces of heavy construction equipment operate simultaneously near the westernmost portion of the project site. Similarly, the closest home located southeast of the project site could experience a substantial temporary increase in noise levels when multiple pieces of heavy construction equipment operate simultaneously at the nearest project construction limits. To reduce this potential impact, the following mitigation measures would be implemented.

Level of Significance Before Mitigation

Potentially significant impact due to temporary substantial increase in noise levels.

The following mitigation measures are recommended to reduce construction noise impacts.

Mitigation Measures

MM NOI-1a During all project site excavation and grading on-site, construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards. This would result in an estimated 5 dBA reduction (perceived as half as loud) in equipment operational noise levels compared to operations without such devices.

MM NOI-1b Whenever feasible, the construction contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the project site. This would result in an estimated 5 dBA reduction (perceived as half as loud) in operational noise levels compared to operations with noise emitted toward a receptor.

MMNOI-1c The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise sensitive receptors nearest the project site during all project construction.

MNNOI-1d All on-site noise producing construction activities (including haul truck deliveries) shall be restricted to the hours from 7:00 a.m. to 7:00 p.m. Mondays through Fridays and 10:00 a.m. to 5:00 p.m. on Saturdays and Sundays, on holidays, and on the Monday following each holiday that falls on a Sunday. To the extent feasible, haul routes should not pass sensitive land uses or residential dwellings.

MNNOI-1e For the duration of construction activities, the construction manager shall serve as the disturbance coordinator, should noise levels become disruptive to local residents. The disturbance coordinator would determine the cause of the noise complaints (starting too early, bad muffler, etc.) and institute reasonable measures warranted to correct the problem. The construction manager shall conspicuously post a telephone number for the disturbance coordinator at all entrances to the construction site.

Level of Significance After Mitigation

Less than significant impact. Implementation of this multi-part mitigation measure would ensure compliance with the City's and County's construction noise ordinances, as well as would further reduce potential noise impacts, to the extent feasible, that could cause discomfort or annoyance for a reasonable person residing or working in the immediate project vicinity and would reduce construction noise operational noise levels to not result in a substantial increase in ambient noise levels at off-site sensitive land uses.

5.2 - Operational Noise Impacts

5.2.1 - Traffic Noise Impacts

A significant impact would occur if the Project would be exposed to noise levels of the City's "normally compatible" standard of 60 dBA CNEL for new residential land use development, or if the project would result in a substantial increase in traffic noise levels compared to noise levels existing without the project. The Environmental Impact Report prepared for the County of Riverside General Plan utilizes "an increase in long-term ambient noise by 5 dBA or more" to determine if the project would result in a substantial increase in long-term ambient noise levels.

Regional access to the project site will be provided by the I-10 Freeway via Cherry Valley Boulevard. Local access to the project site will be provided along Cherry Valley Boulevard via two driveways and one proposed public street. The public street will allow full-access and the driveways will allow right-in/right-out access only. There are single-family residential properties along Cherry Valley Boulevard, Nancy Street, and Union Street that may be affected by project generated traffic noise.

The FHWA highway traffic noise prediction model (FHWA RD-77-108) was used to evaluate traffic-related noise conditions in the vicinity of the Project site. Traffic data used in the model was obtained from the traffic impact analysis prepared by Urban Crossroads (2014). The resultant noise levels were weighed and summed over a 24-hour period in order to determine the CNEL values. The modeled average daily traffic (ADT) volumes were obtained by multiplying the PM peak hour intersection traffic volumes by a factor of ten. As a worst-case analysis, future roadway widening that is would occur with

implementation of the project was assumed for both without project and with project future conditions. The traffic noise modeling input and output files are included in Appendix A of this report. Table 10, Table 11, and Table 12 summarize the traffic noise modeling results for existing, cumulative (year 2017), and horizon (year 2035) traffic conditions, without and with the Project.

The highest traffic noise levels on segments of Cherry Valley Boulevard adjacent to the project site would occur under horizon (year 2035) traffic conditions with implementation of the project. Based on the traffic noise modeling results shown in Table 12, the Project site would be exposed to traffic noise levels ranging up to approximately 73.2 dBA CNEL at 50 feet from the centerline of the nearest travel lane of Cherry Valley Boulevard, under horizon (year 2035) plus Project traffic conditions. At the nearest façade of the proposed warehouse buildings, located approximately 465 feet from the centerline of Cherry Valley Boulevard, these traffic noise levels would attenuate to below 57 dBA CNEL.

According to the County's land use compatibility guidelines, environments with noise levels of up to 70 dBA CNEL are considered "normally acceptable" for new office, business, and commercial land use development. For industrial, manufacturing, utilities, and agriculture land uses, environments with noise levels of up to 75 dBA CNEL are considered "conditionally acceptable." Therefore, traffic noise impacts to the proposed project would be less than significant and no mitigation would be required.

Table 10: Existing without- and with-Project Modeled Roadway Noise Levels

Roadway Segment	Existing No Project ADT	Existing No Project (dBA) CNEL	Existing + Project ADT	Existing + Project (dBA) CNEL	Increase over Existing No Project (dBA)
Cherry Valley Boulevard - Calimesa Boulevard to Driveway 1	6,200	67.0	9,300	67.7	0.7
Cherry Valley Boulevard - Driveway 1 to Street 2	6,200	67.0	8,900	67.5	0.5
Cherry Valley Boulevard - Street 2 to Driveway 3	6,200	67.0	6,600	66.2	-0.8
Cherry Valley Boulevard - Driveway 3 to Union Street	6,200	67.0	6,500	66.1	-0.9
Cherry Valley Boulevard - Union Street to Nancy Street	5,000	63.9	5,200	64.0	0.1
Cherry Valley Boulevard - Nancy Street to Beaumont Avenue	4,600	63.5	4,800	63.7	0.2
Union Street - South of Cherry Valley Boulevard	300	51.7	400	52.9	1.2
Nancy Street - South of Cherry Valley Boulevard	1,400	58.3	1,400	58.3	0.0
I-10 - north of Cherry Valley Boulevard interchange	6,800	68.7	6,900	68.8	0.1
I-10 - south of Cherry Valley Boulevard interchange	5,900	68.1	6,000	68.2	0.1

Note: CNEL (dBA) as measured at 50 feet from the centerline of the outermost travel lane.
Source: FCS 2014.

Table 11: Cumulative (Year 2017) Modeled Roadway Noise Levels

Roadway Segment	Cumulative (2017) No Project ADT	Cumulative (2017) No Project (dBA) CNEL	Cumulative (2017) + Project ADT	Cumulative (2017) + Project (dBA) CNEL	Increase over Cumulative (2017) No Project (dBA)
Cherry Valley Boulevard - Calimesa Boulevard to Driveway 1	12,800	69.1	15,800	70.0	0.9
Cherry Valley Boulevard - Driveway 1 to Street 2	12,800	69.1	15,400	69.9	0.8
Cherry Valley Boulevard - Street 2 to Driveway 3	12,100	68.8	12,400	68.9	0.1
Cherry Valley Boulevard - Driveway 3 to Union Street	12,000	68.8	12,300	68.9	0.1
Cherry Valley Boulevard - Union Street to Nancy Street	7,300	65.5	7,500	65.6	0.1
Cherry Valley Boulevard - Nancy Street to Beaumont Avenue	6,200	64.8	6,400	64.9	0.1
Union Street - South of Cherry Valley Boulevard	800	55.9	900	56.4	0.5
Nancy Street - South of Cherry Valley Boulevard	800	55.9	800	55.9	0.0
I-10 - north of Cherry Valley Boulevard interchange	8,600	69.7	8,700	69.8	0.1
I-10 - south of Cherry Valley Boulevard interchange	7,100	68.9	7,200	69.0	0.1

Note: CNEL (dBA) as measured at 50 feet from the centerline of the outermost travel lane.
Source: FCS 2014.

Table 12: Horizon (Year 2035) Modeled Roadway Noise Levels

Roadway Segment	Horizon (2035) No Project ADT	Horizon (2035) No Project (dBA) CNEL	Horizon (2035) + Project ADT	Horizon (2035) + Project (dBA) CNEL	Increase over Horizon (2035) No Project (dBA)
Cherry Valley Boulevard – Calimesa Boulevard to Driveway 1	27,200	72.4	30,200	72.8	0.4
Cherry Valley Boulevard – Driveway 1 to Street 2	27,200	72.4	29,800	72.8	0.4
Cherry Valley Boulevard – Street 2 to Driveway 3	32,700	73.2	33,000	73.2	0.0

Table 12 (cont.): Horizon (Year 2035) Modeled Roadway Noise Levels

Roadway Segment	Horizon (2035) No Project ADT	Horizon (2035) No Project (dBA) CNEL	Horizon (2035) + Project ADT	Horizon (2035) + Project (dBA) CNEL	Increase over Horizon (2035) No Project (dBA)
Cherry Valley Boulevard – Driveway 3 to Union Street	32,700	73.2	33,000	73.2	0.0
Cherry Valley Boulevard – Union Street to Nancy Street	21,700	69.2	21,900	69.2	0.0
Cherry Valley Boulevard – Nancy Street to Beaumont Avenue	21,800	69.2	22,000	69.2	0.0
Union Street – South of Cherry Valley Boulevard	3,400	62.2	3,400	62.2	0.0
Nancy Street – South of Cherry Valley Boulevard	3,400	62.2	3,400	62.2	0.0
I-10 – north of Cherry Valley Boulevard interchange	20,800	73.6	20,900	73.6	0.0
I-10 – south of Cherry Valley Boulevard interchange	19,100	73.2	19,200	73.2	0.0

Note: CNEL (dBA) as measured at 50 feet from the centerline of the outermost travel lane.
Source: FirstCarbon Solutions 2014.

Modeling results also show that project generated vehicle noise on area-wide roadways would result in a maximum increase of up to 0.9 dBA in traffic noise levels with implementation of the project compared to traffic noise levels existing without the project. This highest increase would occur under cumulative (year 2017) plus Project traffic conditions. The County of Riverside considers a permanent increase of 5 dBA or greater to be a substantial increase. Therefore, an increase in 0.9 dBA is not considered substantial, and Project generated traffic noise would result in a less than significant impact on off-site sensitive receptors along area-wide roadways.

It should be noted that two roadway segments under Existing plus project conditions (as shown in Table 10) would experience an apparent decrease in traffic noise levels as measured at 50 feet from the centerline of the outermost travel lane. However, this apparent reduction only occurs because the existing plus project conditions assumes implementation of planned roadway improvements that would widen the portion of Cherry Valley Boulevard that is adjacent to the project site to a four-lane roadway. This improvement essentially moves traffic further away from the outermost travel lane, thus "reducing" the traffic noise levels measured at that distance. However, this reduction would not be distinguishable compared to existing conditions and should therefore be assumed to be equivalent to no increase.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

5.2.2 - Stationary Noise Impacts

Potential long-term on-site stationary noise impacts would be associated with operations at the proposed light industrial and warehouse land uses. The proposed project would generate noise from truck delivery, loading/unloading activities at the loading areas, and air conditioning systems. A brief discussion of the types of noise that can be expected to occur with project implementation is presented below.

Parking Lot Noise/Truck Loading and Unloading

Potential long-term on-site stationary noise impacts would be associated with operations at the proposed light industrial and warehouse land uses. The proposed project would generate noise from truck delivery, loading/unloading activities at the loading areas, and other noise-producing activities at the parking lot such as customers conversing, doors slamming, engine startup, and slow-moving vehicles. These activities are potential point sources of noise that could affect noise-sensitive receptors near the loading areas and parking lots, including single-family residences located to the west, north, east and southeast. Of these noise sources, noise from truck delivery loading/unloading would result in the highest noise levels at off-site sensitive receptors.

Representative parking activities, such as vehicles cruising at slow speeds, door slamming, cars starting, would generate approximately 60 dBA to 70 dBA L_{max} at 50 feet. Conversation between two persons at a distance of 3 to 5 feet apart would generate a noise level of 60 dBA L_{eq} at 5 feet, or approximately 40 dBA L_{eq} as measured at 50 feet.

Noise would also be generated by truck delivery, loading/unloading activities at the loading areas of the proposed warehouse facility. Typical noise levels from larger delivery truck loading and unloading activities can range from 75 dBA to 85 dBA L_{max} as measured at 50 feet. Typical truck unloading process takes an average of 15 to 20 minutes, typically generating noise levels of up to 60.4 dBA L_{eq} at a distance of 50 feet.

Loading and unloading areas associated with the project face the northern, western, and southern project property lines. The closest residential land use to the west of the project site is located approximately 870 feet from the closest Project truck bays and loading areas. At this distance, activity at the project's western truck bays of multiple trucks loading/unloading simultaneously could result in intermittent noise levels of up to 60 dBA L_{max} and a combined hourly average noise level of 58 dBA L_{eq10}.

The closest residence to the project's south facing loading area is located approximately 1,000 feet to the southeast across Cherry Valley Boulevard. At this distance, activity at the project's southern

truck bays of multiple trucks loading/unloading simultaneously could result in intermittent noise levels of up to 59 dBA L_{max} and a combined hourly average noise level of 52 dBA L_{eq10}.

Project operational noise associated with loading, loading and other parking lot noises would not be audible at the Rancho Calimesa Mobile Home Ranch or at the homes located north and east of the project site due to distance from the site and intervening topography. Noise associated with loading/unloading activities would potentially affect the residences located west and southeast of the project site. Project operational noise that can be expected at these residences are summarized in Table 13.

Table 13: Comparison of Existing Ambient and Maximum Operational Noise Levels

Sensitive Receptor[1]	Measured Ambient Noise Level (dBA L_{eq}	Operational Noise Level at Residential Façade	
		dBA L_{max}	dBA L_{eq}
Residential Property west of project site	52 (NM4)	60	58
Residential Property southeast of project site	69 (NM5)	59	52
Notes: Receptor locations are shown in Exhibit 2. NM = Noise Measurement Location			

The existing residence adjacent to the west of the project site is located within the City of Calimesa and zoned Commercial Regional (CR). As discussed previously, the applicable noise level limits for project operational noise projected to property zoned CR are is 52.5 dBA L_{eq} between the hours of 7:00 p.m. and 7:00 a.m. and 65 dBA L_{eq} between the hours of 7:00 a.m. and 7:00 p.m. As shown in Table 13, projected operational noise levels could range up to 58 dBA L_{eq} when multiple truck loading/unloading operations occur simultaneously at the nearest loading areas of the project site. These operations could, therefore, exceed the City's nighttime operational noise level standard unless mitigation is incorporated. Inclusion of loading bay doors equipped with sealed gaskets would be expected to reduce loading/unloading maximum operational noise levels by at least 15 dBA. This would effectively reduce loading/unloading operational noise levels to below a combined hourly average noise level of 43 dBA L_{eq}, meeting the City of Calimesa's nighttime operational noise standard of 52.5 dBA L_{eq}. With implementation of this measure, loading/unloading operational noise impacts would be reduced to less than significant.

The County of Riverside prohibits noise levels from exceeding 45 dBA L_{eq10}, between the hours of 10:00 PM and 7:00 AM (nighttime standard) and from exceeding 65 dBA L_{eq10} between the hours of 7:00 AM and 10:00 PM (daytime standard) at residential properties. These standards apply to operational noise projected to the homes located southeast of the site. These operations could, therefore, exceed the County's nighttime operational noise level standard unless mitigation is incorporated. Inclusion of loading bay doors equipped with sealed gaskets would be expected to reduce loading/unloading maximum operational noise levels by at least 15 dBA. This would effectively reduce loading/unloading operational noise levels to below a combined hourly average noise level of 37 dBA L_{eq10}, meeting the County of Riverside's nighttime operational noise standard of

45 dBA L_{eq10}. With implementation of this measure, loading/unloading operational noise impacts would be reduced to less than significant.

Heating, Ventilating, and Air Conditioning Equipment Noise

The proposed project would have rooftop heating, ventilating, and air conditioning (HVAC) equipment. Although no final design is available at this time for the type and location of the rooftop mechanical units, based on noise measurements conducted at a similar use, rooftop HVAC units generate noise levels of approximately 62 dBA L_{eq} at 50 feet and the roof edge (parapet) creates a noise barrier that reduces noise levels from rooftop HVAC units by an additional 3 to 5 dBA or more from ground floor receptors. The closest sensitive receptor to the west of the project site is the residence located approximately 880 feet from the nearest proposed building façade and an estimated 900 feet from the nearest possible location for proposed rooftop HVAC units. At this distance operational noise levels of the proposed HVAC units would attenuate to below 37 dBA L_{eq}. This is below the existing measured ambient noise level in the vicinity of this receptor, and well below the both the daytime and nighttime operational noise standard of the City of Calimesa.

Similarly, HVAC operational noise levels would result in noise levels below the County of Riversides daytime and nighttime operational noise standards. The closest receptor is the residence to the southwest located approximately 880 feet from the nearest proposed building façade and an estimated 900 feet from the nearest possible location for proposed rooftop HVAC units. At this distance operational noise levels of the proposed HVAC units would attenuate to below 37 dBA L_{eq}. This is below the existing measured ambient noise level in the vicinity of this receptor.

Therefore, noise from operation of proposed rooftop HVAC units would not result in violations of County of Riverside Code or City of Calimesa Municipal Ordinance and would result in a less than significant impact.

Level of Significance Before Mitigation

Potentially significant impact due to loading/unloading operational noise levels exceeding local nighttime operational noise level standards.

The following mitigation measures are recommended to reduce loading/unloading operational noise impacts.

Mitigation Measures

MM NOI-2 All project loading bays shall be equipped with sealed gasket bay doors. The project applicant shall ensure that these sealed gasket bay doors are strictly used for all nighttime loading/unloading operations. Inclusion of loading bay doors equipped with sealed gaskets would be expected to reduce loading/unloading maximum operational noise levels by at least 15 dBA. This would effectively reduce loading/unloading operational noise levels to below a combined hourly average noise level of 37 dBA L_{eq10}, meeting the County of Riverside's nighttime operational noise standard of 45 dBA L_{eq10}.

Level of Significance After Mitigation

Less than significant impact with mitigation measures incorporated.

5.3 - Groundborne Vibration Impacts

The County of Riverside, the City of Calimesa and the State of California have not adopted criteria or regulations for groundborne vibration or groundborne noise. Therefore, for purposes of this analysis, the annoyance and damage impact criteria of the FTA are utilized.

5.3.1 - Construction Vibration Impacts

Table 2 shows the PPV of some common construction equipment and haul trucks (loaded trucks). The most vibration-causing piece of equipment that will likely be used on-site is the vibratory roller. This machine can cause vibration strong enough to annoy people over 100 feet away. Due to the proximity of the homes located adjacent to the site to the west and southeast of the project site, construction activities may result in ground borne vibration that is annoying but is not expected to result in building damage. The annoyance would only occur during site grading and preparation activities within 100 feet of a home.

5.3.2 - Operational Vibration Impacts

Based on the data shown in Table 2, loaded trucks are not anticipated to exceed 0.076 in/sec peak particle velocity (PPV) at 25 feet. These vibration levels are below the normal perception level and well below the possible damage criteria thresholds. In addition, all off-site structures are located more than 25 feet from proposed project travel ways. Therefore, project operation vibration levels would not exceed groundborne noise or groundborne vibration thresholds presented above. Impacts associated with operational vibration would be considered less than significant.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation is required.

Level of Significance After Mitigation

Less than significant impact.

5.4 - CEQA (Appendix G) Thresholds Applicable to Airport Noise Impacts

The CEQA Guidelines state that the project may result in a significant noise impact if it would expose people residing or working in the project area to excessive aircraft noise levels (for a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airstrip); or, for a project within the vicinity of a private airstrip, if it would expose people residing or working in the project area to excessive aircraft noise levels.

There are no airports, private or public within two miles of the project site. The nearest airport is Banning Airport, which is, located over 9 miles southeast of the site. The project would not expose people residing or working in the area to excessive aircraft noise levels.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation is required.

Level of Significance After Mitigation

Less than significant impact.

SECTION 6: RESIDENTIAL ALTERNATIVE IMPACT ANALYSIS AND MITIGATION

6.1 - Construction Noise Impacts

Project-related construction noise levels were calculated for the residential alternative using the RCNM provided by the FHWA. The modeled scenario assumed the simultaneous use of some of the loudest types of heavy construction equipment, including two graders, one dozer, and one scraper at reasonably expected distance from each other. A 40 percent usage factor was assumed for each piece of equipment. Table 14 summarizes the construction noise modeling results at the closest sensitive receptors to the project site. Modeling output and modeling parameters are provided in Appendix C.

With implementation of the residential alternative, high density residential development would occur in the western portion of the project site, while medium density residential development would occur in the central portion, and very low density residential would occur in the northern portion of the project site. A riparian landscape would provide a setback from Cherry Valley Boulevard along the southern boundary of the project site.

Table 14: Comparison of Existing Ambient and Construction Noise Levels

Sensitive Receptor[1]	Location - Distance/Direction from Site	Ambient Noise Level dBA L_{max}/L_{eq}	Construction Noise Level dBA L_{max}/L_{eq}	Temporary Increase due to Construction Noise dBA L_{max}/L_{eq}
East end of Mobile Home Ranch	City of Calimesa - 1500 feet northwest of nearest construction footprint	56/52$^{(NM1)}$	50[2]/50	0/0
Single family home	City of Calimesa - 850 feet west of nearest construction footprint	84/68$^{(NM2)}$	63/63	0/0
Single family home	County of Riverside - 1200 feet north of nearest construction footprint	52/46$^{(NM3)}$	74/73	22/27
Single family home	County of Riverside - 1600 feet north of nearest construction footprint	52/46$^{(NM3)}$	68/67	16/21
Single family home	City of Calimesa - 670 feet west of nearest construction footprint	55/51$^{(NM4)}$	80/79	25/28
Single family homes	County of Riverside - 110 feet to southeast of nearest project driveway construction area	85/69$^{(NM5)}$	78/77	0/8

Table 14 (cont.): Comparison of Existing Ambient and Construction Noise Levels

Sensitive Receptor[1]	Location - Distance/Direction from Site	Ambient Noise Level dBA L_{max}/L_{eq}	Construction Noise Level dBA L_{max}/L_{eq}	Temporary Increase due to Construction Noise dBA L_{max}/L_{eq}
Notes: [1] Sensitive Receptor locations are shown in Exhibit 2. [2] An extra 10 dB was deducted due to intervening topography. NM = Noise Measurement Location				

As noted previously, the City of Calimesa has established noise level limits for construction activities at receiving land uses of 75 dBA L_{eq} (8-hour). As shown in Table 14, construction noise levels at off-site sensitive receptors could range up to levels above those that would be experienced under implementation of the warehouse alternative. This is primarily due to that fact that construction of proposed residential structures could occur closer to off-site sensitive receptors than the proposed construction footprint of the warehouse structures. Such noise levels would be expected to be shorter in duration as the time required to do site preparation for a single family home is substantially less than that required for construction of the proposed warehouse buildings. Therefore, overall construction impacts would be similar to those experienced under implementation of the warehouse alternative. However, construction noise levels at the nearest off-site residence in Calimesa, west of the project site, would experience noise levels in excess of the City's standard. Therefore, additional mitigation shall be implemented that would require installation of minimum 6-foot high temporary sound barriers along the project property line so as to block the line of sight from nearby residential land uses to the construction activity footprint, for any construction activity that would require use of heavy construction equipment within 800 feet of any residential structure within the City limits of Calimesa. These temporary sound barriers would reduce construction noise levels by a minimum of 5 dBA as measured at nearby sensitive receptors. This would effectively reduce worst-case construction noise levels shown in Table 14 to below the City's threshold of 75 dBA L_{eq}, which would reduce this impact to less than significant.

As shown in Table 14, construction activities with the residential alternative could result in substantial temporary increases of up to 25 dBA L_{max} and 28 dBA L_{eq} in ambient noise levels at sensitive receptors in the project vicinity. In particular, substantial temporary noise increases would be expected at four out of the six residences located nearest the project site when multiple pieces of heavy construction equipment operate simultaneously at the nearest project construction limits. To reduce this potential impacts, the mitigation measure NOI-1a through 1e, and NOI-2 would be implemented.

Level of Significance Before Mitigation

Potentially significant impact due to temporary substantial increase in noise levels.

Mitigation Measures

Implement MM NOI-1a through NOI-1e.

MM NOI-2 For any construction activity that would require use of heavy construction equipment within 800 feet of any residential structure within the City limits of Calimesa must place temporary sound barriers that are a minimum of 6 feet high along the project property line so as to block the line of sight from such nearby residential land uses to the construction activity footprint. These temporary sound barriers would reduce construction noise levels by a minimum of 5 dBA as measured at nearby sensitive receptors. This would effectively reduce worst-case construction noise levels shown in Table 14 to below the City's threshold of 75 dBA L_{eq}

Level of Significance After Mitigation

Less than significant impact. Implementation of multi-part MM NOI1a through NOI-1e and MM NOI-2 would ensure compliance of construction noise impacts associated with the residential alternative with the City's and County's construction noise ordinances, as well as would further reduce potential noise impacts, to the extent feasible, that could cause discomfort or annoyance for a reasonable person residing or working in the immediate project vicinity.

6.2 - Operational Noise Impacts

6.2.1 - Traffic Noise Impacts

A significant impact would occur if the residential alternative would be exposed to noise levels of the City's "normally compatible" standard of 60 dBA CNEL for new residential land use development, or if the alternative would result in a substantial increase in traffic noise levels compared to noise levels existing without the alternative. The Environmental Impact Report prepared for the County of Riverside General Plan utilizes "an increase in long-term ambient noise by 5 dBA or more" to determine if the project would result in a substantial increase in long-term ambient noise levels.

The FHWA highway traffic noise prediction model (FHWA RD-77-108) was again used to evaluate traffic-related noise conditions in the vicinity of the Project site that would result with implementation of the residential alternative. Traffic data used in the model was obtained from the traffic impact analysis prepared by Urban Crossroads (2014). The resultant noise levels were weighed and summed over a 24-hour period in order to determine the CNEL values. The modeled average daily traffic (ADT) volumes were obtained by multiplying the PM peak hour intersection traffic volumes by a factor of ten. As a worst-case analysis, future roadway widening that is would occur with implementation of the project was assumed for both without project and with project future conditions. The traffic noise modeling input and output files are included in Appendix A of this report. Table 15, Table 16, and Table 17 summarize the traffic noise modeling results for existing, cumulative (year 2017), and horizon (year 2035) traffic conditions, without and with the residential alternative.

The highest traffic noise levels on segments of Cherry Valley Boulevard adjacent to the project site would occur under horizon (year 2035) traffic conditions with implementation of the residential alternative. Based on the traffic noise modeling results shown in Table 17, the Project site would be exposed to traffic noise levels ranging up to approximately 73.9 dBA CNEL at 50 feet from the centerline of the nearest travel lane of Cherry Valley Boulevard, under horizon (year 2035) plus

residential alternative traffic conditions. At the nearest proposed residential property line, located approximately 200 feet from the centerline of Cherry Valley Boulevard (due to the proposed landscape buffer and riparian landscape setback), these traffic noise levels would attenuate to approximately 64 dBA CNEL.

Table 15: Existing without- and with-Residential Alternative Modeled Roadway Noise Levels

Roadway Segment	Existing No Project ADT	Existing No Project (dBA) CNEL	Existing + Alternative ADT	Existing + Alternative (dBA) CNEL	Increase over Existing No Project (dBA)
Cherry Valley Boulevard - Calimesa Boulevard to Driveway 1	6,200	67.0	12,600	69.0	2.0
Cherry Valley Boulevard - Driveway 1 to Street 2	6,200	67.0	12,400	68.9	1.9
Cherry Valley Boulevard - Street 2 to Driveway 3	6,200	67.0	7,600	66.8	-0.2
Cherry Valley Boulevard - Driveway 3 to Union Street	6,200	67.0	7,800	66.9	-0.1
Cherry Valley Boulevard - Union Street to Nancy Street	5,000	63.9	6,200	64.8	0.9
Cherry Valley Boulevard - Nancy Street to Beaumont Avenue	4,600	63.5	5,300	64.1	0.6
Union Street - South of Cherry Valley Boulevard	300	51.7	700	55.3	3.6
Nancy Street - South of Cherry Valley Boulevard	1,400	58.3	1,800	59.4	1.1
I-10 - north of Cherry Valley Boulevard interchange	6,800	68.7	7,200	69.0	0.3
I-10 - south of Cherry Valley Boulevard interchange	5,900	68.1	6,000	68.2	0.1

Note: CNEL (dBA) as measured at 50 feet from the centerline of the outermost travel lane.
Source: FCS 2014.

Table 16: Cumulative (Year 2017) Residential Alternative Modeled Roadway Noise Levels

Roadway Segment	Cumulative (2017) No Project ADT	Cumulative (2017) No Project (dBA) CNEL	Cumulative (2017) + Alternative ADT	Cumulative (2017) + Alternative (dBA) CNEL	Increase over Cumulative (2017) No Project (dBA)
Cherry Valley Boulevard - Calimesa Boulevard to Driveway 1	12,000	68.8	18,300	70.6	1.8
Cherry Valley Boulevard - Driveway 1 to Street 2	12,200	68.9	18,400	70.7	1.8

Table 16 (cont.): Cumulative (Year 2017) Residential Alternative Modeled Roadway Noise Levels

Roadway Segment	Cumulative (2017) No Project ADT	Cumulative (2017) No Project (dBA) CNEL	Cumulative (2017) + Alternative ADT	Cumulative (2017) + Alternative (dBA) CNEL	Increase over Cumulative (2017) No Project (dBA)
Cherry Valley Boulevard - Street 2 to Driveway 3	12,900	69.1	14,200	69.5	0.4
Cherry Valley Boulevard - Driveway 3 to Union Street	12,800	69.1	14,400	69.6	0.5
Cherry Valley Boulevard - Union Street to Nancy Street	8,100	66.0	9,300	66.6	0.6
Cherry Valley Boulevard - Nancy Street to Beaumont Avenue	4,200	63.1	5,000	63.9	0.8
Union Street - South of Cherry Valley Boulevard	800	55.9	1,200	57.7	1.8
Nancy Street - South of Cherry Valley Boulevard	2,100	60.1	2,500	60.9	0.8
I-10 - north of Cherry Valley Boulevard interchange	8,400	69.6	8,800	69.8	0.2
I-10 - south of Cherry Valley Boulevard interchange	7,100	68.9	7,200	69.0	0.1

Note: CNEL (dBA) as measured at 50 feet from the centerline of the outermost travel lane.
Source: FCS 2014.

Table 17: Horizon (Year 2035) Residential Alternative Modeled Roadway Noise Levels

Roadway Segment	Horizon (2035) No Project ADT	Horizon (2035) No Project (dBA) CNEL	Horizon (2035) + Alternative ADT	Horizon (2035) + Alternative (dBA) CNEL	Increase over Horizon (2035) No Project (dBA)
Cherry Valley Boulevard – Calimesa Boulevard to Driveway 1	27,200	72.4	32,700	73.2	0.8
Cherry Valley Boulevard – Driveway 1 to Street 2	33,600	73.3	39,200	73.9	0.6
Cherry Valley Boulevard – Street 2 to Driveway 3	32,700	73.2	34,900	73.4	0.2
Cherry Valley Boulevard – Driveway 3 to Union Street	32,700	73.2	35,100	73.5	0.3

Table 17 (cont.): Horizon (Year 2035) Residential Alternative Modeled Roadway Noise Levels

Roadway Segment	Horizon (2035) No Project ADT	Horizon (2035) No Project (dBA) CNEL	Horizon (2035) + Alternative ADT	Horizon (2035) + Alternative (dBA) CNEL	Increase over Horizon (2035) No Project (dBA)
Cherry Valley Boulevard – Union Street to Nancy Street	21,700	69.2	23,700	69.6	0.4
Cherry Valley Boulevard – Nancy Street to Beaumont Avenue	21,800	69.2	23,400	69.5	0.3
Union Street – South of Cherry Valley Boulevard	3,400	62.2	3,800	62.7	0.5
Nancy Street – South of Cherry Valley Boulevard	2,800	61.4	3,200	61.9	0.5
I-10 – north of Cherry Valley Boulevard interchange	20,800	73.6	21,100	73.6	0.0
I-10 – south of Cherry Valley Boulevard interchange	19,100	73.2	19,200	73.2	0.0

Note: CNEL (dBA) as measured at 50 feet from the centerline of the outermost travel lane.
Source: FirstCarbon Solutions 2014.

According to the County's land use compatibility guidelines, environments with noise levels from 55 dBA up to 70 dBA CNEL are considered "conditionally acceptable" for new residential land use development. In such cases, new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, with closed windows and fresh air supply systems or air conditioning will normally suffice. Therefore, all proposed residences located within 350 feet of the centerline of Cherry Valley Boulevard must include a fresh air supply system or air conditioning that will permit windows to remain closed for prolonged periods of time.

Modeling results also show that project generated vehicle noise on area-wide roadways would result in a maximum increase of up to 3.6 dBA in traffic noise levels with implementation of the residential alternative compared to traffic noise levels existing without the project. This highest increase would occur under existing plus residential alternative traffic conditions along the segment of Union Street south of Cherry Valley Boulevard. The County of Riverside considers a permanent increase of 5 dBA or greater to be a substantial increase. Therefore, an increase in 3.6 dBA is not considered substantial, and residential alternative generated traffic noise would result in a less than significant impact on off-site sensitive receptors along area-wide roadways.

It should be noted that two roadway segments under Existing plus residential alternative conditions (as shown in Table 15) would experience an apparent decrease in traffic noise levels as measured at

50 feet from the centerline of the outermost travel lane. However, this apparent reduction only occurs because the existing plus residential alternative conditions assume the improvement of the portion of Cherry Valley Boulevard that is adjacent to the project site to a four lane roadway. This improvement essentially moves traffic further away from the outermost travel lane, thus "reducing" the traffic noise levels as measured at that distance. However, this reduction would not be distinguishable compared to existing conditions and should therefore be assumed to be equivalent to no increase.

Implementation of this alternative would result in overall slightly higher traffic noise levels than those that would be experienced under the proposed Project. For example, traffic noise levels under existing plus residential alternative conditions would range up to 55.3 dBA CNEL, an increase of up to 3.6 dBA along Union Street south of Cherry Valley Boulevard with implementation of the residential alternative. However, under the proposed Project, traffic noise levels along this segment under existing plus Project conditions would range up to 52.9 dBA CNEL, representing an increase of 1.2 dBA over conditions existing without the project. Therefore, traffic noise impacts associated with implementation of the residential alternative would be slightly higher than those that would be experienced with implementation of the proposed Project.

Level of Significance Before Mitigation

Potentially significant impact due to traffic noise levels with the residential alternative exceeding normally acceptable standards for new residential land use development.

Mitigation Measures

MM NOI-3 All residential units constructed within 350 feet of the centerline of Cherry Valley Boulevard must include a fresh air supply system or air conditioning that will permit windows to remain closed for prolonged periods of time. Standard residential construction with windows closed provides a minimum of 25 dBA in exterior to interior noise reduction, effectively reducing traffic noise levels to meet the interior noise level standard of 45 dBA CNEL.

Level of Significance After Mitigation

Less than significant impact.

6.2.2 - Stationary Noise Impacts

A brief discussion of the types of noise that can be expected to occur with implementation of the residential alternative is presented below.

Heating, Ventilating, and Air Conditioning Equipment Noise

The primary stationary noise source associated with new residential development is noise associated with heating, ventilating, and air conditioning (HVAC) equipment. Although no final design is available at this time for the type and location of outdoor mechanical ventilation units, typical reference noise levels for new residential mechanical ventilation systems (including air conditioning units) range from 50 dBA to 65 dBA L_{eq} at 10 feet. The closest sensitive receptor is the residence to the west of the project site located approximately 30 feet from the nearest project boundary and an

estimated 80 feet from the nearest possible location for new mechanical ventilation units. At this distance operational noise levels of the new mechanical ventilation systems would attenuate to below 47 dBA L_{eq}. This is below the existing measured ambient noise level in the vicinity of this receptor. These noise levels are also below both the daytime and nighttime operational noise standards of the City of Calimesa.

Similarly, new residential mechanical ventilation systems operational noise levels would result in noise levels below the County of Riversides daytime and nighttime operational noise standards. The closest receptor within the Count of Riverside is the residence to the north of the project site located approximately 135 feet from the nearest residential development project boundary and an estimated 185 feet from the nearest possible location for new residential mechanical ventilation systems. At this distance operational noise levels of the proposed HVAC units would attenuate to below 40 dBA L_{eq}. This is also below the existing measured ambient noise level in the vicinity of these nearest receptors.

Noise from operation of new mechanical ventilation systems associated with implementation of the residential alternative would not violate the operational noise standards of the County of Riverside Code or the City of Calimesa Municipal Ordinance, nor result in a substantial increase in ambient noise levels. Therefore, stationary noise source impacts associated with implementation of the residential alternative would result in a less than significant impact.

Noise levels from mechanical ventilation equipment would be slightly higher at off-site receptors under the residential alternative conditions compared to those under the proposed Project. This is primarily due to the assumption that mechanical equipment associated with the residential alternative would be located closer to the project borders than the rooftop mechanical equipment of the proposed Project. However, overall stationary noise levels of the proposed Project, including noise levels from parking lot noise and truck loading and unloading operations (ranging up to 58 dBA L_{eq} at the closest off-site receptor) would be higher than the overall stationary noise levels of the residential alternative (ranging up to 47 dBA L_{eq}).

6.3 - Groundborne Vibration Impacts

The County of Riverside, the City of Calimesa and the State of California have not adopted criteria or regulations for groundborne vibration or groundborne noise. Therefore, for purposes of this analysis, the annoyance and damage impact criteria of the FTA are utilized.

Implementation of the residential alternative would not result in any new permanent sources of groundborne vibration. In addition, there are no significant sources of existing groundborne vibration to which new sensitive residential development would be exposed. The only potential groundborne vibration impacts that could result from implementation of the residential alternative would be temporary impacts associated with operation of heavy construction equipment during the site preparation phase of construction.

Table 2 shows the PPV of common construction equipment and haul trucks (loaded trucks). The most vibration-causing piece of equipment that will likely be used on-site is the vibratory roller. This machine can produce groundborne vibration levels of up to 0.21 PPV at 25 feet. The closest off-site sensitive

receptor is located approximately 30 feet from the nearest project boundary and approximately 80 feet from the nearest project construction footprints where potential operation of such heavy construction equipment could occur. At this distance, groundborne vibration levels would attenuate to below 0.037 PPV, well below the potential damage criteria threshold for even the most sensitive type of structures. Therefore, implementation of the residential alternative would be expected to result in less than significant groundborne vibration impacts.

Overall construction vibration impacts for the residential alternative would be similar to those that would be experienced under the proposed Project as heavy construction equipment would operate along the project borders under both scenarios. However, operational vibration impacts of the residential alternative would be slightly lower than the proposed Project as it would not include the daily operation of large trucks passing on local roadways. However, as is shown in impact discussion section 5.3.2, all operational vibration impacts of the Project are found to be less than significant and no mitigation is required.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation is required.

Level of Significance After Mitigation

Less than significant impact.

6.4 - CEQA (Appendix G) Thresholds Applicable to Airport Noise Impacts

As previously discussed under the proposed warehouse alternative impact analysis, the CEQA Guidelines state that the project may result in a significant noise impact if it would expose people residing or working in the project area to excessive aircraft noise levels (for a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airstrip). An impact would also occur if, for a project within the vicinity of a private airstrip, it would expose people residing or working in the project area to excessive aircraft noise levels.

There are no airports, private or public within two miles of the project site. The nearest airport is Banning Airport, which is, located over 9 miles southeast of the site. The project would not expose people residing or working in the area to excessive aircraft noise levels.

While implementation of the residential alternative has the potential to introduce new sensitive receptors to existing aircraft noise levels (in contrast to the proposed Project), the fact that the nearest airport is located over 9 miles southeast of the project site reduces this potential impact to less than significant and no mitigation would be required.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation is required.

Level of Significance After Mitigation

Less than significant impact.

SECTION 7: REFERENCES

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Appendix A: Site Photos

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Photograph 1: Noise Measurement 1 - Eastern boundary of the Rancho Calimesa Mobile Home Ranch, west of the project site.



Photograph 2: Noise Measurement 2 - Northern side of Cherry Valley Boulevard, west of the project site.

Source: Michael Brandman Associates, 2013



Photograph 3: Noise Measurement 3: Roberts Road, north of the project site.



Photograph 4: Noise Measurement 5: Southern side of Cherry Valley Boulevard, south of the project site.

Source: Michael Brandman Associates, 2013

Appendix B:
Field Noise Measurement Data

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Noise Measurement Field Data

Michael Brandman Associates

Project Name: I-10 GATEWAY
Project #: 3426.0005

Receiver Name: _____ Technician: COLLIN RAMSEY
Date: 5/30/2013

Address: _____
Site Description: UNDEVELOPED; RUDERAL VEGETATION; SCRUB

Temperature: 75° Settings: (SLOW) FAST
Wind: 0-3 MPH Terrain: VARIED; FOOTHILLS
Weather: CLEAR

Primary Source: VEHICLE TRAFFIC ALONG I-10 & CVB;
Secondary Sources: NATURAL AMBIENT NOISE (BIRDS); AIR TRAFFIC

1	Start: 1026	End: 1036	Leq: 57.6	Lmax: 58.6	Other:	Lmin 48.0
2	Start: 1044	End: 1054	Leq: 68.2	Lmax: 83.7	Other:	Lmin 52.9
3	Start: 1102	End: 1112	Leq: 46.3	Lmax: 51.8	Other:	Lmin 41.4
4	Start: 1117	End: 1127	Leq: 50.6	Lmax: 55.2	Other:	Lmin 46.8

Additional Notes/Sketch

#5 1134-1144 LEQ 68.8 LMAX 85.4 LMIN 43.1

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MAX Value=55.6
MIN Value=48.0
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Appendix C:
Construction Noise Modeling Sheets

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Roadway Construction Noise Model (RCNM),Version 1.1

Report date:	12/15/2014															
Case Description:	San Gorgonio Crossing - Warehouse Alt															
				---- Receptor #1 ----												
		Baselines (dBA)														
Description	Land Use	Daytime	Evening	Night												
Calimesa Mobile Homes	Residential	55.5	55	45												
				Equipment												
				Spec	Actual	Receptor	Estimated									
		Impact		Lmax	Lmax	Distance	Shielding									
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)									
Grader		No	40	85		1500	10									
Grader		No	40	85		1550	10									
Dozer		No	40	85		1550	10									
Scraper		No	40	85		1600	10									
				Results												
		Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night		
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	
Grader		45.5	41.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Grader		45.2	41.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Dozer		45.2	41.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Scraper		44.9	40.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	Total	45.5	47.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		*Calculated Lmax is the Loudest value.														

				---- Receptor #2 ----											
		Baselines (dBA)													
Description	Land Use	Daytime	Evening	Night											
Single Family Residence	Residential	55	55	45											
				Equipment											
				Spec	Actual	Receptor	Estimated								
		Impact		Lmax	Lmax	Distance	Shielding								
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)								
Grader		No	40	85		850	0								
Grader		No	40	85		900	0								
Dozer		No	40	85		900	0								
Scraper		No	40	85		950	0								
				Results											
		Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader		60.4	56.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		59.9	55.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		59.9	55.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		59.4	55.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	60.4	62	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		*Calculated Lmax is the Loudest value.													

				---- Receptor #3 ----											
		Baselines (dBA)													
Description	Land Use	Daytime	Evening	Night											
Single Family Residence	Residential	55	55	45											
				Equipment											
				Spec	Actual	Receptor	Estimated								
		Impact		Lmax	Lmax	Distance	Shielding								
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)								
Grader		No	40	85		1200	10								
Grader		No	40	85		1250	10								
Dozer		No	40	85		1250	10								
Scraper		No	40	85		1300	10								
				Results											
		Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader		47.4	43.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		47	43.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		47	43.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		46.7	42.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	47.4	49.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		*Calculated Lmax is the Loudest value.													

				---- Receptor #4 ----											
		Baselines (dBA)													
Description	Land Use	Daytime	Evening	Night											
Single Family Residence	Residential	55	55	45											
				Equipment											
				Spec	Actual	Receptor	Estimated								
		Impact		Lmax	Lmax	Distance	Shielding								
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)								
Grader		No	40	85		1600	10								
Grader		No	40	85		1650	10								
Dozer		No	40	85		1650	10								
Scraper		No	40	85		1700	10								
				Results											
		Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader		44.9	40.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		44.6	40.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		44.6	40.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		44.4	40.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	44.9	46.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		*Calculated Lmax is the Loudest value.													

				---- Receptor #5 ----											
		Baselines (dBA)													
Description	Land Use	Daytime	Evening	Night											
Single Family Residence	Residential	55	55	45											
				Equipment											
				Spec	Actual	Receptor	Estimated								
		Impact		Lmax	Lmax	Distance	Shielding								
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)								
Grader		No	40	85		670	0								
Grader		No	40	85		720	0								
Dozer		No	40	85		720	0								
Scraper		No	40	85		770	0								
				Results											
		Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader		62.5	58.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		61.8	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		61.8	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		61.2	57.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	62.5	63.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		*Calculated Lmax is the Loudest value.													

				---- Receptor #6 ----											
		Baselines (dBA)													
Description	Land Use	Daytime	Evening	Night											
Single Family Residence	Residential	55	55	45											
				Equipment											
				Spec	Actual	Receptor	Estimated								
		Impact		Lmax	Lmax	Distance	Shielding								
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)								
Grader		No	40	85		110	0								
Grader		No	40	85		160	0								
Dozer		No	40	85		160	0								
Scraper		No	40	85		210	0								
				Results											
		Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader		78.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		74.9	70.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		74.9	70.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		72.5	68.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	78.2	77.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		*Calculated Lmax is the Loudest value.													

			Roadway Construction Noise Model (RCNM),Version 1.1													
Report date:	12/15/2014															
Case Description:	San Gorgonio Crossing - Warehouse Alt															
				---- Receptor #1 ----												
		Baselines (dBA)														
Description	Land Use	Daytime	Evening	Night												
Calimesa Mobile Ho	Residential	55.5	55	45												
				Equipment												
				Spec	Actual	Receptor	Estimated									
		Impact		Lmax	Lmax	Distance	Shielding									
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)									
Grader		No	40	85		900	10									
Dozer		No	40	85		950	10									
Scraper		No	40	85		1000	10									
				Results												
		Calculated (dBA)			Noise Limits (dBA)							Noise Limit Exceedance (dBA)				
				Day		Evening		Night		Day		Evening		Night		
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	
Grader		49.9	45.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Dozer		49.4	45.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Scraper		49	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	Total	49.9	50.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
		*Calculated Lmax is the Loudest value.														

				---- Receptor #2 ----											
		Baselines (dBA)													
Description	Land Use	Daytime	Evening	Night											
Single Family Reside	Residential	55	55	45											
				Equipment											
				Spec	Actual	Receptor	Estimated								
		Impact		Lmax	Lmax	Distance	Shielding								
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)								
Grader		No	40	85		670	0								
Dozer		No	40	85		720	0								
Scraper		No	40	85		770	0								
				Results											
		Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader		62.5	58.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		61.8	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		61.2	57.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	62.5	62.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		*Calculated Lmax is the Loudest value.													

				---- Receptor #3 ----											
		Baselines (dBA)													
Description	Land Use	Daytime	Evening	Night											
Single Family Reside	Residential	55	55	45											
				Equipment											
				Spec	Actual	Receptor	Estimated								
		Impact		Lmax	Lmax	Distance	Shielding								
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)								
Grader		No	40	85		185	0								
Dozer		No	40	85		235	0								
Scraper		No	40	85		285	0								
				Results											
		Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader		73.6	69.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		71.6	67.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		69.9	65.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	73.6	72.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		*Calculated Lmax is the Loudest value.													

				---- Receptor #4 ----											
		Baselines (dBA)													
Description	Land Use	Daytime	Evening	Night											
Single Family Reside	Residential	55	55	45											
				Equipment											
				Spec	Actual	Receptor	Estimated								
		Impact		Lmax	Lmax	Distance	Shielding								
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)								
Grader		No	40	85		375	0								
Dozer		No	40	85		425	0								
Scraper		No	40	85		475	0								
				Results											
		Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader		67.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		66.4	62.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		65.4	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	67.5	67.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		*Calculated Lmax is the Loudest value.													

				---- Receptor #5 ----											
		Baselines (dBA)													
Description	Land Use	Daytime	Evening	Night											
Single Family Reside	Residential	55	55	45											
				Equipment											
				Spec	Actual	Receptor	Estimated								
		Impact		Lmax	Lmax	Distance	Shielding								
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)								
Grader		No	40	85		85	0								
Dozer		No	40	85		135	0								
Scraper		No	40	85		185	0								
				Results											
		Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader		80.4	76.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		76.4	72.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		73.6	69.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	80.4	78.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		*Calculated Lmax is the Loudest value.													

				---- Receptor #6 ----											
		Baselines (dBA)													
Description	Land Use	Daytime	Evening	Night											
Single Family Reside	Residential	55	55	45											
				Equipment											
				Spec	Actual	Receptor	Estimated								
		Impact		Lmax	Lmax	Distance	Shielding								
Description		Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)								
Grader		No	40	85		110	0								
Dozer		No	40	85		160	0								
Scraper		No	40	85		210	0								
				Results											
		Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader		78.2	74.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		74.9	70.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper		72.5	68.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	78.2	76.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		*Calculated Lmax is the Loudest value.													

Appendix D:
FHWA Traffic Noise Model Calculations

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TABLE Existing-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Calimesa Boulevard to Driveway 1
NOTES: San Gorgonio Crossing - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6200 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.01

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	76.0	163.3	351.6

TABLE Existing-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 1 to Street 2
NOTES: San Gorgonio Crossing - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6200 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.01

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	76.0	163.3	351.6

TABLE Existing-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Street 2 to Driveway 3
NOTES: San Gorgonio Crossing - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6200 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.01

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	76.0	163.3	351.6

TABLE Existing-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 3 to Union Street
NOTES: San Gorgonio Crossing - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6200 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.01

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	76.0	163.3	351.6

TABLE Existing-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Union Street to Nancy Street
NOTES: San Gorgonio Crossing - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 5000 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 63.87

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL	70 CNEL	65 CNEL	60 CNEL	55 CNEL
	0.0	0.0	101.1	217.4

TABLE Existing-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Nancy Street to Beaumont Avenue
NOTES: San Gorgonio Crossing - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 4600 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 63.51

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	95.6	205.6

TABLE Existing-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Union Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Crossing - Existing

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 300 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 51.66

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL	70 CNEL	65 CNEL	60 CNEL	55 CNEL
	0.0	0.0	0.0	0.0

TABLE Existing-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Nancy Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Crossing - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1400 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 58.35

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	93.2

TABLE Existing-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - north of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Crossing - Existing

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6800 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.73

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
79.4	151.0	315.2	674.2

TABLE Existing-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - south of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Crossing - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 5900 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.11

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
74.3	138.5	287.3	613.6

TABLE Existing Plus Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Calimesa Boulevard to Driveway 1
NOTES: San Gorgonio Crossing - Existing Plus Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 9300 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.70

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	100.8	214.4	460.4

TABLE Existing Plus Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 1 to Street 2
NOTES: San Gorgonio Crossing - Existing Plus Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 8900 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.51

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL	70 CNEL	65 CNEL	60 CNEL	55 CNEL
	0.0	98.0	208.2	447.2

TABLE Existing Plus Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Street 2 to Driveway 3
NOTES: San Gorgonio Crossing - Existing Plus Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6600 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.21

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL	70 CNEL	65 CNEL	60 CNEL	55 CNEL
	0.0	80.9	170.9	366.5

TABLE Existing Plus Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 3 to Union Street
NOTES: San Gorgonio Crossing - Existing Plus Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6500 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.14

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL	70 CNEL	65 CNEL	60 CNEL	55 CNEL
	0.0	80.1	169.2	362.8

TABLE Existing Plus Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Union Street to Nancy Street
NOTES: San Gorgonio Crossing - Existing Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 5200 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 64.04

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	103.7	223.1

TABLE Existing Plus Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Nancy Street to Beaumont Avenue
NOTES: San Gorgonio Crossing - Existing Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 4800 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 63.70

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	98.4	211.6

TABLE Existing Plus Project-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Union Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Crossing - Existing Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 400 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 52.91

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL	70 CNEL	65 CNEL	60 CNEL	55 CNEL
	0.0	0.0	0.0	0.0

TABLE Existing Plus Project-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Nancy Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Crossing - Existing Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1400 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 58.35

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	93.2

TABLE Existing Plus Project-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - north of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Crossing - Existing Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6900 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.79

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
79.9	152.4	318.2	680.8

TABLE Existing Plus Project-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - south of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Crossing - Existing Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6000 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.19

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
74.8	139.9	290.4	620.5

TABLE Project Only-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Calimesa Boulevard to Driveway 1
NOTES: San Gorgonio Crossing - Project Only

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3100 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 62.92

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	104.3	222.0

TABLE Project Only-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 1 to Street 2
NOTES: San Gorgonio Crossing - Project Only

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2700 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 62.32

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	95.4	202.6

TABLE Project Only-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Street 2 to Driveway 3
NOTES: San Gorgonio Crossing - Project Only

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 400 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 54.03

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	59.3

TABLE Project Only-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 3 to Union Street
NOTES: San Gorgonio Crossing - Project Only

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 300 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 52.78

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	0.0

TABLE Project Only-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Union Street to Nancy Street
NOTES: San Gorgonio Crossing - Project Only

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 300 SPEED (MPH): 45 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 51.66

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL 70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	0.0

TABLE Project Only-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Nancy Street to Beaumont Avenue
NOTES: San Gorgonio Crossing - Project Only

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 300 SPEED (MPH): 45 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 51.66

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	0.0

TABLE Project Only-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Union Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Crossing - Project Only

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 100 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 46.88

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	0.0

TABLE Project Only-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Nancy Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Crossing - Project Only

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 0 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 26.89

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	0.0

TABLE Project Only-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - north of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Crossing - Project Only

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 200 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 53.42

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	76.7

TABLE Project Only-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - south of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Crossing - Project Only

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 100 SPEED (MPH): 65 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 50.41

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	0.0

TABLE Cumulative (2017) without Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Calimesa Boulevard to Driveway 1
NOTES: San Gorgonio Crossing - Cumulative (2017) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12800 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.08

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
59.7	124.0	264.8	569.4

TABLE Cumulative (2017) without Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 1 to Street 2
NOTES: San Gorgonio Crossing - Cumulative (2017) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12800 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.08

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
59.7	124.0	264.8	569.4

TABLE Cumulative (2017) without Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Street 2 to Driveway 3
NOTES: San Gorgonio Crossing - Cumulative (2017) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12100 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.84

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
57.7	119.5	255.1	548.5

TABLE Cumulative (2017) without Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 3 to Union Street
NOTES: San Gorgonio Crossing - Cumulative (2017) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12000 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.80

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
57.4	118.9	253.7	545.5

TABLE Cumulative (2017) without Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Union Street to Nancy Street
NOTES: San Gorgonio Crossing - Cumulative (2017) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 7300 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 65.52

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	60.6	129.9	279.7

TABLE Cumulative (2017) without Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Nancy Street to Beaumont Avenue
NOTES: San Gorgonio Crossing - Cumulative (2017) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6200 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 64.81

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	54.4	116.6	250.8

TABLE Cumulative (2017) without Project-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Union Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Crossing - Cumulative (2017) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 800 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 55.92

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL	70 CNEL	65 CNEL	60 CNEL	55 CNEL
	0.0	0.0	0.0	64.3

TABLE Cumulative (2017) without Project-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Nancy Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Crossing - Cumulative (2017) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 800 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 55.92

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	64.3

TABLE Cumulative (2017) without Project-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - north of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Crossing - Cumulative (2017) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 8600 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.75

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
89.2	174.7	367.8	788.1

TABLE Cumulative (2017) without Project-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - south of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Crossing - Cumulative (2017) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 7100 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.92

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
81.0	155.1	324.3	693.8

TABLE Cumulative (2017) Plus Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Calimesa Boulevard to Driveway 1
NOTES: San Gorgonio Crossing - Cumulative (2017) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 15800 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 70.00

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
68.0	142.3	304.6	655.2

TABLE Cumulative (2017) Plus Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 1 to Street 2
NOTES: San Gorgonio Crossing - Cumulative (2017) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 15400 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.89

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL	70 CNEL	65 CNEL	60 CNEL	55 CNEL
	66.9	139.9	299.4	644.1

TABLE Cumulative (2017) Plus Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Street 2 to Driveway 3
NOTES: San Gorgonio Crossing - Cumulative (2017) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12400 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.95

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
58.6	121.4	259.3	557.5

TABLE Cumulative (2017) Plus Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 3 to Union Street
NOTES: San Gorgonio Crossing - Cumulative (2017) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12300 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.91

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL	70 CNEL	65 CNEL	60 CNEL	55 CNEL
	58.3	120.8	257.9	554.5

TABLE Cumulative (2017) Plus Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Union Street to Nancy Street
NOTES: San Gorgonio Crossing - Cumulative (2017) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 7500 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 65.63

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL	70 CNEL	65 CNEL	60 CNEL	55 CNEL
	0.0	61.7	132.3	284.8

TABLE Cumulative (2017) Plus Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Nancy Street to Beaumont Avenue
NOTES: San Gorgonio Crossing - Cumulative (2017) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6400 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 64.95

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	55.5	119.1	256.2

TABLE Cumulative (2017) Plus Project-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Union Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Crossing - Cumulative (2017) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 900 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 56.43

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	69.6

TABLE Cumulative (2017) Plus Project-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Nancy Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Crossing - Cumulative (2017) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 800 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 55.92

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	64.3

TABLE Cumulative (2017) Plus Project-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - north of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Crossing - Cumulative (2017) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 8700 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.80

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
89.8	176.0	370.6	794.2

TABLE Cumulative (2017) Plus Project-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - south of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Crossing - Cumulative (2017) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 7200 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.98

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
81.6	156.4	327.2	700.3

TABLE Horizon (2035) without Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Calimesa Boulevard to Driveway 1
NOTES: San Gorgonio Crossing - Horizon (2035) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 27200 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 72.36

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
95.8	203.6	437.1	940.9

TABLE Horizon (2035) without Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 1 to Street 2
NOTES: San Gorgonio Crossing - Horizon (2035) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 27200 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 72.36

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
95.8	203.6	437.1	940.9

TABLE Horizon (2035) without Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Street 2 to Driveway 3
NOTES: San Gorgonio Crossing - Horizon (2035) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 32700 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.16

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
107.9	229.9	494.1	1063.8

TABLE Horizon (2035) without Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 3 to Union Street
NOTES: San Gorgonio Crossing - Horizon (2035) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 32700 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.16

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
107.9	229.9	494.1	1063.8

TABLE Horizon (2035) without Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Union Street to Nancy Street
NOTES: San Gorgonio Crossing - Horizon (2035) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 21700 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.17

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
60.5	125.7	268.6	577.5

TABLE Horizon (2035) without Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Nancy Street to Beaumont Avenue
NOTES: San Gorgonio Crossing - Horizon (2035) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 21800 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.19

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
60.7	126.1	269.4	579.2

TABLE Horizon (2035) without Project-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Union Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Crossing - Horizon (2035) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3400 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 62.20

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL	70 CNEL	65 CNEL	60 CNEL	55 CNEL
	0.0	0.0	78.2	168.2

TABLE Horizon (2035) without Project-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Nancy Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Crossing - Horizon (2035) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3400 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 62.20

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	78.2	168.2

TABLE Horizon (2035) without Project-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - north of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Crossing - Horizon (2035) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 20800 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.58

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
148.0	308.5	659.6	1418.6

TABLE Horizon (2035) without Project-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - south of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Crossing - Horizon (2035) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 19100 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.21

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
140.5	291.8	623.3	1340.2

TABLE Horizon (2035) Plus Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Calimesa Boulevard to Driveway 1
NOTES: San Gorgonio Crossing - Horizon (2035) Plus Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 30200 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 72.81

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
102.5	218.1	468.6	1008.9

TABLE Horizon (2035) Plus Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 1 to Street 2
NOTES: San Gorgonio Crossing - Horizon (2035) Plus Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 29800 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 72.75

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
101.6	216.2	464.5	999.9

TABLE Horizon (2035) Plus Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Street 2 to Driveway 3
NOTES: San Gorgonio Crossing - Horizon (2035) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 33000 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.20

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
108.6	231.3	497.1	1070.3

TABLE Horizon (2035) Plus Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 3 to Union Street
NOTES: San Gorgonio Crossing - Horizon (2035) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 33000 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.20

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
108.6	231.3	497.1	1070.3

TABLE Horizon (2035) Plus Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Union Street to Nancy Street
NOTES: San Gorgonio Crossing - Horizon (2035) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 21900 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.21

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
60.8	126.5	270.2	581.0

TABLE Horizon (2035) Plus Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Nancy Street to Beaumont Avenue
NOTES: San Gorgonio Crossing - Horizon (2035) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 22000 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.23

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
61.0	126.8	271.0	582.8

TABLE Horizon (2035) Plus Project-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Union Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Crossing - Horizon (2035) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3400 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 62.20

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	78.2	168.2

TABLE Horizon (2035) Plus Project-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Nancy Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Crossing - Horizon (2035) Plus Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3400 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 62.20

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	78.2	168.2

TABLE Horizon (2035) Plus Project-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - north of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Crossing - Horizon (2035) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 20900 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.61

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
148.4	309.4	661.7	1423.1

TABLE Horizon (2035) Plus Project-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - south of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Crossing - Horizon (2035) Plus Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 19200 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.24

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
140.9	292.8	625.5	1344.9

TABLE Existing-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Calimesa Boulevard to Driveway 1
NOTES: San Gorgonio Residential Alt - Existing

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6200 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.01

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	76.0	163.3	351.6

TABLE Existing-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 1 to Street 2
NOTES: San Gorgonio Residential Alt - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6200 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.01

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	76.0	163.3	351.6

TABLE Existing-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Street 2 to Driveway 3
NOTES: San Gorgonio Residential Alt - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6200 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.01

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	76.0	163.3	351.6

TABLE Existing-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 3 to Union Street
NOTES: San Gorgonio Residential Alt - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6200 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.01

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	76.0	163.3	351.6

TABLE Existing-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Union Street to Nancy Street
NOTES: San Gorgonio Residential Alt - Existing

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 5000 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 63.87

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	101.1	217.4

TABLE Existing-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Nancy Street to Beaumont Avenue
NOTES: San Gorgonio Residential Alt - Existing

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 4600 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 63.51

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	95.6	205.6

TABLE Existing-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Union Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Residential Alt - Existing

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 300 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 51.66

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	0.0

TABLE Existing-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Nancy Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Residential Alt - Existing

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1400 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 58.35

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	93.2

TABLE Existing-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - north of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Residential Alt - Existing

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6800 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.73

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
79.4	151.0	315.2	674.2

TABLE Existing-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - south of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Residential Alt - Existing

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 5900 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.11

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
74.3	138.5	287.3	613.6

TABLE Existing Plus Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Calimesa Boulevard to Driveway 1
NOTES: San Gorgonio Residential Alt - Existing Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12600 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.01

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
59.2	122.7	262.1	563.5

TABLE Existing Plus Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 1 to Street 2
NOTES: San Gorgonio Residential Alt - Existing Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12400 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.95

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
58.6	121.4	259.3	557.5

TABLE Existing Plus Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Street 2 to Driveway 3
NOTES: San Gorgonio Residential Alt - Existing Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 7600 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.82

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL	70 CNEL	65 CNEL	60 CNEL	55 CNEL
	0.0	88.5	187.6	402.6

TABLE Existing Plus Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 3 to Union Street
NOTES: San Gorgonio Residential Alt - Existing Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 7800 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.93

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	90.0	190.8	409.6

TABLE Existing Plus Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Union Street to Nancy Street
NOTES: San Gorgonio Residential Alt - Existing Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6200 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 64.81

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL	70 CNEL	65 CNEL	60 CNEL	55 CNEL
	0.0	54.4	116.6	250.8

TABLE Existing Plus Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Nancy Street to Beaumont Avenue
NOTES: San Gorgonio Residential Alt - Existing Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 5300 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 64.13

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL	70 CNEL	65 CNEL	60 CNEL	55 CNEL
	0.0	0.0	105.1	226.0

TABLE Existing Plus Project-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Union Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Residential Alt - Existing Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 700 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 55.34

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	58.9

TABLE Existing Plus Project-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Nancy Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Residential Alt - Existing Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1800 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 59.44

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	51.4	110.1

TABLE Existing Plus Project-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - north of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Residential Alt - Existing Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 7200 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.98

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
81.6	156.4	327.2	700.3

TABLE Existing Plus Project-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - south of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Residential Alt - Existing Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6000 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.19

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
74.8	139.9	290.4	620.5

TABLE Project Only-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Calimesa Boulevard to Driveway 1
NOTES: San Gorgonio Residential Alt - Project Only

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6400 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.07

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	79.4	167.5	359.1

TABLE Project Only-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 1 to Street 2
NOTES: San Gorgonio Residential Alt - Project Only

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6200 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 65.94

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL	70 CNEL	65 CNEL	60 CNEL	55 CNEL
	0.0	77.8	164.0	351.6

TABLE Project Only-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Street 2 to Driveway 3
NOTES: San Gorgonio Residential Alt - Project Only

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1400 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 59.47

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	63.1	131.5

TABLE Project Only-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 3 to Union Street
NOTES: San Gorgonio Residential Alt - Project Only

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1600 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 60.05

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	68.5	143.5

TABLE Project Only-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Union Street to Nancy Street
NOTES: San Gorgonio Residential Alt - Project Only

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1200 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 57.68

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL	70 CNEL	65 CNEL	60 CNEL	55 CNEL
	0.0	0.0	0.0	84.2

TABLE Project Only-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Nancy Street to Beaumont Avenue
NOTES: San Gorgonio Residential Alt - Project Only

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 800 SPEED (MPH): 45 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 55.92

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	64.3

TABLE Project Only-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Union Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Residential Alt - Project Only

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 400 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 52.91

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL	70 CNEL	65 CNEL	60 CNEL	55 CNEL
	0.0	0.0	0.0	0.0

TABLE Project Only-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Nancy Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Residential Alt - Project Only

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 400 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 52.91

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	0.0

TABLE Project Only-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - north of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Residential Alt - Project Only

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 500 SPEED (MPH): 65 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES		
	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 57.39

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	69.1	125.4

TABLE Project Only-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - south of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Residential Alt - Project Only

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 100 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 50.41

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	0.0

TABLE Cumulative (2017) without Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Calimesa Boulevard to Driveway 1
NOTES: San Gorgonio Residential Alt - Cumulative (2017) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12000 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.80

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
57.4	118.9	253.7	545.5

TABLE Cumulative (2017) without Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 1 to Street 2
NOTES: San Gorgonio Residential Alt - Cumulative (2017) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12200 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.87

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
58.0	120.2	256.5	551.5

TABLE Cumulative (2017) without Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Street 2 to Driveway 3
NOTES: San Gorgonio Residential Alt - Cumulative (2017) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12900 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.12

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
60.0	124.6	266.2	572.4

TABLE Cumulative (2017) without Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 3 to Union Street
NOTES: San Gorgonio Residential Alt - Cumulative (2017) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 12800 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.08

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
59.7	124.0	264.8	569.4

TABLE Cumulative (2017) without Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Union Street to Nancy Street
NOTES: San Gorgonio Residential Alt - Cumulative (2017) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 8100 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 65.97

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	64.9	139.3	299.7

TABLE Cumulative (2017) without Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Nancy Street to Beaumont Avenue
NOTES: San Gorgonio Residential Alt - Cumulative (2017) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 4200 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 63.12

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	90.0	193.6

TABLE Cumulative (2017) without Project-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Union Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Residential Alt - Cumulative (2017) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 800 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 55.92

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	64.3

TABLE Cumulative (2017) without Project-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Nancy Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Residential Alt - Cumulative (2017) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2100 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 60.11

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	56.9	122.0

TABLE Cumulative (2017) without Project-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - north of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Residential Alt - Cumulative (2017) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 8400 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.65

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
88.2	172.2	362.1	775.9

TABLE Cumulative (2017) without Project-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - south of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Residential Alt - Cumulative (2017) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 7100 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.92

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
81.0	155.1	324.3	693.8

TABLE Cumulative (2017) Plus Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Calimesa Boulevard to Driveway 1
NOTES: San Gorgonio Residential Alt - Cumulative (2017) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 18300 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 70.64

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
74.5	156.7	335.8	722.5

TABLE Cumulative (2017) Plus Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 1 to Street 2
NOTES: San Gorgonio Residential Alt - Cumulative (2017) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 18400 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 70.66

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
74.7	157.3	337.0	725.2

TABLE Cumulative (2017) Plus Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Street 2 to Driveway 3
NOTES: San Gorgonio Residential Alt - Cumulative (2017) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 14200 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.53

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL	70 CNEL	65 CNEL	60 CNEL	55 CNEL
	63.6	132.7	283.7	610.2

TABLE Cumulative (2017) Plus Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 3 to Union Street
NOTES: San Gorgonio Residential Alt - Cumulative (2017) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 14400 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.59

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
64.2	133.9	286.4	615.9

TABLE Cumulative (2017) Plus Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Union Street to Nancy Street
NOTES: San Gorgonio Residential Alt - Cumulative (2017) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 9300 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.57

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL	70 CNEL	65 CNEL	60 CNEL	55 CNEL
	0.0	71.1	152.7	328.6

TABLE Cumulative (2017) Plus Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Nancy Street to Beaumont Avenue
NOTES: San Gorgonio Residential Alt - Cumulative (2017) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 5000 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 63.87

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	101.1	217.4

TABLE Cumulative (2017) Plus Project-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Union Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Residential Alt - Cumulative (2017) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1200 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 57.68

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	0.0	84.2

TABLE Cumulative (2017) Plus Project-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Nancy Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Residential Alt - Cumulative (2017) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2500 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 60.86

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	63.8	137.0

TABLE Cumulative (2017) Plus Project-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - north of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Residential Alt - Cumulative (2017) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 8800 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.85

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
90.3	177.3	373.4	800.2

TABLE Cumulative (2017) Plus Project-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - south of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Residential Alt - Cumulative (2017) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 7200 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.98

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
81.6	156.4	327.2	700.3

TABLE Horizon (2035) without Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Calimesa Boulevard to Driveway 1
NOTES: San Gorgonio Residential Alt - Horizon (2035) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 27200 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 72.36

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
95.8	203.6	437.1	940.9

TABLE Horizon (2035) without Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 1 to Street 2
NOTES: San Gorgonio Residential Alt - Horizon (2035) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 33600 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.27

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
109.9	234.1	503.1	1083.2

TABLE Horizon (2035) without Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Street 2 to Driveway 3
NOTES: San Gorgonio Residential Alt - Horizon (2035) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 32700 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.16

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
107.9	229.9	494.1	1063.8

TABLE Horizon (2035) without Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 3 to Union Street
NOTES: San Gorgonio Residential Alt - Horizon (2035) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 32700 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.16

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
107.9	229.9	494.1	1063.8

TABLE Horizon (2035) without Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Union Street to Nancy Street
NOTES: San Gorgonio Residential Alt - Horizon (2035) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 21700 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.17

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
60.5	125.7	268.6	577.5

TABLE Horizon (2035) without Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Nancy Street to Beaumont Avenue
NOTES: San Gorgonio Residential Alt - Horizon (2035) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 21800 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.19

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
60.7	126.1	269.4	579.2

TABLE Horizon (2035) without Project-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Union Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Residential Alt - Horizon (2035) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3400 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 62.20

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	78.2	168.2

TABLE Horizon (2035) without Project-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Nancy Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Residential Alt - Horizon (2035) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2800 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 61.36

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	68.8	147.8

TABLE Horizon (2035) without Project-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - north of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Residential Alt - Horizon (2035) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 20800 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.58

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
148.0	308.5	659.6	1418.6

TABLE Horizon (2035) without Project-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - south of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Residential Alt - Horizon (2035) without Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 19100 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.21

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
140.5	291.8	623.3	1340.2

TABLE Horizon (2035) Plus Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Calimesa Boulevard to Driveway 1
NOTES: San Gorgonio Residential Alt - Horizon (2035) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 32700 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.16

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
107.9	229.9	494.1	1063.8

TABLE Horizon (2035) Plus Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 1 to Street 2
NOTES: San Gorgonio Residential Alt - Horizon (2035) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 39200 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.94

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
121.4	259.3	557.5	1200.4

TABLE Horizon (2035) Plus Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Street 2 to Driveway 3
NOTES: San Gorgonio Residential Alt - Horizon (2035) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 34900 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.44

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
112.6	240.1	516.0	1111.0

TABLE Horizon (2035) Plus Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Driveway 3 to Union Street
NOTES: San Gorgonio Residential Alt - Horizon (2035) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 35100 SPEED (MPH): 55 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.46

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
113.0	241.0	518.0	1115.2

TABLE Horizon (2035) Plus Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Union Street to Nancy Street
NOTES: San Gorgonio Residential Alt - Horizon (2035) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 23700 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.56

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
63.8	133.2	284.8	612.4

TABLE Horizon (2035) Plus Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Cherry Valley Boulevard - Nancy Street to Beaumont Avenue
NOTES: San Gorgonio Residential Alt - Horizon (2035) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 23400 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 18 SITE CHARACTERISTICS: SOFT

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* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.50

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
63.3	132.0	282.4	607.2

TABLE Horizon (2035) Plus Project-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Union Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Residential Alt - Horizon (2035) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3800 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 62.68

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	84.2	181.1

TABLE Horizon (2035) Plus Project-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: Nancy Street - South of Cherry Valley Boulevard
NOTES: San Gorgonio Residential Alt - Horizon (2035) Plus Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3200 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	EVENING	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 61.94

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL			
70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	75.2	161.5

TABLE Horizon (2035) Plus Project-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - north of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Residential Alt - Horizon (2035) Plus Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 21100 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.65

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
149.3	311.4	665.9	1432.2

TABLE Horizon (2035) Plus Project-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 12/09/2014
ROADWAY SEGMENT: I-10 - south of Cherry Valley Boulevard interchange
NOTES: San Gorgonio Residential Alt - Horizon (2035) Plus Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 19200 SPEED (MPH): 65 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVENING	NIGHT
AUTOS	71.00	11.30	9.00
M-TRUCKS	0.50	0.10	0.10
H-TRUCKS	7.70	0.10	0.20

ACTIVE HALF-WIDTH (FT): 42 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 73.24

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL

70 CNEL	65 CNEL	60 CNEL	55 CNEL
140.9	292.8	625.5	1344.9

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Appendix E:
Operational Noise Modeling Sheets

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Receptor: Western Residencel		Reference (dBA) 50 ft		Usage	Distance to	Ground	Shielding	Calculated (dBA)		
No.	Source	Lmax	Quantity	factor[1]	Receptor	Effect	(dBA)	Lmax	Leq	Energy
1	**Truck Loading/Unloading**	85	1	33.33333	870	0.5	0	60.2	49.2	83465.24
2	**Truck Loading/Unloading**	85	2	33.33333	890	0.5	0	60.0	52.0	157709.8
3	**Truck Loading/Unloading**	85	2	33.33333	910	0.5	0	59.8	51.7	149186.8
4	**Truck Loading/Unloading**	85	2	33.33333	930	0.5	0	59.6	51.5	141294.9
5	**Truck Loading/Unloading**	85	2	33.33333	950	0.5	0	59.4	51.3	133975.3
Notes:							**Lmax[2]**	**60**	**Leq(h)**	**58**

[1] Percentage of time activity occurs each hour

[2] Calculated Lmax is the Loudest value.

Receptor: Southern Residence		Reference (dBA) 50 ft		Usage	Distance to	Ground	Shielding	Calculated (dBA)		
No.	Source	Lmax	Quantity	factor[1]	Receptor	Effect	(dBA)	Lmax	Leq	Energy
1	**Truck Loading/Unloading**	85	1	33.33333	1045	0.5	0	58.6	47.2	52785.3
2	**Truck Loading/Unloading**	85	1	33.33333	1065	0.5	0	58.4	47.0	50341.92
3	**Truck Loading/Unloading**	85	1	33.33333	1085	0.5	0	58.3	46.8	48053.99
4	**Truck Loading/Unloading**	85	1	33.33333	2005	0.5	0	52.9	40.2	10351.85
5	**Truck Loading/Unloading**	85	1	33.33333	2025	0.5	0	52.9	40.0	10098.14
Notes:							**Lmax[2]**	**59**	**Leq(h)**	**52**

[1] Percentage of time activity occurs each hour

[2] Calculated Lmax is the Loudest value.

MITIGATED OPERATIONAL NOISE LEVELS

Receptor: Western Residencel		Reference (dBA) 50 ft		Usage	Distance to	Ground	Shielding[2]	Calculated (dBA)		
No.	Source	Lmax	Quantity	factor[1]	Receptor	Effect	(dBA)	Lmax	Leq	Energy
1	**Truck Loading/Unloading**	85	1	33.33333	870	0.5	15	45.2	34.2	2639.403
2	**Truck Loading/Unloading**	85	2	33.33333	890	0.5	15	45.0	37.0	4987.222
3	**Truck Loading/Unloading**	85	2	33.33333	910	0.5	15	44.8	36.7	4717.699
4	**Truck Loading/Unloading**	85	2	33.33333	930	0.5	15	44.6	36.5	4468.136
5	**Truck Loading/Unloading**	85	2	33.33333	950	0.5	15	44.4	36.3	4236.671
Notes:							**Lmax[3]**	**45**	**Leq(h)**	**43**

[1] Percentage of time activity occurs each hour

[2] Shielding provided by sealed gasket loading bay doors.

[3] Calculated Lmax is the Loudest value.

Receptor: Southern Residence		Reference (dBA) 50 ft		Usage	Distance to	Ground	Shielding[2]	Calculated (dBA)		
No.	Source	Lmax	Quantity	factor[1]	Receptor	Effect	(dBA)	Lmax	Leq	Energy
1	**Truck Loading/Unloading**	85	1	33.33333	1045	0.5	15	43.6	32.2	1669.218
2	**Truck Loading/Unloading**	85	1	33.33333	1065	0.5	15	43.4	32.0	1591.951
3	**Truck Loading/Unloading**	85	1	33.33333	1085	0.5	15	43.3	31.8	1519.6
4	**Truck Loading/Unloading**	85	1	33.33333	2005	0.5	15	37.9	25.2	327.3541
5	**Truck Loading/Unloading**	85	1	33.33333	2025	0.5	15	37.9	25.0	319.3311
Notes:							**Lmax[3]**	**44**	**Leq(h)**	**37**

[1] Percentage of time activity occurs each hour

[2] Shielding provided by sealed gasket loading bay doors.

[3] Calculated Lmax is the Loudest value.

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Appendix I: Traffic Study

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I.1 - Traffic Impact Analysis

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San Gorgonio Crossing (Parcel Map No. 36093)

TRAFFIC IMPACT ANALYSIS

COUNTY OF RIVERSIDE

PREPARED BY:

Aric Evatt, PTP
aevatt@urbanxroads.com
(949) 660-1994 x204

Charlene So, PE
cso@urbanxroads.com
(949) 660-1994 x222

Pranesh Tarikere, PE
ptarikere@urbanxroads.com
(949) 660-1994 x205

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08312-11 Report REV

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
DIF	Development Impact Fee
E+P	Existing Plus Project
EAC	Existing Plus Ambient Growth Plus Cumulative
EAP	Existing Plus Ambient Growth Plus Project
EAPC	Existing Plus Ambient Growth Plus Project Plus Cumulative
FHWA	Federal Highway Administration
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
MUTCD	Manual on Uniform Traffic Control Devices
PHF	Peak Hour Factor
Project	San Gorgonio Crossing (Parcel Map No. 36093)
RivTAM	Riverside County Traffic Analysis Model
SCAG	Southern California Association of Governments
TIA	Traffic Impact Analysis
TUMF	Transportation Uniform Mitigation Fee
WRCOG	Western Riverside Council 0f Governments

1 INTRODUCTION

This report presents the results of the traffic impact analysis (TIA) for the proposed San Gorgonio Crossing (Parcel Map No. 36093) ("Project"), which is generally located north of Cherry Valley Boulevard and approximately 1,800 feet east of the I-10 Freeway and Cherry Valley Boulevard interchange in unincorporated County of Riverside.

The purpose of this traffic impact analysis is to evaluate the potential impacts to traffic and circulation associated with the development of the proposed Project, and recommend improvements necessary to mitigate impacts considered significant in comparison to established regulatory thresholds. As directed by County of Riverside staff, this TIA has been prepared in accordance with the Riverside County Transportation Department's *Traffic Impact Analysis Preparation Guide* (April 2008). (1) The approved Project Traffic Study Scoping agreement is provided in Appendix "1.1" of this TIA.

1.1 PROJECT OVERVIEW

The Project includes the development of approximately 1,860,760 square feet of high-cube distribution warehouse use between two (2) buildings. For the purposes of this traffic study, the square footage of the buildings is listed below:

- Building 1 – 737,480 square feet of high-cube distribution warehouse use with access to Cherry Valley Boulevard via Driveway 1 and Street 2.
- Building 2 – 1,123,280 square feet of high-cube distribution warehouse use with access to Cherry Valley Boulevard via Street 2 and Driveway 3.

The site plan for the proposed Project is shown on Exhibit 1-1. Exhibit 1-2 depicts the location of the proposed project in relation to the existing roadway network. It is anticipated that the Project will be developed as a single phase. The Project's opening year is anticipated to be 2017 (i.e., fully built and occupied). Access to the Project site will be provided via Driveway 1, Street 2 and Driveway 3 to Cherry Valley Boulevard. Right-in/right-out access only is proposed at Driveway 1 and Driveway 3, with full access at Street 2.

Trips generated by the Project's proposed land uses (1,860,760 square feet of high-cube warehouse use) have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition, 2012. (2) To represent the impact large trucks, buses and recreational vehicles have on traffic flow; all trucks were converted into Passenger Car Equivalents (PCEs). By their size alone, these vehicles occupy the same space as two or more passenger cars. In addition, the time it takes for them to accelerate and decelerate is greater than for passenger cars, and varies depending on the type of vehicle and number of axles. For the purpose of this analysis, a PCE factor of 1.5 has been applied to 2-axle trucks, 2.0 for 3-axle trucks and 3.0 for 4+-axle trucks.

The Project is estimated to generate a net total of approximately 3,126 net trip-ends per day (4,905 net passenger car equivalent (PCE) trip-ends per day) on a typical weekday with approximately 205 (288 PCE) net AM peak hour trips and 223 (335 PCE) net PM peak hour trips.

EXHIBIT 1-1: PRELIMINARY SITE PLAN

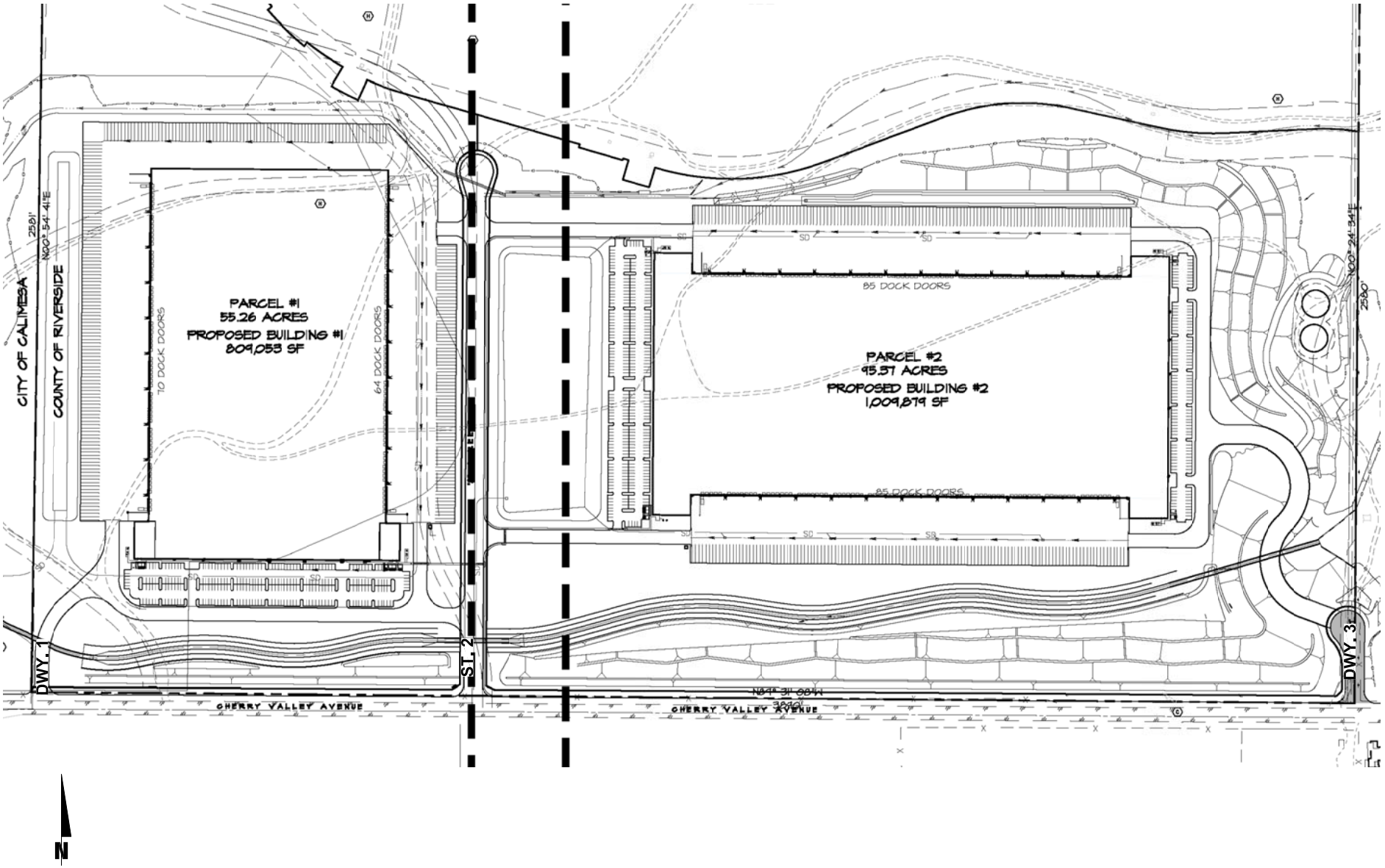
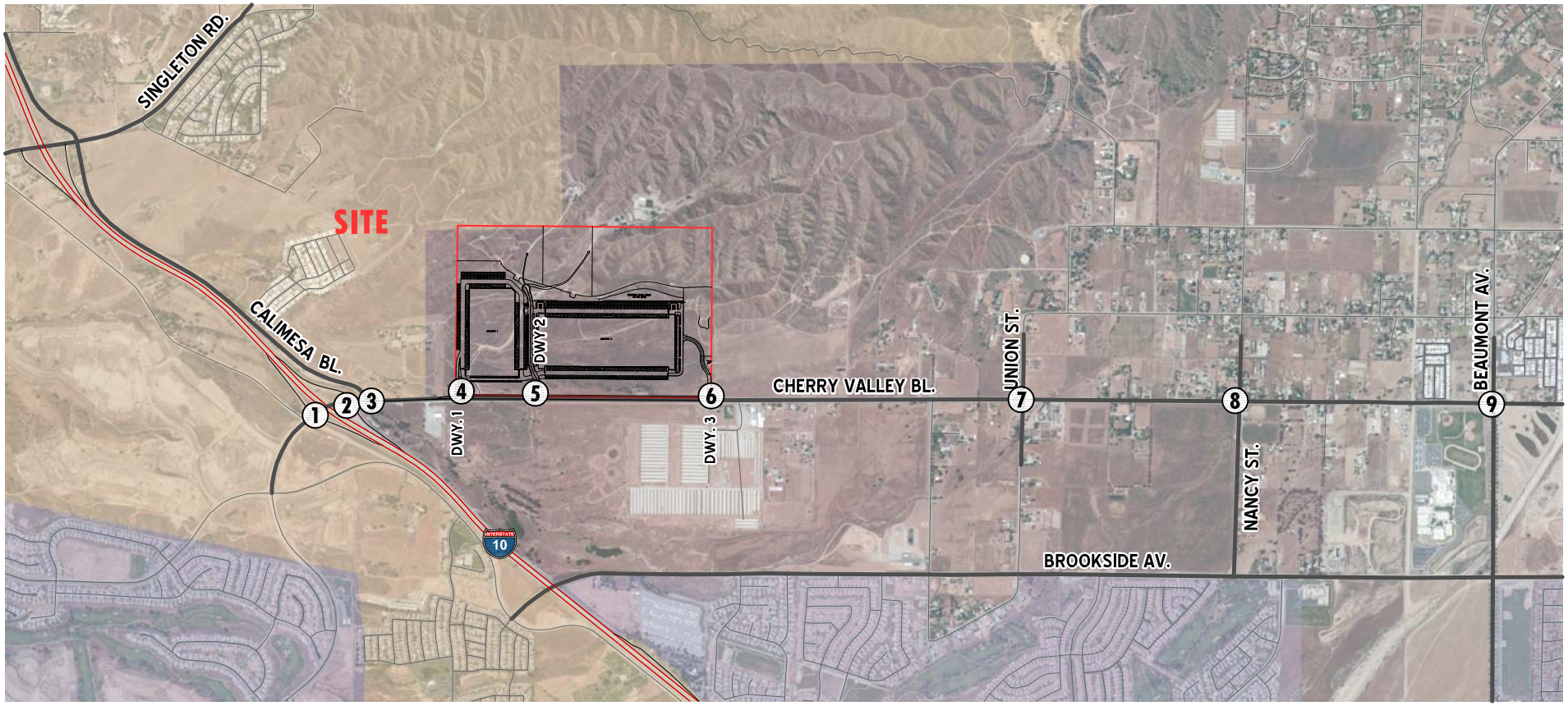


EXHIBIT 1-2: LOCATION MAP



LEGEND:

① = INTERSECTION ANALYSIS LOCATION

The assumptions and methods used to estimate the Project's trip generation characteristics are discussed in greater detail in Section 4.1 Project Trip Generation of this report.

1.2 ANALYSIS SCENARIOS

For the purposes of this traffic study, potential impacts to traffic and circulation have been assessed for each of the following conditions:

- Existing (2014) Conditions
- Existing plus Project Conditions
- Existing plus Ambient Growth plus Project (EAP) (2017) Conditions
- Existing plus Ambient Growth plus Project plus Cumulative (EAPC) (2017) Conditions
- Horizon Year (2035) Without Project Conditions
- Horizon Year (2035) With Project Conditions

1.2.1 EXISTING (2014) CONDITIONS

Information for Existing (2014) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared.

1.2.2 EXISTING PLUS PROJECT CONDITIONS

The Existing plus Project (E+P) analysis determines significant traffic impacts that would occur on the existing roadway system in the theoretical scenario of the Project being placed upon Existing conditions. The E+P scenario is presented for informational purposes only as the County of Riverside's currently adopted traffic study guidelines requires Project impacts to be identified through the analysis of EAP traffic conditions.

1.2.3 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT (2017) CONDITIONS

The EAP (2017) conditions analysis determines the traffic impacts based on a comparison of the EAP traffic conditions to Existing (2014) conditions. To account for background traffic growth, an ambient growth factor from Existing (2014) conditions of 6.12% (2 percent per year over 3 years, compounded annually) is included for EAP (2017) traffic conditions. Cumulative development projects are not included as part of the EAP (2017) analysis. Consistent with Riverside County traffic study guidelines, the EAP (2017) analysis is intended to identify opening year impacts associated with the development of the proposed Project based on the expected background growth within the study area.

1.2.4 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE (2017) CONDITIONS

The EAPC (2017) conditions analysis determines if near-term cumulative traffic conditions can be served by improvements funded through regional transportation mitigation fee programs, such as the Transportation Uniform Mitigation Fee (TUMF) and County of Riverside Development Impact Fee (DIF), or other approved funding mechanism. If the "funded" improvements can provide the requisite LOS, then the Project's payment into one or more of the pre-existing fee programs shall be considered as adequate mitigation to address the Project's contribution to cumulative traffic impacts. To account for Opening Year conditions,

other known development projects assumed to interact or contribute traffic to study area intersections were included in addition to 6.12% of ambient growth for EAPC (2017) traffic conditions.

1.2.5 HORIZON YEAR (2035) CONDITIONS

Traffic projections for Horizon Year (2035) with Project conditions were derived from the County of Riverside Traffic Analysis Model (RivTAM) using accepted procedures for model forecast refinement and smoothing. The traffic forecasts reflect the area-wide growth anticipated between Existing (2014) conditions and Horizon Year (2035) conditions including foreseeable past, present and future development proposals. The Horizon Year (2035) conditions analysis has also been utilized to determine if improvements funded through local and regional transportation mitigation fee programs such as the Transportation Uniform Mitigation Fee (TUMF) program and County Development Impact Fee (DIF) programs can accommodate the cumulative traffic at the target LOS identified in the County of Riverside General Plan. If the "funded" improvements can provide the target LOS, then the Project's payment into the established fee programs will be considered as cumulative mitigation through the conditions of approval. Other improvements needed beyond the "funded" improvements (such as localized improvements to non-TUMF, non-DIF facilities) are identified as such

1.3 STUDY AREA

The potential impact study area was defined in coordination with the County of Riverside staff and in conformance with the requirements of the County's TIA preparation guidelines. Based on these guidelines, the minimum area to be studied shall include any intersection of "Collector" or higher classification streets, at which the proposed project will add 50 or more peak hour trips. Exhibit 1-2 presents the study area roadway network, intersection analysis locations, and freeway mainline segments.

To ensure that this TIA complies with the County's TIA preparation guidelines, Urban Crossroads, Inc. prepared a Project Traffic Study Scoping Agreement for review by County staff prior to the preparation of this TIA. The Agreement provides an outline of the Project study area, trip generation, trip distribution, and analysis methodology. The County staff reviewed the Agreement and accepted the TIA's proposed study area and methodology as meeting the County's TIA preparation guidelines. The Agreement approved by the County of Riverside is included in Appendix "1.1".

1.3.1 INTERSECTIONS

The following nine study area intersection locations shown on Exhibit 1-2 and listed on Table 1-1 were selected for this TIA based on the County of Riverside's traffic study guidelines that require analysis of intersection locations in which a proposed project is anticipated to contribute 50 or more peak-hour trips.

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction
1	I-10 Freeway EB Ramps / Cherry Valley Boulevard	Caltrans
2	I-10 Freeway WB Ramps / Cherry Valley Boulevard	Caltrans
3	Calimesa Boulevard / Cherry Valley Boulevard	RivCo, Calimesa
4	Driveway 1 / Cherry Valley Bl.- Future Intersection (RIRO)	Riverside County
5	Street 2 / Cherry Valley Boulevard - Future Intersection	Riverside County
6	Driveway 3 / Cherry Valley Bl. - Future Intersection (RIRO)	Riverside County
7	Union St. / Cherry Valley Boulevard	Riverside County
8	Nancy Av. / Cherry Valley Boulevard	Riverside County
9	Beaumont Av. / Cherry Valley Boulevard	Riverside County

It should be noted that the "50 peak hour trip" criterion utilized by the County of Riverside and the City of Calimesa is consistent with the methodology employed by other jurisdictions throughout Southern California, and generally represents a threshold of trips at which an intersection would have the potential to be significantly impacted. Although each intersection may have unique operating characteristics, this traffic engineering rule of thumb is a widely utilized tool for estimating a potential area of impact (i.e., study area).

1.3.2 FREEWAY MAINLINE SEGMENTS

Consistent with Caltrans traffic study guidelines, the freeway mainline analysis locations include the segments on either side of the interchange where the proposed Project is anticipated to contribute 100 two-way peak hour trips on the segments. The study area freeway mainline analysis locations include four I-10 Freeway mainline segments on either side of Cherry Valley Boulevard for both eastbound and westbound directions of flow as shown on Table 1-2:

TABLE 1-2 FREEWAY MAINLINE SEGMENT ANALYSIS LOCATIONS

ID	Freeway Mainline Segments
1	I-10 Freeway – Eastbound, east of Cherry Valley Boulevard
2	I-10 Freeway – Eastbound, west of Cherry Valley Boulevard
3	I-10 Freeway – Westbound, east of Cherry Valley Boulevard
4	I-10 Freeway – Westbound, west of Cherry Valley Boulevard

Pursuant to recent clarification from Caltrans, study area mainline segments on which the Project's contribution of 50 or more peak hour trips on a segment, which is a wider study area than the I-10 segments east and west of Cherry Valley Boulevard were studied and is presented as a supplement to this report in a letter titled *San Gorgonio Crossing Traffic Impact Analysis – Supplemental Expanded Freeway Segment Analysis* .

1.3.3 FREEWAY MERGE/DIVERGE RAMP JUNCTIONS

The study area freeway merge/diverge ramp junction analysis locations include four I-10 Freeway ramp junctions at Cherry Valley Boulevard for both eastbound and westbound directions of flow as shown on Table 1-3:

TABLE 1-3 FREEWAY MERGE/DIVERGE RAMP JUNCTION ANALYSIS LOCATIONS

ID	Freeway Merge/Diverge Ramp Junctions
1	I-10 Freeway – Eastbound, Off-Ramp at Cherry Valley Boulevard (Diverge)
2	I-10 Freeway – Eastbound, On-Ramp at Cherry Valley Boulevard (Merge)
3	I-10 Freeway – Westbound, On-Ramp at Cherry Valley Boulevard (Merge)
4	I-10 Freeway – Westbound, Off-Ramp at Cherry Valley Boulevard (Diverge)

1.4 ANALYSIS FINDINGS

This section provides a summary of the analysis results for Existing (2014), E+P, EAP, EAPC, and Horizon Year traffic conditions. Section 2.0 *Methodologies* provides information on the methodologies used in the analysis.

1.4.1 INTERSECTIONS

A summary of intersection level of service (LOS) findings by traffic condition is provided on Table 1-4.

EXISTING (2014) CONDITIONS

For Existing traffic conditions, the following intersections were found to operate at an unacceptable LOS during either the AM and/or PM peak hours:

ID	Intersection Location	Jurisdiction
1	I-10 EB Ramps / Cherry Valley Boulevard	Caltrans
2	I-10 WB Ramps / Cherry Valley Boulevard	Caltrans

Table 1-4

Summary of Intersection LOS

#	Intersection	Existing (2014) LOS		E+P LOS		EAP LOS		EAPC LOS		2035 NP LOS		2035 WP LOS		Acceptable LOS
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
1	I-10 EB Ramps / Cherry Valley Bl.	C	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**	D
2	I-10 WB Ramps / Cherry Valley Bl.	**F**	D	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**	**F**	D
3	Calimesa Boulevard / Cherry Valley Bl.	B	B	C	C	C	C	**F**	**F**	**F**	**F**	**F**	**F**	C
4	Driveway 1 / Cherry Valley Bl.	--	--	B	B	B	B	C	B	--	--	C	C	D
5	Street 2 / Cherry Valley Bl.	--	--	B	A	B	A	C	B	--	--	--	--	D
6	Driveway 3 / Cherry Valley Bl.	--	--	B	A	B	A	B	B	--	--	B	C	D
7	Union St. (NS) / Cherry Valley Bl.	C	B	C	B	C	C	D	C	**F**	**F**	**F**	**F**	D
8	Nancy Av. (NS) / Cherry Valley Bl.	B	B	B	B	B	B	C	B	**F**	**F**	**F**	**F**	D
9	Beaumont Ave. / Cherry Valley Bl.	C	B	C	B	C	B	D	C	**F**	**F**	**F**	**F**	D

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

LOS = Level of Service; E+P = Existing Plus Project; EAP = Existing Plus Ambient Growth Plus Project; EAPC = Existing Plus Ambient Growth Plus Project Plus Cumulativ

NP = No Project (or Without Project); WP = With Project

EXISTING PLUS PROJECT CONDITIONS

The same intersections that were found to operate at a deficient LOS (i.e. LOS E or F) under Existing traffic conditions were also found to operate at a deficient LOS under E+P traffic conditions. In other words, there were no NEW deficiencies identified due to the addition of Project traffic.

EXISTING PLUS AMBIENT GROWTH PLUS PROJECT (2017) CONDITIONS

Based on a comparison of EAP to Existing and E+P traffic conditions, the same intersections previously identified to operate at an unacceptable LOS for Existing and E+P traffic conditions were also found to operate at an unacceptable LOS for EAP traffic conditions. In other words, there were no NEW deficiencies identified due to the addition of 6.12% ambient growth along with Project traffic.

EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE (2017) CONDITIONS

Based on the assessment of EAPC traffic conditions, the following additional intersections were identified to operate at a deficient LOS in addition to those previously identified under Existing traffic conditions:

ID	Intersection Location	Jurisdiction
3	Calimesa Boulevard / Cherry Valley Boulevard	RivCo, Calimesa

HORIZON YEAR (2035) CONDITIONS

Based on the assessment of Horizon Year Without and With Project traffic conditions, the following additional intersections were identified to operate at a deficient LOS in addition to those previously identified under Existing, E+P, EAP, and EAPC traffic conditions:

ID	Intersection Location	Jurisdiction
5	Street 2 / Cherry Valley Boulevard	Riverside County
7	Union St. / Cherry Valley Boulevard	Riverside County
8	Nancy Av. / Cherry Valley Boulevard	Riverside County
9	Beaumont Av. / Cherry Valley Boulevard	Riverside County

1.4.2 FREEWAY MAINLINE

The analysis of Freeway operations prepared for this traffic study concludes that mainline and ramp junctions of the I-10 Freeway east and west of Cherry Valley Boulevard would operate at LOS "D" or better under Existing (2014), E+P, EAP (2017) and EAPC (2017) traffic conditions. However, the freeway segments and ramp junctions were found to be cumulatively impacted under Horizon Year (2035) without and with Project traffic conditions.

The mainline and ramp junctions of the I-10 Freeway east and west of Cherry Valley Boulevard would operate at LOS "F" even without the Project under Horizon Year (2035) traffic conditions. In fact, the Project's contribution to cumulative impacts under Horizon Year (2035) conditions involves only a small percentage (approximately 1% or less) of the forecasted traffic occurring on the identified freeway mainline and ramp junction under 2035 conditions.

1.4.3 FREEWAY OFF-RAMP QUEUING

There are no potential queuing issues anticipated during the AM and PM peak 95th percentile traffic flows for EAP (2017), EAPC (2017) traffic conditions and Horizon Year (2035) with Project traffic conditions.

1.5 RECOMMENDED IMPROVEMENTS

1.5.1 INTERSECTIONS

Table 1-5 lists the recommended improvements necessary to reduce the identified intersection LOS deficiencies by traffic condition. In addition, Table 1-5 also indicates those improvements currently included in existing fee programs. The Project's "fair share" percentage has also been calculated for each deficient study intersection.

A preliminary roundabout alternative to signalization at the I-10 Freeway at Cherry Valley Boulevard interchange ramps has been assessed and discussed later in this report. The preliminary roundabout alternative assessment has been based on near term and 2035 concepts previously presented in the *Roundabout Feasibility Study for Interstate 10 and Cherry Valley Boulevard Interchange* published by Omni-means, Ltd. (September 2013). (3)

1.5.2 FREEWAY MAINLINE

The Riverside County Transportation Commission (RCTC) shows long range plans to add an eastbound truck climbing lane from the San Bernardino County line to SR-60. The Caltrans I-10 Route Concept Report, which is currently being updated, shows plans for adding an HOV lane from San Bernardino County Line to SR-60. As the timing and funding of these future improvements are uncertain, they were not included as part of this analysis.

At this time, Caltrans has no fee programs or other mitigation programs in place for the mitigation of direct or cumulative impacts caused by development projects in Riverside County on State Highway System (SHS) roadway segments. Mitigation of cumulative impacts to freeway ramps are satisfied by mandatory participation in the TUMF program.

1.5.3 MITIGATION MEASURES

While ultimate improvement plans have not yet been finalized for the I-10 interchange at Cherry Valley Boulevard, a roundabout concept is being proposed by the City of Calimesa. As timing of future improvements to the interchange are uncertain, the project applicant proposes, and Mitigation Measures 1A and 1B require, payment of the project's fair share toward the construction of the interchange improvements or, if a fair share contribution program has not been established, construction of interim improvements at the I-10 at Cherry

Table 1-5
Page 1 of 2

Summary of Intersection Improvements

#	Intersection Location	Jurisdiction	Recommended Improvements				Improvements in TUMF or DIF[1]?	Fair Share %[2]
			Existing (2014)	EAP (2017)	EAPC (2017)	Horizon Year (2035) With Project		
1	I-10 EB Ramps / Cherry Valley Bl.[3]	Caltrans	- Traffic Signal - WB left turn lane	- Same - Same - SB right turn lane	- Same - Same - Same	- Same - Same - Modify the intersection to provide free flow movement for the SB right turn lane. - 2nd EB through lane - EB right turn lane - 2nd WB through lane	Yes (TUMF)[4]	5.8%
2	I-10 WB Ramps / Cherry Valley Bl.[3]	Caltrans	- Traffic Signal - EB left turn lane	- Same - Same - WB right turn lane	- Same - Same - Same	- Same - Same - Same - NB left turn lane - 2nd EB left turn lane - 2nd EB through lane - 2nd WB through lane - WB right turn lane	Yes (TUMF)[4]	10.6%
3	Calimesa Boulevard / Cherry Valley Bl.	Calimesa and County of Riverside		- EB left turn lane	- Same - Traffic Signal	- Same - Same - SB right turn lane - 2nd EB through lane - 2nd WB through lane - WB right turn lane - Modify the traffic signal in order to provide overlap phasing for the WB right turn lane.	No No No Yes (TUMF) Yes (TUMF) No No	12.1%
5	Street 2 / Cherry Valley Bl.	County of Riverside		- Traffic Signal - WB left turn lane - SB left turn lane - SB right turn lane	- Same - Same - Same - Same	- Same - Same - Same - Same - NB left turn lane - NB through lane - 2nd EB through lane - WB left turn lane - 2nd WB through lane	No No No No No No Yes (TUMF) No Yes (TUMF)	12.7%
7	Union St. (NS) / Cherry Valley Bl.	County of Riverside				- Traffic Signal - NB left turn lane - SB left turn lane - EB left turn lane - 2nd EB through lane - WB left turn lane - 2nd WB through lane	No No No No Yes (TUMF) No Yes (TUMF)	1.8%

Summary of Intersection Improvements

#	Intersection Location	Jurisdiction	Recommended Improvements				Improvements in TUMF or DIF[1]?	Fair Share %[2]
			Existing (2014)	EAP (2017)	EAPC (2017)	Horizon Year (2035) With Project		
8	Nancy Av. (NS) / Cherry Valley Bl.	County of Riverside				- Traffic Signal - EB left turn lane - 2nd EB through lane - WB left turn lane - 2nd EB through lane	No No Yes (TUMF) No Yes (TUMF)	1.5%
9	Beaumont Ave. / Cherry Valley Bl.	County of Riverside				- 2nd EB through lane - 2nd WB through lane - Modify the traffic signal in order to provide overlap phasing for the EB right turn lane.	Yes (TUMF) Yes (TUMF) No	1.5%

[1] Improvements are identified as being included in the Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF) program or as a County of Riverside DIF facility.

[2] Program improvements constructed by project may be eligible for fee credit, at discretion of County of Riverside. See Table 9-2 for Fair Share Calculations.

[3] As shown on Tables 6-5, 6-6, and 7-4 and discussed in the TIA, a preliminary roundabout interchange design has been analyzed for EAP (2017), EAPC (2017), and Horizon Year (2035) With Project conditions as an alternative to the improvements listed in this table. As the I-10 Freeway and Cherry Valley Boulevard interchange is a TUMF facility, the Project's TUMF payment will be the same regardless of the improvement alternatives implemented. Further discussion of the roundabout alternative at the I-10 Freeway and Cherry Valley Boulevard interchange can be found in Section 6.8 *Recommended Improvements for EAP and EAPC (2017) Conditions* and Section 7.8 *Recommended Improvements for Horizon Year (2035) Conditions* .

[4] I-10 Freeway and Cherry Valley Boulevard interchange is identified in the WRCOG Pass Area TUMF zone.

Valley interchange to mitigate project impacts.

Mitigation Measure 1A

(a) Prior to the issuance of occupancy permits, the project applicant shall pay the project's fair share toward the construction of the new interchange at the I-10 eastbound and westbound intersections at Cherry Valley Boulevard, provided that the City of Calimesa has established a fair share contribution program for such improvements. The County shall determine whether a fair share program exists in the City of Calimesa and, if one does exist, the fair share payment due from the applicant to the City of Calimesa shall be 5.8 % at the I-10 EB ramps/Cherry Valley Boulevard and 10.6% at I-10 WB ramps/Cherry Valley Boulevard, as determined in the traffic study.

(b) If a fair share contribution program has not been established, and provided that both Caltrans and the City of Calimesa authorize construction within their respective jurisdictional control, the project applicant shall construct the following interim improvements prior to the issuance of occupancy permits:

- Install traffic signals at I-10 eastbound and westbound ramp intersections at Cherry Valley Boulevard,
- Restripe to provide eastbound and westbound left turn pockets within the existing width of the Cherry Valley Boulevard bridge,
- Add a southbound right turn lane on the off ramp at the intersection of I-10 EB ramps at Cherry Valley Boulevard, and
- Add a westbound right turn lane at the intersection of I-10 WB ramps at Cherry Valley Boulevard.

Mitigation Measure 1B

(a) Prior to the issuance of occupancy permits, the project applicant shall pay the project's fair share costs to realign Calimesa Boulevard approximately 550 feet east of the I-10 westbound ramps and construct an eastbound left turn lane at the intersection of Calimesa Boulevard and Cherry Valley Boulevard, provided that the City of Calimesa has established a fair share contribution program for this intersection. The County shall determine whether a fair share program exists in the City of Calimesa and, if one does exist, the fair share payment due from the applicant to the City of Calimesa shall be 12.1%, as determined in the traffic study.

(b) If a fair share contribution program has not been established, and provided that the City of Calimesa authorizes construction within its jurisdictional control, the project applicant shall, prior to the issuance of occupancy permits:

- Realign Calimesa Boulevard approximately 550 feet east of the I-10 westbound ramps; and

- Construct an eastbound left turn lane at the intersection of Calimesa Boulevard and Cherry Valley Boulevard.

A supplemental traffic analysis to assess the interim traffic signals and other improvements at the interchange ramps, including vehicle queues and potential impact to operations of the adjacent Calimesa Boulevard at Cherry Valley Boulevard intersection is provided in *San Gorgonio Crossing Supplemental Traffic Analysis* dated June 9, 2016, prepared by Urban Crossroads.

1.6 On-Site Roadway and Site Access Improvements

1.6.1 On-Site Roadway Improvements

The Project is proposed to have access on Cherry Valley Boulevard via Driveway 1, Street 2 and Driveway 3. Street 2 is proposed to be full-access. Driveways 1 and 3 will be restricted to right-in/right-out access only.

Roadway improvements necessary to provide site access and on-site circulation are assumed to be constructed in conjunction with site development and are described below. These improvements should be in place prior to occupancy. The recommended site-adjacent roadway improvements for the Project are described below and illustrated on Exhibit 1-3.

Cherry Valley Boulevard - Construct Cherry Valley Boulevard from the westerly Project boundary to the easterly Project boundary at its ultimate half-section width as an Arterial Highway (128-foot right-of-way) consistent with the Riverside County General Plan Circulation Element. Construct a raised median on Cherry Valley Boulevard to enforce right-in/right-out access at Driveway 1 and Driveway 3.

Street 2 - Construct Street 2 from the Project's Private Roadway to Cherry Valley Boulevard as a Public Street at its ultimate full-section width as an Industrial Collector (78-foot right-of-way).

Private Roadway - Construct Project's Private Roadway from northerly Project boundary to its connection with Street 2 as a 56-foot paved section.

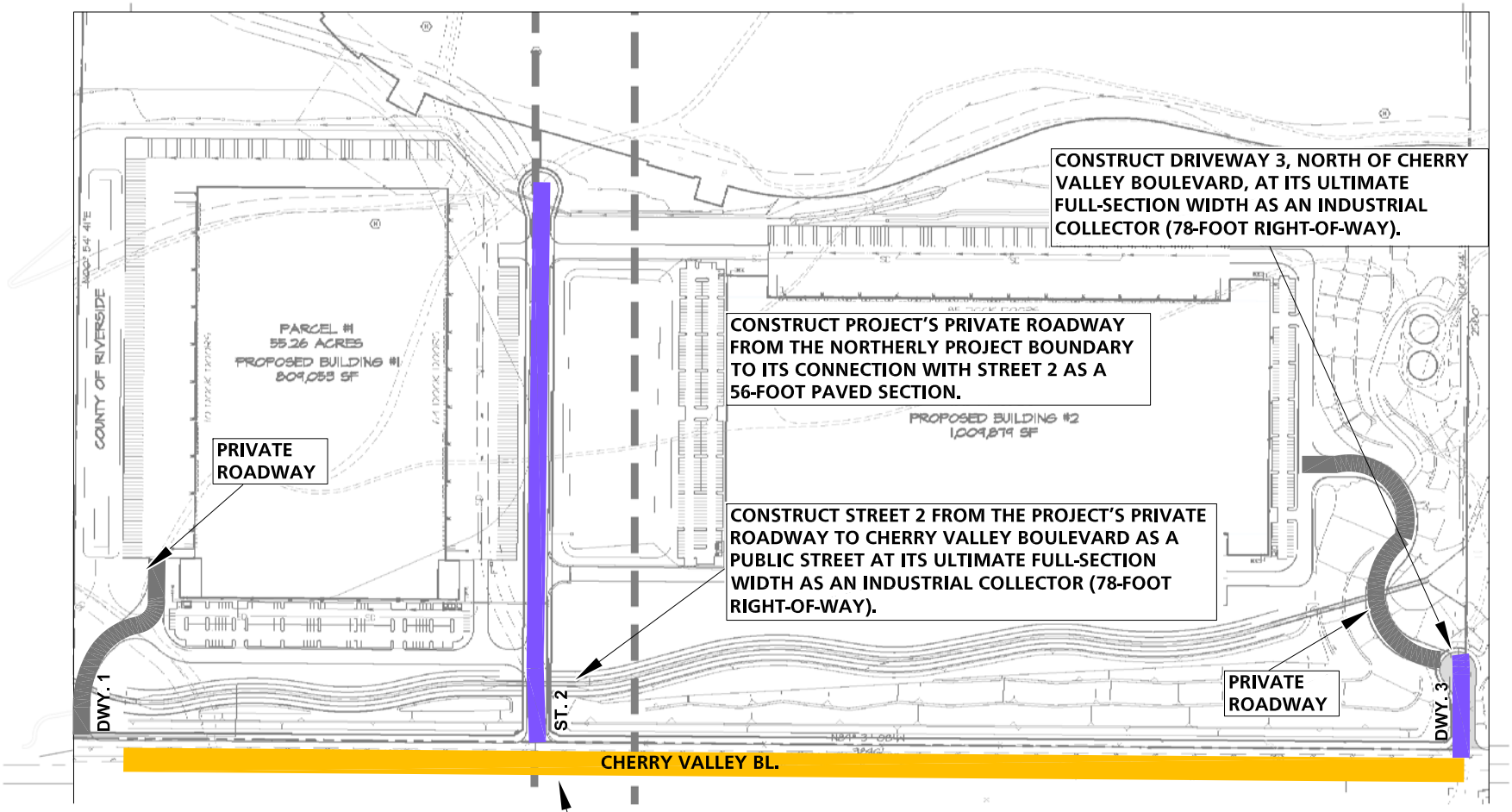
Driveway 3 - Construct Driveway 3, north of Cherry Valley Boulevard, at its ultimate full-section width as an Industrial Collector (78-foot right-of-way).

Specific lane geometrics at each Project access point are discussed subsequently in *Section 1.6.2 Site Access Improvements*.

1.6.2 Site Access Improvements

The recommended site access driveway improvements for the Project are described below. Exhibit 1-4 illustrates the on-site and the minimum site adjacent recommended roadway lane improvements. Construction of on-site and site adjacent improvements shall occur in conjunction with adjacent Project development activity or as needed for Project access purposes.

EXHIBIT 1-3: SITE ADJACENT ROADWAY RECOMMENDATIONS



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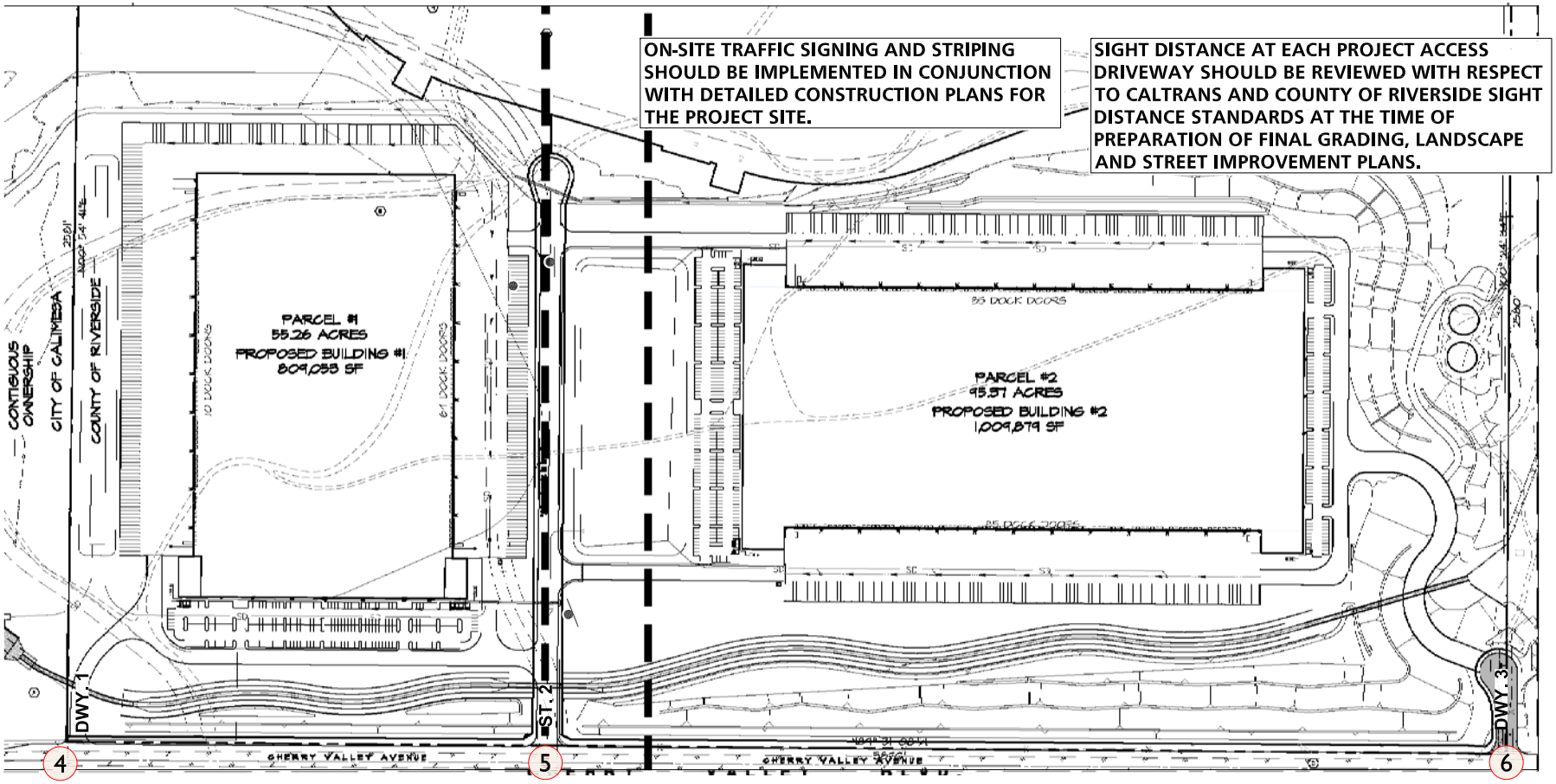
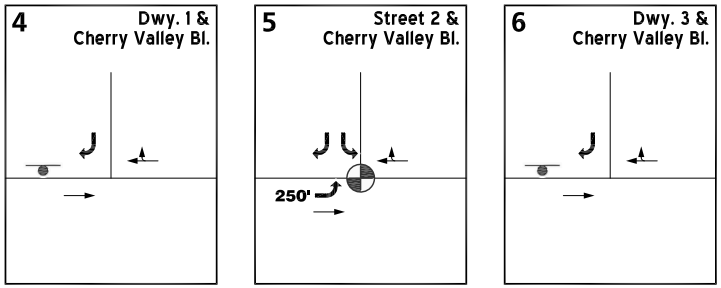
URBAN CROSSROADS

EXHIBIT 1-4: SITE ACCESS ON-SITE CIRCULATION RECOMMENDATIONS





LEGEND:

- = TRAFFIC SIGNAL
- = STOP SIGN
- = EXISTING LANE
- = LANE IMPROVEMENT
- 250' = TURN POCKET LENGTH

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URBAN CROSSROADS

Driveway 1 at Cherry Valley Boulevard – Install a stop control on the southbound approach and construct the intersection with right-in/right-out access only in conjunction with the following geometrics:

Northbound Approach: N/A

Southbound Approach: One right turn lane.

Eastbound Approach: One through lane.

Westbound Approach: One shared through-right turn lane.

Street 2 at Cherry Valley Boulevard – Install a traffic signal and construct the intersection with the following geometrics:

Northbound Approach: N/A.

Southbound Approach: One left turn lane and one shared through-right turn lane.

Eastbound Approach: One left turn lane with a minimum of 250-feet of storage and one through lane. Westbound Approach: One shared through-right turn lane.

Driveway 3 at Cherry Valley Boulevard – Install a stop control on the southbound approach and construct the intersection with right-in/right-out access only in conjunction with the following geometrics:

Northbound Approach: N/A

Southbound Approach: One right turn lane.

Eastbound Approach: One through lane.

Westbound Approach: One shared through-right turn lane.

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the Project site. Sight distance at each Project access driveway should be reviewed with respect to Caltrans and County of Riverside sight distance standards at the time of preparation of final grading, landscape and street improvement plans.

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2 METHODOLOGIES

This section documents the methodologies and assumptions used to perform this TIA.

2.1 LEVEL OF SERVICE

Traffic operations of roadway facilities are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic flow based on several factors such as speed, travel time, delay, and freedom to maneuver. Six levels are typically defined ranging from LOS A, representing completely free-flow conditions, to LOS F, representing breakdown in flow resulting in stop-and-go conditions. LOS E represents operations at or near capacity, an unstable level where vehicles are operating with the minimum spacing for maintaining uniform flow.

2.2 INTERSECTION CAPACITY ANALYSIS

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The *Highway Capacity Manual* (HCM) 2010 methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (4) The HCM uses different procedures depending on the type of intersection control.

The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected in April 2014. The following peak hours were selected for analysis:

- Weekday AM Peak Hour (peak hour between 7:00 AM and 9:00 AM)
- Weekday PM Peak Hour (peak hour between 4:00 PM and 6:00 PM)

2.2.1 SIGNALIZED INTERSECTIONS

The County of Riverside requires signalized intersection operations analysis based on the methodology described in Chapter 18 and Chapter 31 of the HCM 2010. (4) Intersection LOS operations are based on an intersection's average control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections LOS is directly related to the average control delay per vehicle and is correlated to a LOS designation as described in Table 2-1.

TABLE 2-1 SIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00	A	F
Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00	B	F
Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.01 to 35.00	C	F
Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.01 to 55.00	D	F
Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.01 to 80.00	E	F
Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths	80.01 and up	F	F

Source: HCM 2010, Chapter 18

Per the Caltrans *Guide for the Preparation of Traffic Impact Studies*, the traffic modeling and signal timing optimization software package Synchro (Version 8 Build 805) has been utilized to analyze signalized intersections under Caltrans' jurisdiction, which include interchange to arterial ramps (i.e. I-10 Freeway ramps at Cherry Valley Boulevard). All other study area intersections have also been analyzed with the Synchro software package. Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the Chapters 18 and 31 of the HCM 2010. Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The LOS and capacity analysis performed by Synchro take into consideration optimization and coordination of signalized intersections within a network.

The peak hour traffic volumes have been adjusted using a peak hour factor (PHF) to reflect peak 15 minute volumes. Common practice for LOS analysis is to use a peak 15-mintue rate of flow. However, flow rates are typically expressed in vehicles per hour. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume (e.g. PHF = [Hourly Volume] / [4 x Peak 15-minute Flow Rate]). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for Existing (2014) and EAP (2017) traffic conditions. A PHF of 0.92 or higher has been used for EAPC (2017) traffic conditions. Lastly, a PHF of 0.95 or higher has been used for all intersections with the exception of driveways for long-range Horizon Year (2035) without and with Project traffic conditions. A PHF of 0.92 has been used for Project driveways for Horizon Year (2035) with Project conditions.

2.2.2 UNSIGNALIZED INTERSECTIONS

The County of Riverside requires the operations of unsignalized intersections be evaluated using the methodology described in Chapter 19, Chapter 20 and Chapter 32 of the HCM 2010. (4) The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2).

TABLE 2-2 UNSIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay Per Vehicle (Seconds)	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Little or no delays.	0 to 10.00	A	F
Short traffic delays.	10.01 to 15.00	B	F
Average traffic delays.	15.01 to 25.00	C	F
Long traffic delays.	25.01 to 35.00	D	F
Very long traffic delays.	35.01 to 50.00	E	F
Extreme traffic delays with intersection capacity exceeded.	> 50.00	F	F

Source: HCM 2010, Chapter 19 and Chapter 20

At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. For all-way stop controlled intersections, LOS is computed for the intersection as a whole. All unsignalized study area intersections have been analyzed using Synchro software.

2.3 FREEWAY MAINLINE SEGMENT ANALYSIS

The freeway system in the study area has been broken into segments defined by the freeway-to-arterial interchange locations. The freeway segments have been evaluated in this TIA based upon peak hour directional volumes. The freeway segment analysis is based on the methodology described in Chapter 11 of the HCM 2010 and performed using HCS 2010 software. (4) The performance measure preferred by Caltrans to calculate LOS is density. Density is expressed in terms of passenger cars per mile per lane. Table 2-3 illustrates the freeway segment LOS thresholds for each density range utilized for this analysis.

TABLE 2-3 FREEWAY MAINLINE LOS THRESHOLDS

Level of Service	Description	Density Range (pc/mi/ln)1
A	Free-flow operations in which vehicles are relatively unimpeded in their ability to maneuver within the traffic stream. Effects of incidents are easily absorbed.	0.0 – 11.0
B	Relative free-flow operations in which vehicle maneuvers within the traffic stream are slightly restricted. Effects of minor incidents are easily absorbed.	11.1 – 18.0
C	Travel is still at relative free-flow speeds, but freedom to maneuver within the traffic stream is noticeably restricted. Minor incidents may be absorbed, but local deterioration in service will be substantial. Queues begin to form behind significant blockages.	18.1 – 26.0
D	Speeds begin to decline slightly and flows and densities begin to increase more quickly. Freedom to maneuver is noticeably limited. Minor incidents can be expected to create queuing as the traffic stream has little space to absorb disruptions.	26.1 – 35.0
E	Operation at capacity. Vehicles are closely spaced with little room to maneuver. Any disruption in the traffic stream can establish a disruption wave that propagates throughout the upstream traffic flow. Any incident can be expected to produce a serious disruption in traffic flow and extensive queuing.	35.1 – 45.0
F	Breakdown in vehicle flow.	>45.0

[1] *pc/mi/ln = passenger cars per mile per lane. Source: HCM 2010, Chapter 11*

2.4 FREEWAY MERGE/DIVERGE RAMP JUNCTION ANALYSIS

The freeway system in the study area has been broken into segments defined by freeway-to-arterial interchange locations resulting in four (4) existing on and off ramp locations. Although the HCM indicates the influence area for a merge/diverge junction is 1,500 feet, the analysis presented in this traffic study has been performed at all ramp locations with respect to the nearest on or off ramp at each interchange in an effort to be consistent with Caltrans guidance/comments on other projects Urban Crossroads has worked on.

The merge/diverge analysis is based on the HCM 2010 Freeway Merge and Diverge Segments analysis method and performed using HCS2010 software. (4) The measure of effectiveness (reported in passenger car/mile/lane) are calculated based on the existing number of travel lanes, number of lanes at the on and off ramps both at the analysis junction and at upstream and downstream locations (if applicable) and acceleration/deceleration lengths at each merge/diverge point. Table 2-4 presents the merge/diverge area level of service thresholds for each density range utilized for this analysis.

TABLE 2-4 FREEWAY MERGE AND DIVERGE LOS THRESHOLDS

Level of Service	Density Range (pc/mi/ln)[1]
A	≤10.0
B	10.0 – 20.0
C	20.0 – 28.0
D	28.0 – 35.0
E	>35.0
F	Demand Exceeds Capacity

[1] pc/mi/ln = passenger cars per mile per lane. Source: HCM 2010, Chapter 13

2.5 FREEWAY OFF-RAMP QUEUING

Consistent with Caltrans requirements, the progression of vehicles has been assessed to determine potential queuing impacts at the freeway ramp intersections on the off-ramps at Cherry Valley Boulevard. The traffic progression analysis tool and HCM intersection analysis program, Synchro, has been used to assess the potential impacts/needs of the intersections with traffic added from the proposed Project. Storage (turn-pocket) length recommendations at the ramps have been based upon the 95th percentile queue resulting from the Synchro progression analysis. The 95th percentile queue is the maximum back of queue with 95th percentile traffic volumes. The queue length reported is for the lane with the highest queue in the lane group.

Traffic is simulated for two complete cycles of the 95th percentile traffic in Synchro in order to account for the effects of spillover between cycles. In practice, the 95th percentile queue shown will rarely be exceeded and the queues shown with the footnote are acceptable for the design of storage bays.

A vehicle is considered queued whenever it is traveling at less than 10 feet/second. A vehicle will only become queued when it is either at the stop bar or behind another queued vehicle. Although only the 95th percentile queue has been reported in the tables, the 50th percentile queue can be found in the appendix alongside the 95th percentile queue for each ramp location. The 50th percentile maximum queue is the maximum back of queue on a typical cycle during the peak hour, while the 95th percentile queue is the maximum back of queue with 95th percentile traffic volumes during the peak hour. In other words, if traffic were observed for 100 cycles, the 95th percentile queue would be the queue experienced with the 95th busiest cycle (or 5% of the time). The 50th percentile or average queue represents the typical queue length for peak hour traffic conditions, while the 95th percentile queue is derived from the average queue plus 1.65 standard deviations. The 95th percentile queue is not necessarily ever observed, it is simply based on statistical calculations.

2.6 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or ascertain the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TIA uses the signal warrant criteria presented in the latest edition of the Federal Highway Administration's (FHWA) Manual on Uniform Traffic Control Devices (MUTCD), as amended by the MUTCD 2012 California Supplement, for all study area intersections. (5)

The signal warrant criteria for Existing (2014) conditions are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. Both the FHWA's MUTCD and the MUTCD 2012 California Supplement indicate that the installation of a traffic signal should be considered if one or more of the signal warrants are met. Specifically, this TIA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing intersections. Warrant 3 criteria are basically identical for both the FHWA's MUTCD and the MUTCD 2012 California Supplement. Warrant 3 is appropriate to use for this TIA because it provides specialized warrant criteria for intersections with rural characteristics (e.g. located in communities with populations of less than 10,000 persons or with adjacent major streets operating above 40 miles per hour). For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection. It should be noted that for the purposes of this analysis, the peak hour warrant has also been utilized at study area locations under future traffic conditions if the planning level ADT warrant was not met.

Future unsignalized intersections have been assessed regarding the potential need for new traffic signals based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets.

Traffic signal warrant analyses were performed for the following unsignalized study area intersections:

ID	Intersection Location	Jurisdiction
1	I-10 Freeway EB Ramps / Cherry Valley Boulevard	Caltrans
2	I-10 Freeway WB Ramps / Cherry Valley Boulevard	Caltrans
3	Calimesa Boulevard / Cherry Valley Boulevard	RivCo, Calimesa
5	Street 2 / Cherry Valley Boulevard - Future Intersection	Riverside County
7	Union Street / Cherry Valley Boulevard	Riverside County
8	Nancy Avenue / Cherry Valley Boulevard	Riverside County

The existing conditions traffic signal warrant analysis is presented in the subsequent section, Section 3 Area Conditions of this report. The traffic signal warrant analysis for future conditions is presented in Section 5 Existing plus Project Traffic Analysis, Section 6 Opening Year (2017) Traffic Analysis and Section 7 Horizon Year (2035) Traffic Analysis of this report.

It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should also be noted that signal warrants do not necessarily correlate with level of service. An intersection may satisfy a signal warrant condition and operate at or above LOS "C" or operate below LOS "C" and not meet a signal warrant.

2.7 LOS CRITERIA

County of Riverside

County of Riverside General Plan Policy C 2.1 states that the County will maintain the following County-wide target level of service (LOS): LOS "C" on all County-maintained roads and conventional State Highways. As an exception, LOS "D" is allowed in Community Development areas at intersections of any combination of Secondary Highways, Major Highways, Arterial Highways, Urban Arterial Highways, Expressways or conventional State Highways. Finally, LOS "E" may be allowed in designated Community Centers to the extent that it would support transit-oriented development and pedestrian communities.

City of Calimesa

The City of Calimesa General Plan states that arterial roads should carry both local and through traffic and be improved to maintain a Level of Service "C" or better. As such, LOS "C" has been considered acceptable at any intersection within the City of Calimesa.

Caltrans

Caltrans considers LOS "D" to be the limit of acceptable traffic operations during the peak hour at freeway ramp intersections, basic freeway segments and merge/diverge ramp junctions maintained by Caltrans.

Table 2-5 shows the LOS criteria for each of the study area intersections.

TABLE 2-5 INTERSECTION LEVEL OF SERVICE CRITERIA

ID	Intersection Location	Jurisdiction	Acceptable LOS
1	I-10 Freeway EB Ramps / Cherry Valley Boulevard	Caltrans	D
2	I-10 Freeway WB Ramps / Cherry Valley Boulevard	Caltrans	D
3	Calimesa Boulevard / Cherry Valley Boulevard	RivCo, Calimesa	C
4	Driveway 1 / Cherry Valley Bl.(RIRO)	Riverside County	D
5	Street 2 / Cherry Valley Boulevard	Riverside County	D
6	Driveway 3 / Cherry Valley Bl. (RIRO)	Riverside County	D
7	Union St. / Cherry Valley Boulevard	Riverside County	D
8	Nancy Av. / Cherry Valley Boulevard	Riverside County	D
9	Beaumont Av. / Cherry Valley Boulevard	Riverside County	D

2.8 PROJECT FAIR SHARE CALCULATION METHODOLOGY

In cases where this TIA identifies that the proposed Project would have a significant cumulative impact to a roadway facility, and the recommended mitigation measure is a fair share monetary contribution, the following methodology was applied to determine the fair share contribution. A project's fair share contribution at an off-site study area intersection is determined based on the following equation, which is the ratio of project traffic to new traffic, and new traffic is total future traffic subtracts existing baseline traffic:

Project Fair Share % = Project Traffic / (Total Traffic – Existing Baseline Traffic)

The project fair share contribution calculations are presented in Section 9 *Local and Regional Funding Mechanisms* of this TIA.

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3 AREA CONDITIONS

This section provides a summary of the existing circulation network, the County of Riverside General Plan Circulation Network, and a review of existing peak hour intersection operations and traffic signal warrants.

3.1 EXISTING CIRCULATION NETWORK

Pursuant to the approved Traffic Study Scoping Agreement (Appendix "1.1") and discussion with the County of Riverside staff, the study area includes a total of nine (9) existing and future intersections as shown on Exhibit 1-2. Of these nine intersections, the existing study area circulation network includes six intersection analysis locations shown on Table 1-1. The other three intersections in the study area are future Project access points that do not currently exist.

Exhibit 3-1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls.

3.2 GENERAL PLAN CIRCULATION ELEMENTS

As previously noted, the Project site is located within the County of Riverside. Exhibit 3-2 shows the County of Riverside General Plan Circulation Element, and Exhibit 3-3 illustrates the County of Riverside General Plan roadway cross-sections.

3.3 TRANSIT SERVICE

The study area is currently served by the Pass Transit with bus services along Cherry Valley Boulevard through Route 7. Pass transit routes in the vicinity of Project are shown on Exhibit 3-4.

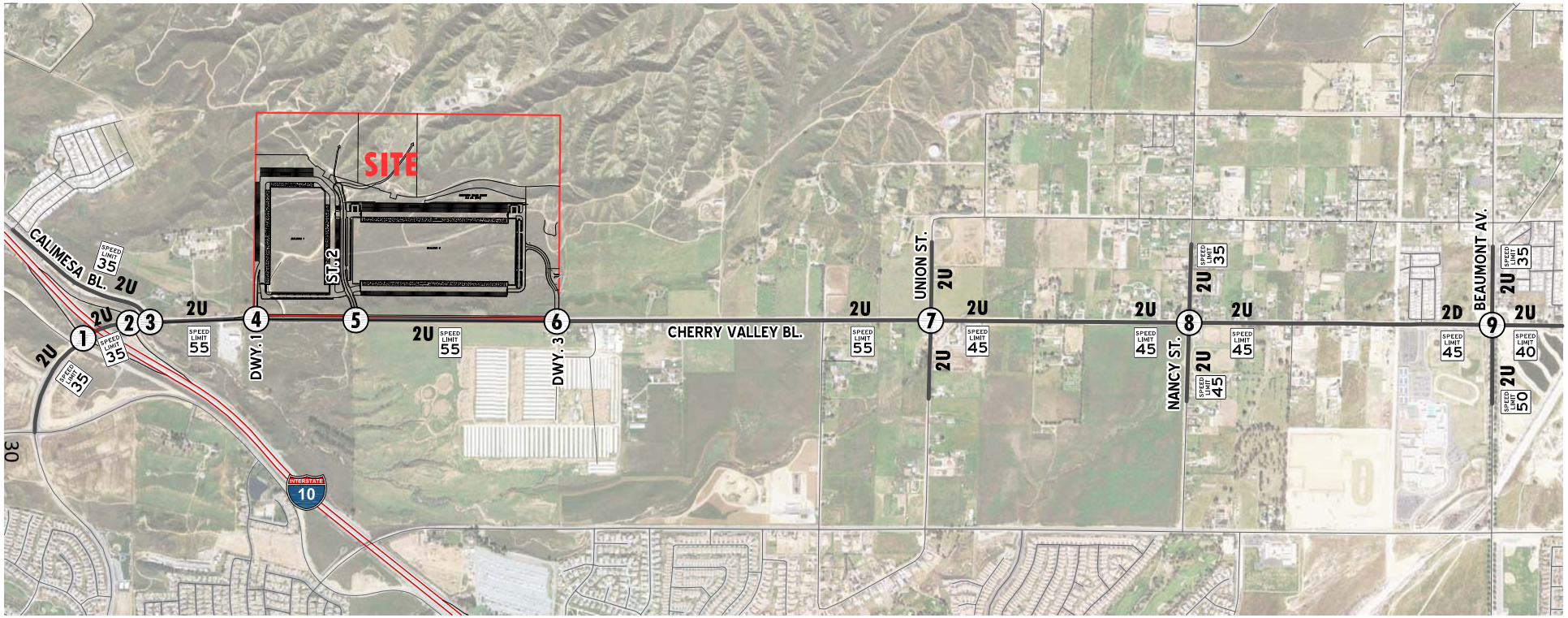
3.4 EXISTING TRAFFIC COUNTS

The AM peak hour traffic volumes were determined by counting traffic volumes in the two hour period between 7:00 and 9:00 AM in April 1, 2014. Similarly, the PM peak hour traffic volumes were identified by counting traffic volumes in the two hour period from 4:00 to 6:00 PM in April 1, 2014. The April 2014 count data are representative of typical weekday peak hour traffic conditions in the study area. There were no observations made in the field that would indicate atypical traffic conditions on this date, such as construction activity or detour routes.

The raw manual peak hour turning movement traffic count data sheets are included in Appendix "3.1". The traffic counts collected on April 1, 2014 include the vehicle classifications as shown below:

- Passenger Cars
- 2-Axle Trucks
- 3-Axle Trucks
- 4 or More Axle Trucks

EXHIBIT 3-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS



1 I-10 EB Ramps & Cherry Valley Bl.	2 I-10 WB Ramps & Cherry Valley Bl.	3 Calimesa Bl. & Cherry Valley Bl.	4 Dwy. 1 & Cherry Valley Bl.	5 St. 2 & Cherry Valley Bl.	6 Dwy. 3 & Cherry Valley Bl.	7 Union St. & Cherry Valley Bl.	8 Nancy St. & Cherry Valley Bl.	9 Beaumont Av. & Cherry Valley Bl.
			Intersection Does Not Exist	Intersection Does Not Exist	Intersection Does Not Exist		S	DEF DEF

LEGEND:

= TRAFFIC SIGNAL
S = ALL WAY STOP
= STOP SIGN

4 = NUMBER OF LANES
D = DIVIDED
U = UNDIVIDED
DEF = DEFACTO RIGHT TURN

N

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EXHIBIT 3-2: RIVERSIDE COUNTY GENERAL PLAN CIRCULATION ELEMENT

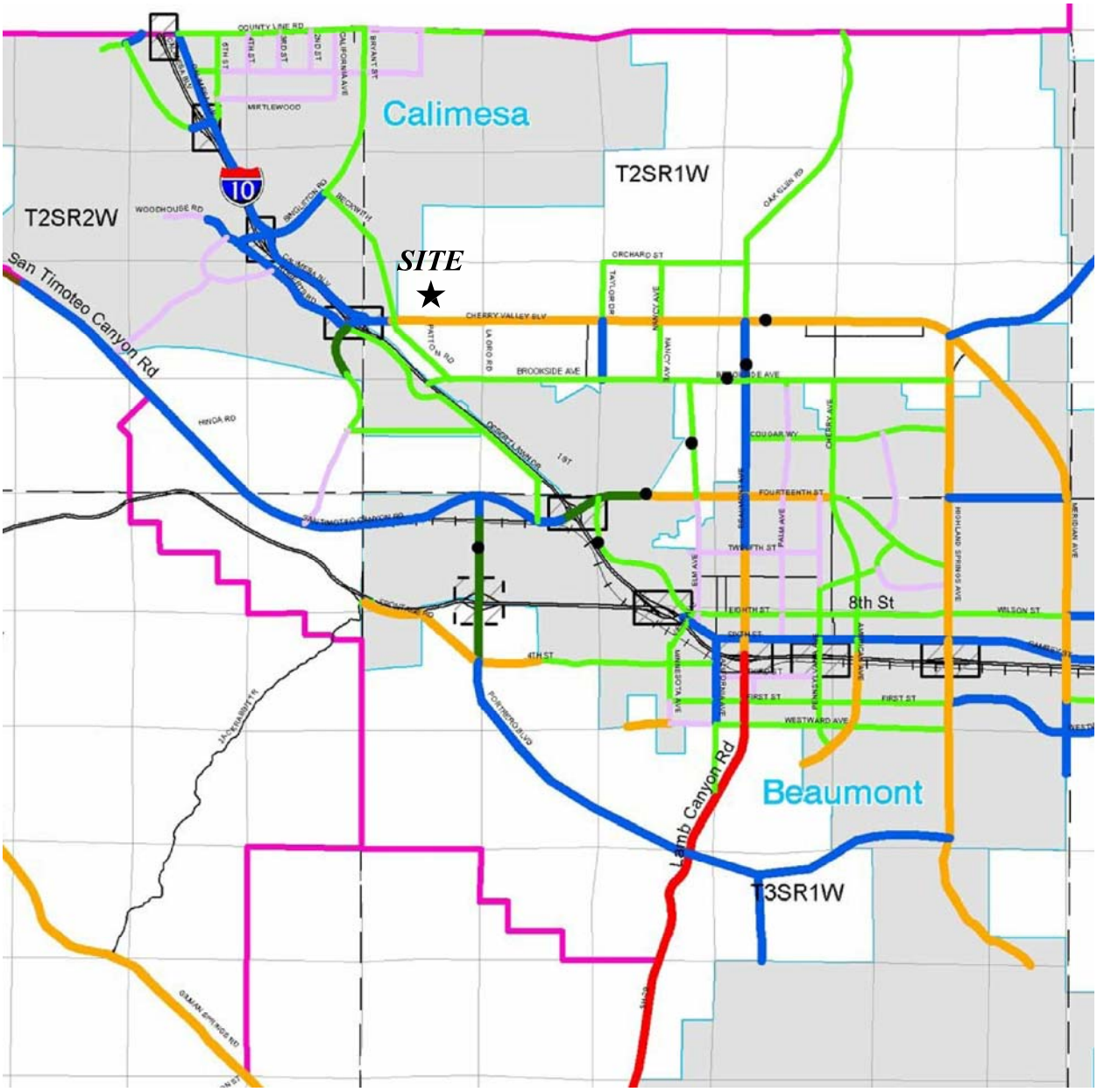
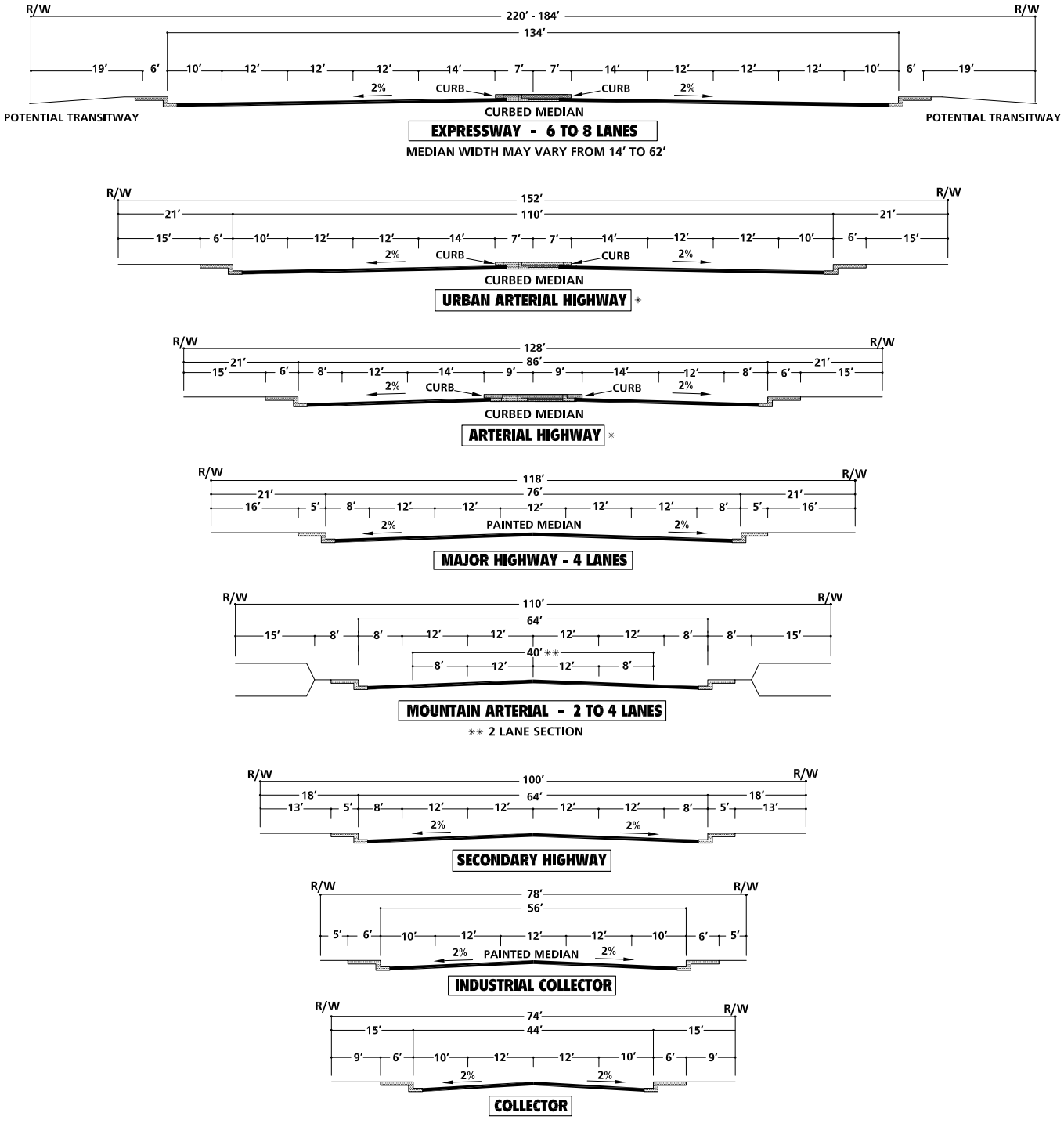


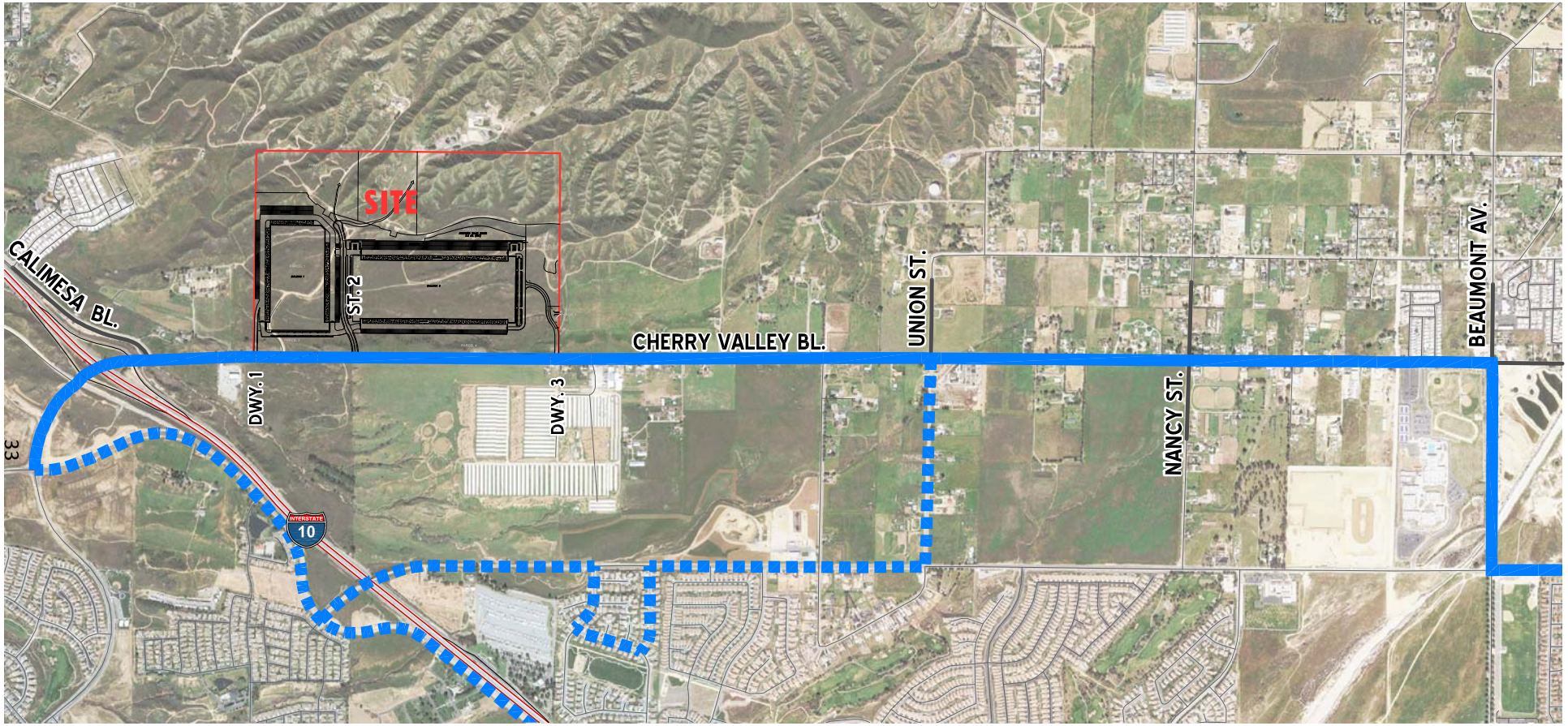
EXHIBIT 3-3: RIVERSIDE COUNTY GENERAL PLAN ROADWAY CROSS-SECTIONS



* *IMPROVEMENTS MAY BE RECONFIGURED TO ACCOMMODATE EXCLUSIVE TRANSIT LANES OR ALTERNATIVE LANE ARRANGEMENTS ADDITIONAL RIGHT OF WAY MAY BE REQUIRED AT INTERSECTIONS TO ACCOMMODATE ULTIMATE IMPROVEMENTS FOR STATE HIGHWAYS SHALL CONFORM TO CALTRANS DESIGN STANDARDS.*



EXHIBIT 3-4: EXISTING TRANSIT SERVICES



LEGEND:

- ROUTE 7
- ROUTE 7 ALTERNATE ROUTE

N

SOURCE: PASS TRANSIT (www.ci.beaumont.ca.us)

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To represent the impact large trucks, buses and recreational vehicles have on traffic flow; all trucks were converted into Passenger Car Equivalents (PCEs). By their size alone, these vehicles occupy the same space as two or more passenger cars. In addition, the time it takes for them to accelerate and decelerate is greater than for passenger cars, and varies depending on the type of vehicle and number of axles. For the purpose of this analysis, a PCE factor of 1.5 has been applied to 2-axle trucks, 2.0 for 3-axle trucks and 3.0 for 4+-axle trucks to estimate each turning movement.

Existing (2014) average daily traffic (ADT) volumes on arterial highways throughout the study area are shown on Exhibit 3-5. Existing (2014) ADT volumes are based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg:

PM Peak Hour (Approach Volume + Exit Volume) x 12 = Leg Volume

A comparison of PM peak hour traffic count data to 24-hour count data indicated that the PM peak hour volumes were approximately eight to nine percent of the total 24-hour daily volume on select roadway segments. This same relationship (i.e., PM peak hour traffic volumes equate to 8-9 percent of average daily traffic volumes) was applied in estimating average daily roadway segment traffic volumes throughout the study area.

Existing (2014) AM and PM peak hour intersection volumes are shown on Exhibits 3-6 and 3-7, respectively. All of the traffic volumes illustrated on the exhibits and used in the traffic analysis are shown in terms of PCE.

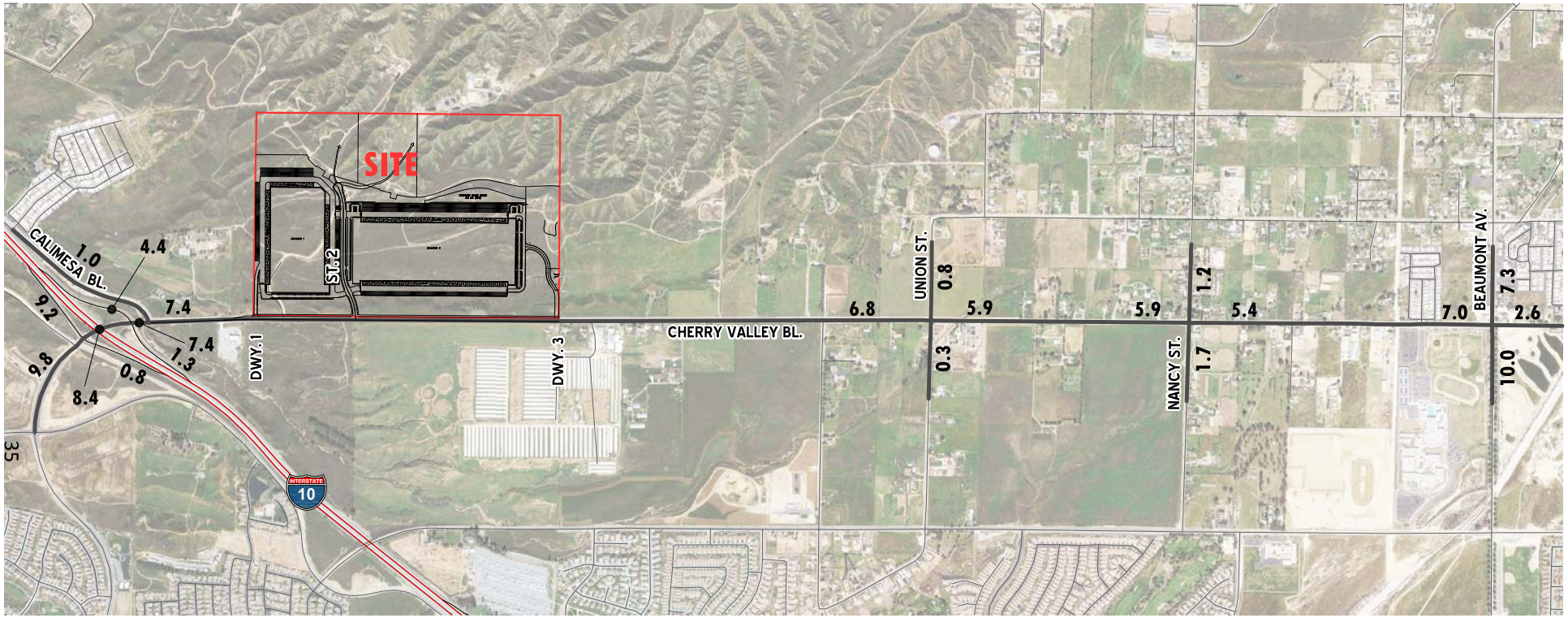
3.5 EXISTING CONDITIONS INTERSECTION OPERATIONS ANALYSIS

Existing (2014) baseline peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection operations analysis results provided on Table 3-1 shows that the following intersection analysis location currently experiences unacceptable conditions.

ID	Intersection
1	I-10 EB Ramps / Cherry Valley Boulevard – LOS "F" PM Peak Hour only
2	I-10 WB Ramps / Cherry Valley Boulevard – LOS "F" AM Peak Hour only

Consistent with Table 3-1, a summary of the peak hour intersection LOS for Existing (2014) conditions are shown in Exhibit 3-8. The intersection operations analysis worksheets for Existing (2014) traffic conditions are included in Appendix "3.2" of this TIA.

EXHIBIT 3-5: EXISTING (2014) AVERAGE DAILY TRAFFIC (ADT)



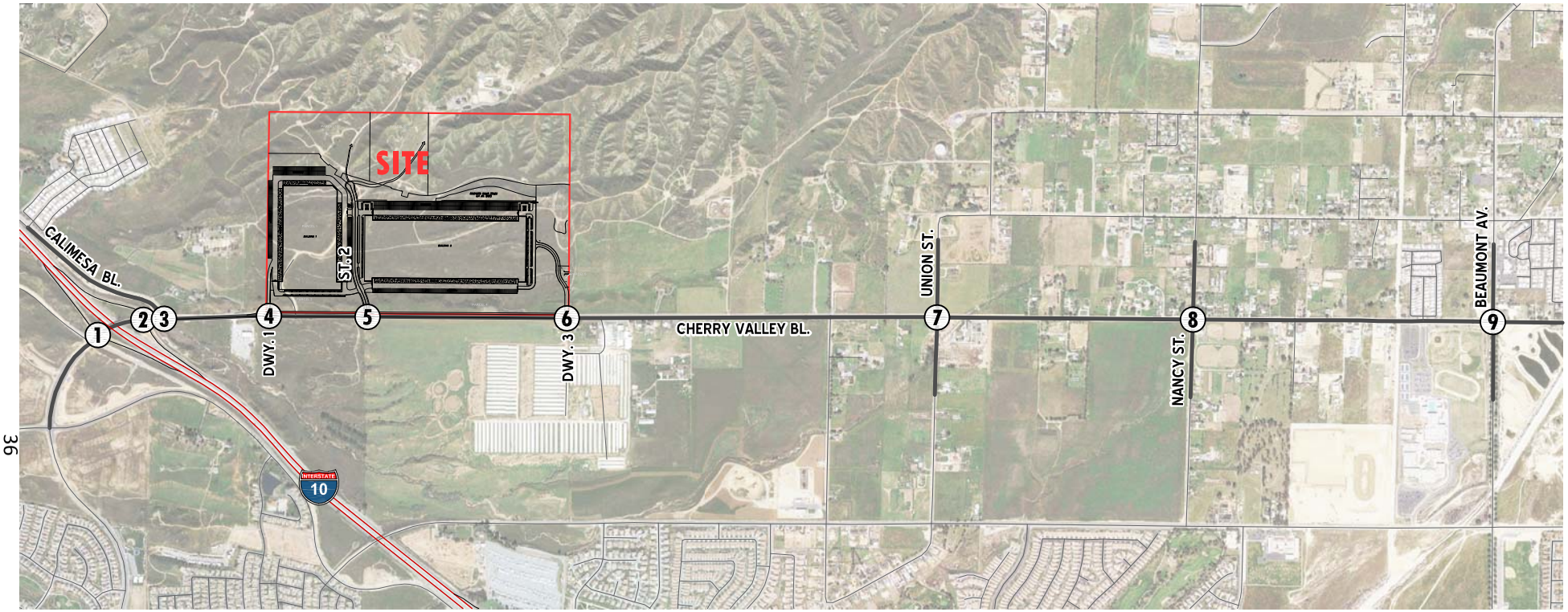
LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

N

CVAR_11230

EXHIBIT 3-6: EXISTING (2014) AM PEAK HOUR INTERSECTION VOLUMES

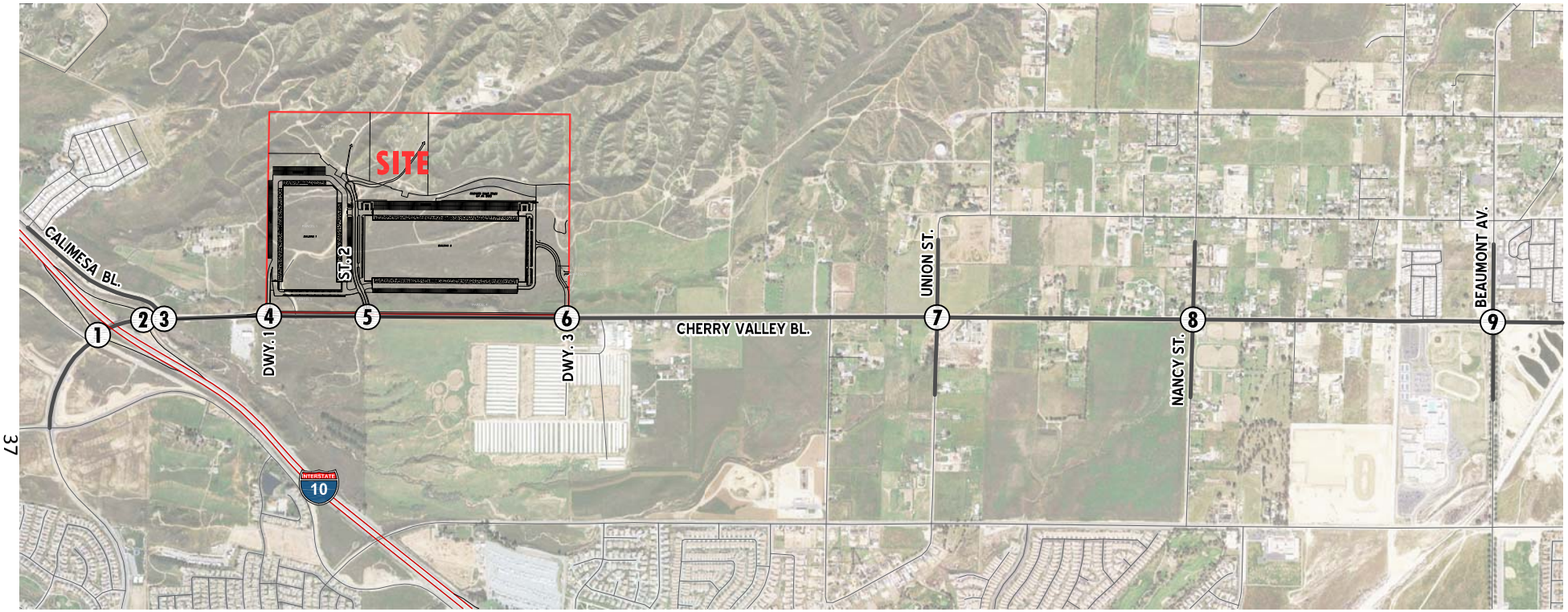


1 I-10 EB Ramps & Cherry Valley Bl.	2 I-10 WB Ramps & Cherry Valley Bl.	3 Calimesa Bl. & Cherry Valley Bl.	4 Dwy. 1 & Cherry Valley Bl.	5 St. 2 & Cherry Valley Bl.	6 Dwy. 3 & Cherry Valley Bl.	7 Union St. & Cherry Valley Bl.	8 Nancy St. & Cherry Valley Bl.	9 Beaumont Av. & Cherry Valley Bl.
84 1 117 / 84 20 / 555 67	378 78 / 480 192 / 26 0 8	19 18 / 10 436 / 17 183	Intersection Does Not Exist	Intersection Does Not Exist	Intersection Does Not Exist	68 1 1 / 1 303 3 / 16 167 3 / 12 0 3	60 28 14 / 4 208 47 / 12 127 35 / 34 22 122	69 181 5 / 8 236 15 / 35 104 238 / 252 101 4

N

NOTE: ALL VOLUMES ARE IN P.C.E.

EXHIBIT 3-7: EXISTING (2014) PM PEAK HOUR INTERSECTION VOLUMES



1 I-10 EB Ramps & Cherry Valley Bl.	2 I-10 WB Ramps & Cherry Valley Bl.	3 Calimesa Bl. & Cherry Valley Bl.	4 Dwy. 1 & Cherry Valley Bl.	5 St. 2 & Cherry Valley Bl.	6 Dwy. 3 & Cherry Valley Bl.	7 Union St. & Cherry Valley Bl.	8 Nancy St. & Cherry Valley Bl.	9 Beaumont Av. & Cherry Valley Bl.
426 1 341 → 119 ← 13	→ 171 ← 50	20 26 → 14 ← 200	Intersection Does Not Exist	Intersection Does Not Exist	Intersection Does Not Exist	25 0 0 → 0 ← 183 ← 5	8 19 9 → 4 ← 157 ← 13	37 203 20 → 14 ← 47 ← 7
227 → 49 →	193 → 375 → 82 0 24 ←	21 → 378 →				38 → 303 → 12 → 9 1 2 ←	36 → 239 → 34 → 18 26 29 ←	61 → 111 → 186 → 141 275 20 ←

NOTE: ALL VOLUMES ARE IN P.C.E.

CVAR_11232

URBAN CROSSROADS

Table 3-1

Intersection Analysis for Existing (2014) Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	I-10 EB Ramps / Cherry Valley Bl.	CSS	0	0	0	0	1	0	0	1	0	0	1	0	19.3	**89.9**	C	**F**
2	I-10 WB Ramps / Cherry Valley Bl.	CSS	0	1	0	0	0	0	0	1	0	0	1	0	**>100.0**	28.8	**F**	D
3	Calimesa Boulevard / Cherry Valley Bl.	CSS	0	0	0	0	1	0	0	1	0	0	1	0	13.8	13.0	B	B
4	Driveway 1 / Cherry Valley Bl.		Future Intersection Location												--	--	--	--
5	Street 2 / Cherry Valley Bl.		Future Intersection Location												--	--	--	--
6	Driveway 3 / Cherry Valley Bl.		Future Intersection Location												--	--	--	--
7	Union St. (NS) / Cherry Valley Bl.	CSS	0	1	0	0	1	0	0	1	0	0	1	0	15.4	13.9	C	B
8	Nancy Av. (NS) / Cherry Valley Bl.	AWS	0	1	0	0	1	0	0	1	1	0	1	1	12.9	10.3	B	B
9	Beaumont Ave. / Cherry Valley Bl.	TS	1	1	d	1	1	d	1	1	1	1	1	0	29.7	17.5	C	B

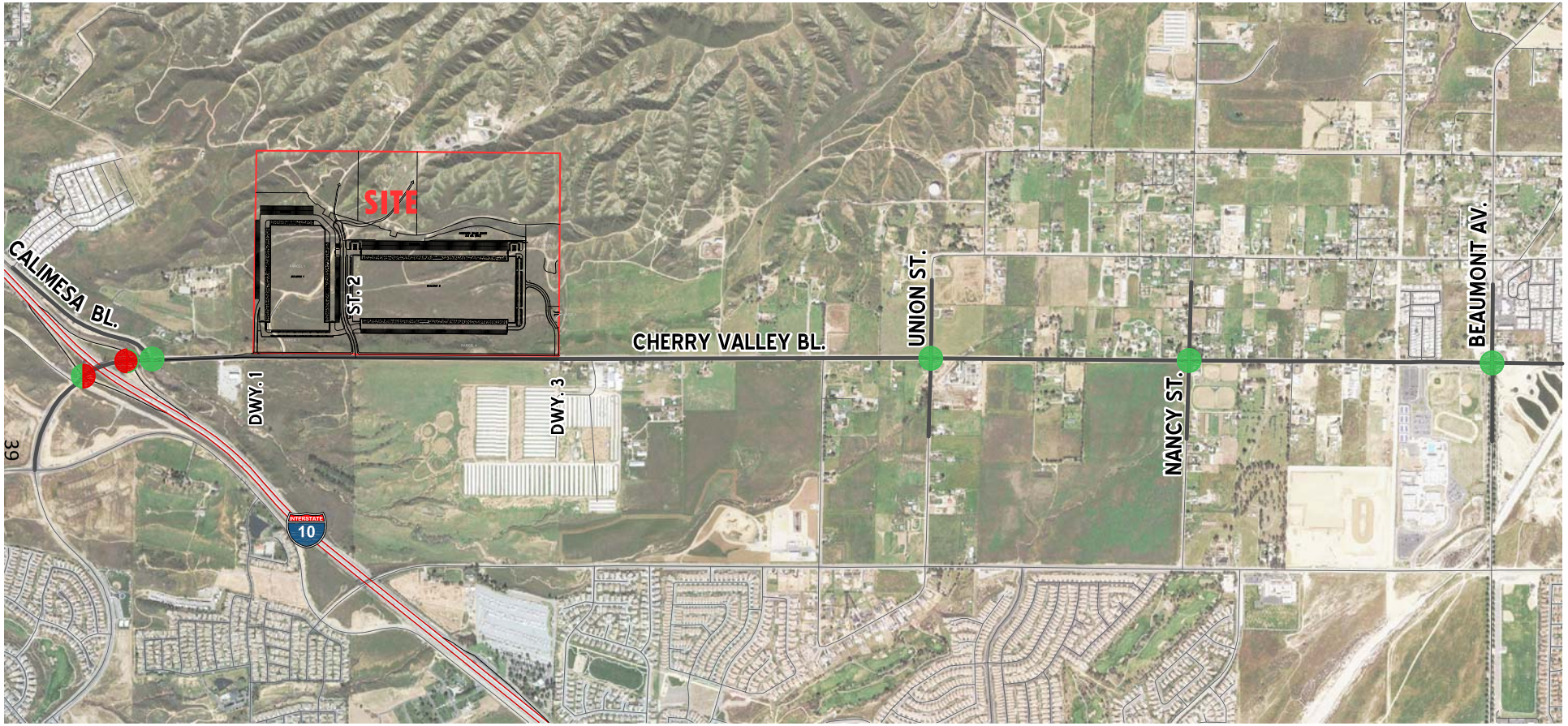
[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes

L = Left; T = Through; R = Right; > = Right-Turn Overlap Phasing; d= Defacto Right Turn Lane

[2] Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (o movements sharing a single lane) are shown.

[3] TS = Traffic Signal; AWS = All-Way Stop; CSS = Cross-street Stop

EXHIBIT 3-8: SUMMARY OF PEAK HOUR INTERSECTION LOS FOR EXISTING (2014) CONDITIONS



LEGEND:

- = AM PEAK HOUR ACCEPTABLE LOS
- = AM PEAK HOUR DEFICIENT LOS
- = PM PEAK HOUR ACCEPTABLE LOS
- = PM PEAK HOUR DEFICIENT LOS

N

CVAR_11234

3.6 EXISTING CONDITIONS TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for existing traffic conditions are based on existing peak hour intersection turning volumes. For Existing (2014) traffic conditions, the following intersection currently appears to warrant traffic signal (See Appendix "3.3"):

ID	Intersection Location	Jurisdiction
1	I-10 EB Ramps / Cherry Valley Boulevard	Caltrans

Although not warranted, the intersection of I-10 Westbound Ramps at Cherry Valley Boulevard is anticipated to operate at unacceptable LOS during the AM peak hour without the installation of a traffic signal. The addition of lanes is not anticipated to improve the deficient peak hour LOS at this intersection. As such, it is recommended that this location be monitored, and the Caltrans Traffic Engineer should implement engineering judgment and his/her discretion on the installation of a traffic signal.

3.7 RECOMMENDED IMPROVEMENTS FOR EXISTING (2014) CONDITIONS

Table 3-2 lists the improvement needs recommended to reduce each deficient location's peak hour delay and associated LOS grade back to acceptable levels for Existing (2014) conditions.

Existing (2014) intersection operations analysis worksheets, with improvements, are provided in Appendix "3.4".

3.8 EXISTING CONDITIONS FREEWAY SEGMENT ANALYSIS

Existing (2014) mainline directional volumes for the AM and PM peak hours are provided on Exhibit 3-9. As shown on Table 3-3, the I-10 Freeway segments analyzed for this study were found to operate at LOS "C" or better during the peak hours for Existing (2014) traffic conditions. Existing (2014) basic freeway segment analysis worksheets are provided in Appendix "3.5".

3.9 EXISTING CONDITIONS FREEWAY MERGE/DIVERGE ANALYSIS

Ramp merge and diverge operations were also evaluated for Existing (2014) conditions and the results of this analysis are presented in Table 3-4. As shown in Table 3-4, the I-10 Freeway ramp merge and diverge areas at Cherry Valley Boulevard currently operate at LOS "C" or better during the peak hours under Existing (2014) traffic conditions. Existing (2014) freeway ramp junction operations analysis worksheets are provided in Appendix "3.6".

EXHIBIT 3-9: EXISTING (2014) I-10 FREEWAY MAINLINE VOLUMES



Table 3-2

Recommended Improvements for Existing (2014) Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	I-10 EB Ramps / Cherry Valley Bl.																	
	- Without Improvements	CSS	0	0	0	0	1	0	0	1	0	0	1	0	19.3	**89.9**	C	**F**
	- With Improvements	**TS**	0	0	0	0	1	0	0	1	0	**1**	1	0	21.3	25.2	C	C
2	I-10 WB Ramps / Cherry Valley Bl.																	
	- Without Improvements	CSS	0	1	0	0	0	0	0	1	0	0	1	0	**>100.0**	28.8	**F**	D
	- With Improvements	**TS**	0	1	0	0	0	0	**1**	1	0	0	1	0	30.0	16.8	C	B

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes

L = Left; T = Through; R = Right; > = Right-Turn Overlap Phasing; d= Defacto Right Turn Lane;**1** = Improvement

[2] Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (o movements sharing a single lane) are shown. The signalized I-10 ramp at Cherry Valley Boulevard have been analyzed using Synchro (Version 8.0 , build 803)

[3] CSS = Cross-street Stop; TS = Traffic Signal

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

Table 3-3

Basic Freeway Segment Analysis for Existing (2014) Conditions

Freeway	Direction	Mainline Segment	Lanes[1]	Volume		Truck %		Density[2]		LOS	
				AM	PM	AM	PM	AM	PM	AM	PM
I-10	EB	West of Cherry Valley Boulevard	3	2,195	3,248	12%	10%	13.0	19.0	B	C
		East of Cherry Valley Boulevard	3	2,026	2,591	13%	13%	12.0	15.4	B	B
	WB	West of Cherry Valley Boulevard	3	4,137	3,515	11%	12%	24.5	20.8	C	C
		East of Cherry Valley Boulevard	3	3,382	3,246	13%	13%	20.1	19.3	C	C

[1] Number of lanes are in the specified direction and is based on existing conditions. No future improvements are currently plannec

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln)

Table 3-4

Freeway Ramp Junction Merge/Diverge Analysis for Existing (2014) Conditions

Freeway	Direction	Ramp or Segment	Lanes on Freeway[1]	AM Peak Hour		PM Peak Hour	
				Density[2]	LOS	Density[2]	LOS
I-10	EB	Off-Ramp at Cherry Valley Boulevard	3	14.8	B	21.8	C
		On-Ramp at Cherry Valley Boulevard	3	14.0	B	16.9	B
	WB	On-Ramp at Cherry Valley Boulevard	3	26.6	C	22.1	C
		Off-Ramp at Cherry Valley Boulevard	3	21.8	C	21.1	C

[1] Number of lanes are in the specified direction and is based on existing conditions. No future improvements are currently plannec

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln)

4 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project, as well as the Project's trip assignment onto the study area roadway network. The Project is located north of Cherry Valley Boulevard and approximately 1,800 feet east of the I-10 / Cherry Valley Boulevard interchange in unincorporated County of Riverside.

The Project includes the development of 1,860,760 square feet of high-cube logistics warehouse use between two (2) buildings. The proposed intensity for each of the buildings is listed below:

- Building 1 – 737,480 square feet of high-cube warehouse use with access to Cherry Valley Boulevard via Driveway 1 and Street 2.
- Building 2 – 1,123,280 square feet of high-cube warehouse use with access to Cherry Valley Boulevard via Street 2 and Driveway 3.

For the purposes of this traffic analysis, the Project has been assumed to be developed in a single phase with a proposed opening year of 2017.

Site access is provided along Cherry Valley Boulevard via Driveway 1, Street 2 (proposed public street) and Driveway 3. Street 2 is assumed to allow full-access. Driveways 1 and 3 have been assessed assuming restricted right-in/right-out access only. The Project will construct improvements on the site adjacent roadway of Cherry Valley Boulevard as indicated in the Conditions of Approval. Regional access to the Project site will be provided by the I-10 Freeway via Cherry Valley Boulevard.

4.1 PROJECT TRIP GENERATION

In order to estimate the traffic characteristics of the proposed Project, trip-generation statistics published in the most recent release of the Institute of Transportation Engineers (ITE) Trip Generation (9th Edition, 2012) manual for the proposed land use (ITE Land Use Code 152 – High-Cube Warehousing) was used. This particular rate was selected based on our understanding of the Project's design and operating characteristics. Trip generation rates for the Project are shown in Table 4-1. Refinements to these raw trip generation estimates have been made to provide a more detailed breakdown of trips by vehicle mix. The vehicle mix percentages were obtained from data collected by the South Coast Air Quality Management District (SCAQMD) and applied to ITE truck trip generation rates for land use code 152 (High-Cube Warehousing).

In addition, Passenger Car Equivalents (PCE) factors have been applied to the trip generation rates for heavy trucks (large 2-axles, 3-axles, 4+-axles). PCE factors have been utilized due to the expected heavy truck component for the proposed Project uses. PCE factors allow the typical "real-world" mix of vehicle types to be represented as a single, standardized unit, such as the passenger car, for the purposes of capacity and level of service analyses. PCE factors are

Table 4-1

Project Trip Generation Summary (Actual Vehicles) [1]

Land Use[1]	Units[3]	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			Inbound	Outbound	Total	Inbound	Outbound	Total	
High-Cube Warehouse[2]	TSF	152	0.076	0.034	0.110	0.037	0.083	0.120	1.680
		Passenger Cars	0.055	0.025	0.080	0.025	0.055	0.080	1.040
		2-Axle Trucks	0.005	0.002	0.007	0.003	0.006	0.009	0.141
		3-Axle Trucks	0.004	0.002	0.005	0.002	0.005	0.007	0.113
		4-Axle+ Trucks	0.012	0.006	0.018	0.007	0.017	0.024	0.386

Land Use	Quantity	Units[3]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Building 1	737.480	TSF							
Passenger Cars:			41	18	59	18	41	59	767
Truck Trips:			15	7	22	9	20	29	472
2-axle:			*3*	*2*	*5*	*2*	*4*	*6*	*104*
3-axle:			*3*	*1*	*4*	*2*	*4*	*5*	*84*
4+-axle:			*9*	*4*	*13*	*6*	*12*	*18*	*285*
- Net Truck Trips [2]			*15*	*7*	*22*	*9*	*20*	*29*	*472*
Building 1 Subtotal			**56**	**25**	**81**	**27**	**61**	**88**	**1,239**
Building 2	1,123.280	TSF							
Passenger Cars:			62	28	90	28	62	90	1,168
Truck Trips:			23	10	34	14	31	45	719
2-axle:			*5*	*2*	*7*	*3*	*7*	*10*	*158*
3-axle:			*4*	*2*	*6*	*2*	*5*	*8*	*127*
4+-axle:			*14*	*6*	*20*	*8*	*19*	*27*	*434*
- Net Truck Trips [2]			*23*	*10*	*34*	*14*	*31*	*45*	*719*
Building 2 Subtotal			**85**	**38**	**124**	**42**	**93**	**135**	**1,887**
I-10 Gateway Job Center Passenger Cars			**103**	**46**	**149**	**46**	**103**	**149**	**1,935**
I-10 Gateway Job Center Net Truck Trips			**39**	**17**	**56**	**23**	**51**	**74**	**1,191**
I-10 Gateway Job Center [4]			**141**	**64**	**205**	**69**	**154**	**223**	**3,126**

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Ninth Edition (2012).

[2] Vehicle Mix Source: Total truck percentage source from ITE Trip Generation manual. Truck mix (by axle type) source from SCAQMD.

AM peak hour = 72.7% passenger cars, 6.01% 2-Axle trucks, 4.83% 3-Axle trucks, 16.46% 4-Axle trucks

PM peak hour = 66.7% passenger cars, 7.33% 2-Axle trucks, 5.89% 3-Axle trucks, 20.08% 4-Axle trucks

ADT = 61.9% passenger cars, 8.38% 2-Axle trucks, 6.74% 3-Axle trucks, 22.98% 4-Axle trucks

[3] TSF = thousand square feet

[4] TOTAL TRIPS = Passenger Cars + Net Truck Trips

applied to large truck types such as large 2-axles, 3-axles, 4+-axles. A PCE factor of 1.5 has been applied to large 2-axle trucks, a factor of 2.0 for 3-axle trucks and a factor of 3.0 for 4+-axle trucks. These PCE factors are consistent with the values recommended by the San Bernardino Associated Governments (SANBAG) and are accepted factors in the County of Riverside.

Project daily and peak hour trip generation by vehicle type are illustrated in Table 4-1 (actual vehicles) and Table 4-2 (in PCE). The proposed Project is anticipated to generate a net total of approximately 3,126 (4,905 PCE) net trip-ends per day on a typical weekday with approximately 205 (288 PCE) net AM peak hour trips and 223 (335 PCE) net PM peak hour trips.

4.2 PROJECT TRIP DISTRIBUTION

Trip distribution is the process of identifying the probable destinations, directions or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered, to identify the route where the Project traffic would distribute. The Project trip distribution was developed based on anticipated travel patterns to and from the Project site for both passenger cars and truck traffic.

The Project passenger car trip distribution pattern is graphically depicted on Exhibit 4-1. The Project truck trip distribution pattern is graphically depicted on Exhibit 4-2. Each of these distribution patterns was reviewed and approved by the County of Riverside as part of the traffic study scoping process (see Appendix 1.1). Both the passenger car and truck trip distribution patterns take into consideration the access restrictions at Driveways 1 and 3.

4.3 MODAL SPLIT

Although the use of public transit, walking, and/or bicycling have the potential to reduce some Project-related vehicular for passenger cars only, such reductions have not been taken into considerations in this traffic study in order to provide a conservative analysis of the Project's potential to result in significant traffic impacts.

4.4 PROJECT TRIP ASSIGNMENT

The assignment of traffic from the Project to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, Project average daily traffic (ADT) volumes for the weekday are shown on Exhibit 4-3. Project AM and PM peak hour volumes are shown on Exhibits 4-4 and 4-5, respectively.

4.5 BACKGROUND TRAFFIC

Opening year traffic forecasts have been based upon three years of background (ambient) growth at 2% per year for Opening Year (2017) traffic conditions. The ambient growth factor is

Table 4-2

Project Trip Generation Summary (in PCE) [1]

Land Use[1]	Units[3]	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			Inbound	Outbound	Total	Inbound	Outbound	Total	
High-Cube Warehouse[2]	TSF	152	0.076	0.034	0.110	0.037	0.083	0.120	1.680
Passenger Cars			0.055	0.025	0.080	0.025	0.055	0.080	1.040
2-Axle Trucks (PCE = 1.5)			0.007	0.003	0.010	0.004	0.009	0.013	0.211
3-Axle Trucks (PCE = 2.0)			0.007	0.003	0.011	0.004	0.010	0.014	0.226
4-Axle+ Trucks (PCE = 3.0)			0.037	0.017	0.054	0.022	0.050	0.072	1.158

Land Use	Quantity	Units[3]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Building 1	737.480	TSF							
Passenger Cars:			41	18	59	18	41	59	767
Truck Trips:			15	7	22	9	20	29	472
2-axle:			*5*	*2*	*7*	*3*	*7*	*10*	*156*
3-axle:			*5*	*2*	*8*	*3*	*7*	*10*	*167*
4+-axle:			*28*	*12*	*40*	*17*	*37*	*53*	*854*
- Net Truck Trips (PCE)[2]			*38*	*17*	*55*	*23*	*51*	*73*	*1,177*
Building 1 Subtotal			**79**	**35**	**114**	**41**	**91**	**132**	**1,944**
Building 2	1,123.280	TSF							
Passenger Cars:			62	28	90	28	62	90	1,168
Truck Trips:			23	10	34	14	31	45	719
2-axle:			*8*	*3*	*11*	*5*	*10*	*15*	*237*
3-axle:			*8*	*4*	*12*	*5*	*11*	*16*	*254*
4+-axle:			*42*	*19*	*61*	*25*	*56*	*81*	*1,301*
- Net Truck Trips (PCE)[2]			*58*	*26*	*84*	*35*	*77*	*112*	*1,793*
Building 2 Subtotal			**120**	**54**	**174**	**63**	**139**	**202**	**2,961**
I-10 Gateway Job Center Passenger Cars			**103**	**46**	**149**	**46**	**103**	**149**	**1,935**
I-10 Gateway Job Center Net Truck Trips (PCE)			**96**	**43**	**139**	**57**	**128**	**185**	**2,969**
I-10 Gateway Job Center (PCE)[4]			**199**	**89**	**288**	**104**	**231**	**335**	**4,905**

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Ninth Edition (2012).

[2] Vehicle Mix Source: Total truck percentage source from ITE Trip Generation manual. Truck mix (by axle type) source from SCAQMD. PCE rates are per SANBAG.

AM peak hour = 72.7% passenger cars, 6.01% 2-Axle trucks, 4.83% 3-Axle trucks, 16.46% 4-Axle trucks

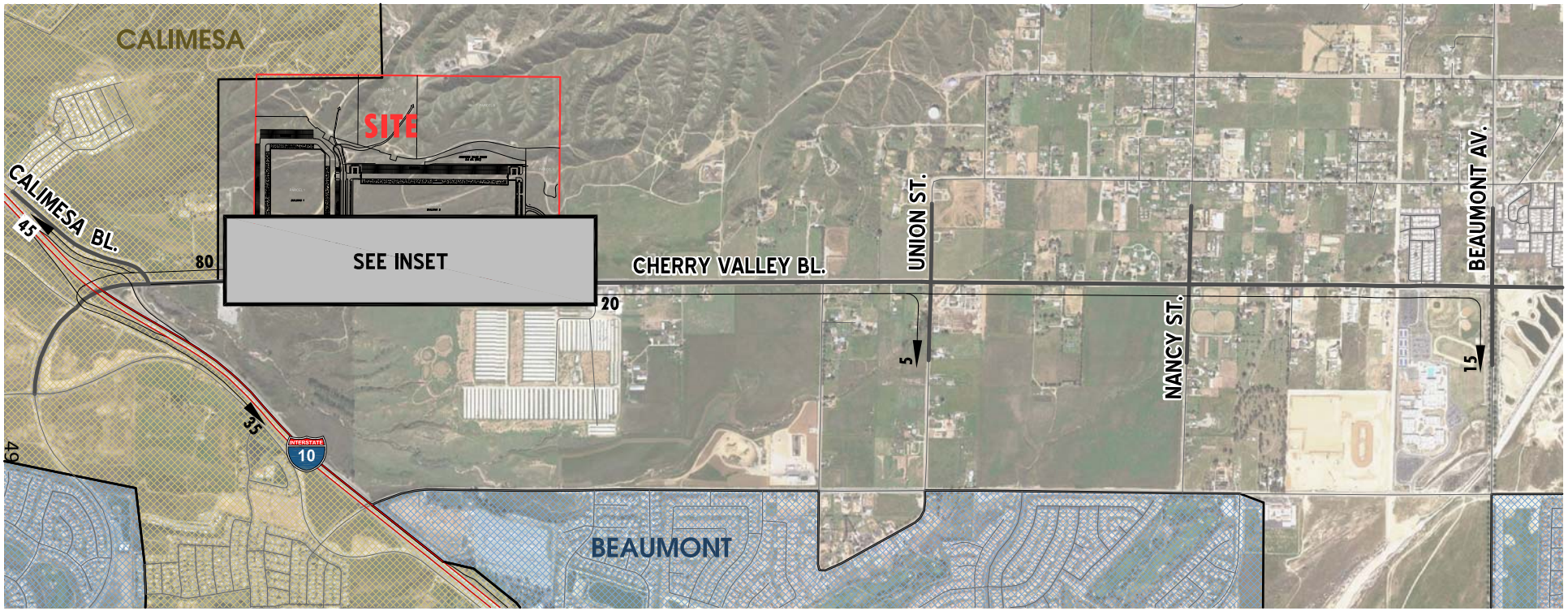
PM peak hour = 66.7% passenger cars, 7.33% 2-Axle trucks, 5.89% 3-Axle trucks, 20.08% 4-Axle trucks

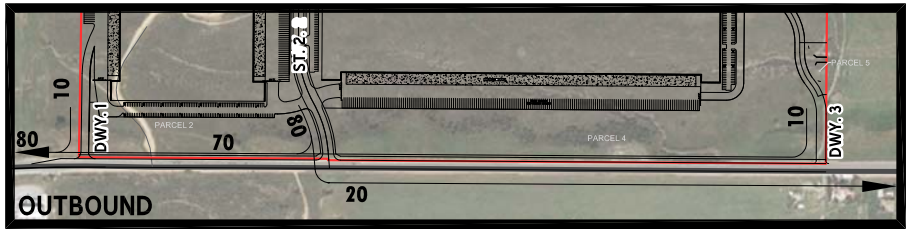
ADT = 61.9% passenger cars, 8.38% 2-Axle trucks, 6.74% 3-Axle trucks, 22.98% 4-Axle trucks

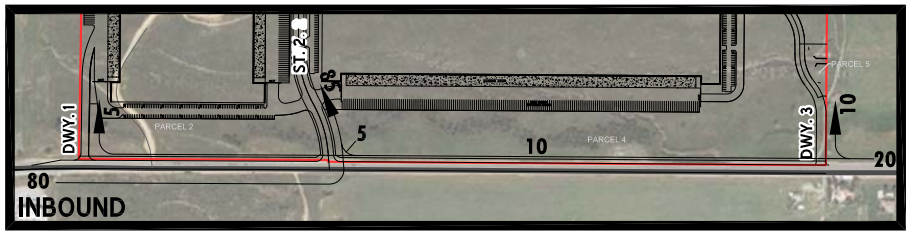
[3] TSF = thousand square feet

[4] TOTAL TRIPS (PCE) = Passenger Cars + Net Truck Trips (PCE).

EXHIBIT 4-1: PROJECT (PASSENGER CAR) TRIP DISTRIBUTION







LEGEND:

10 = PERCENT TO/FROM PROJECT

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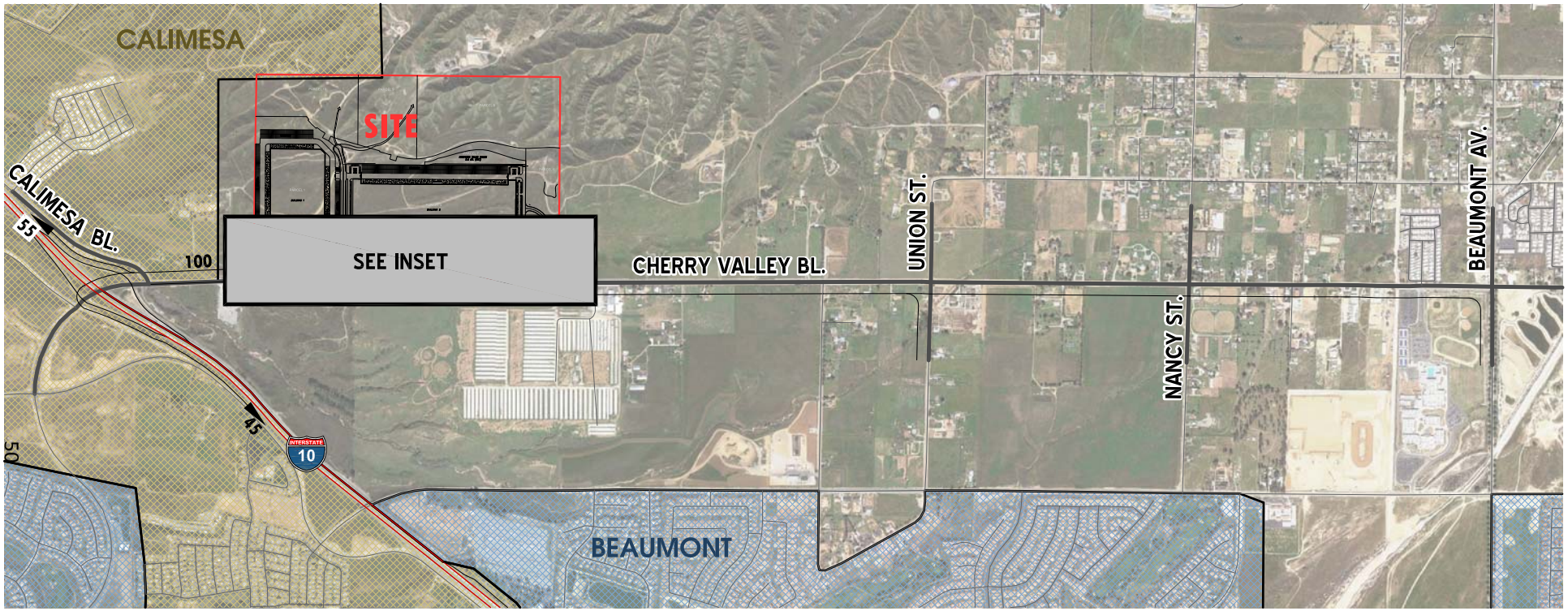
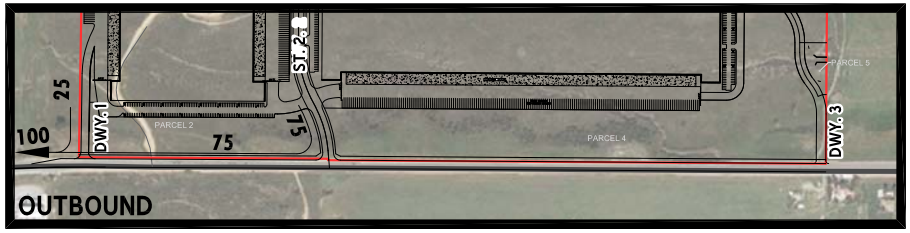
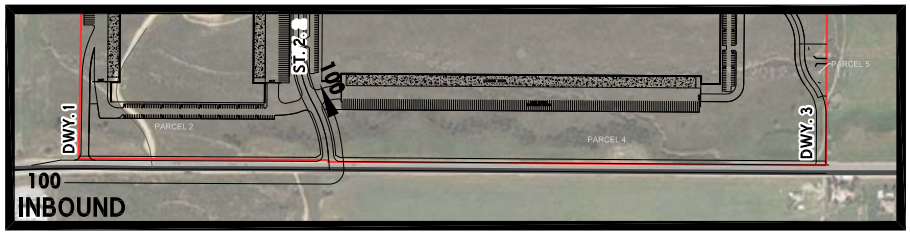
URBAN CROSSROADS

EXHIBIT 4-2: PROJECT (TRUCK) TRIP DISTRIBUTION







LEGEND:

10 = PERCENT TO/FROM PROJECT

N

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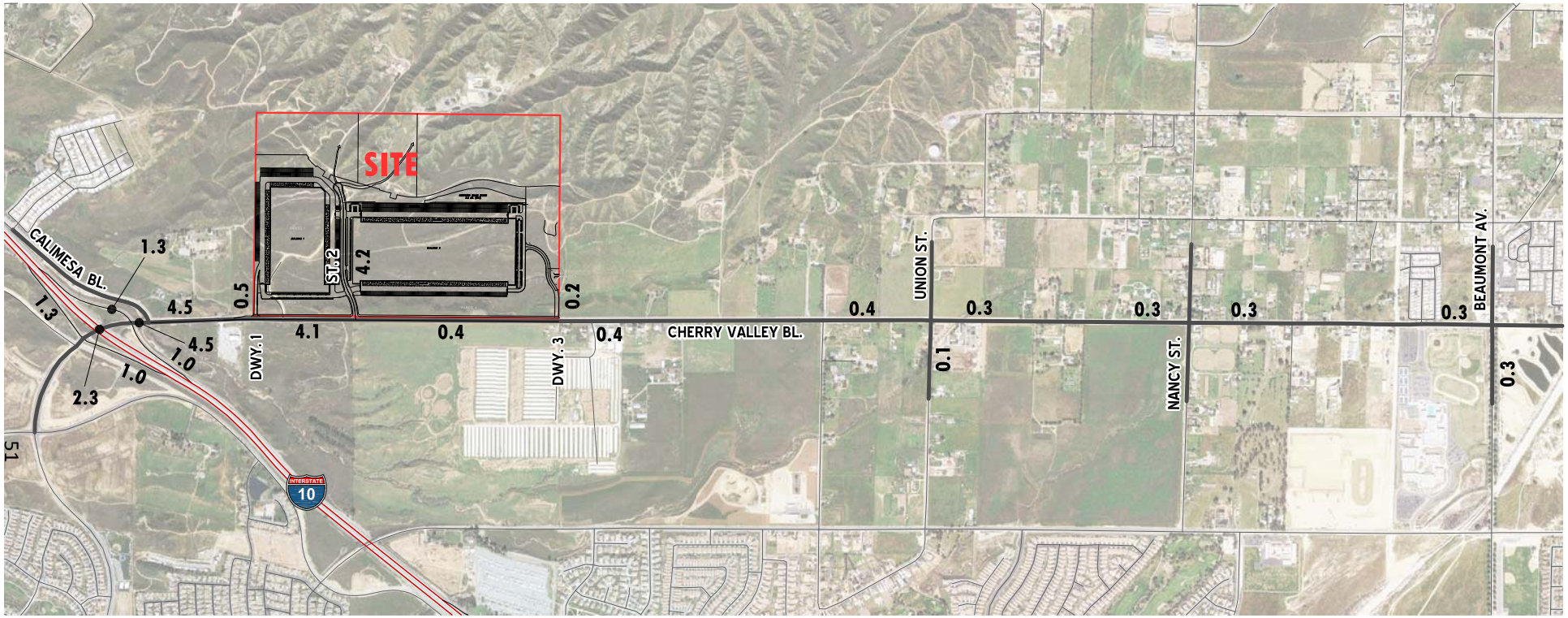
EXHIBIT 4-3: PROJECT ONLY AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

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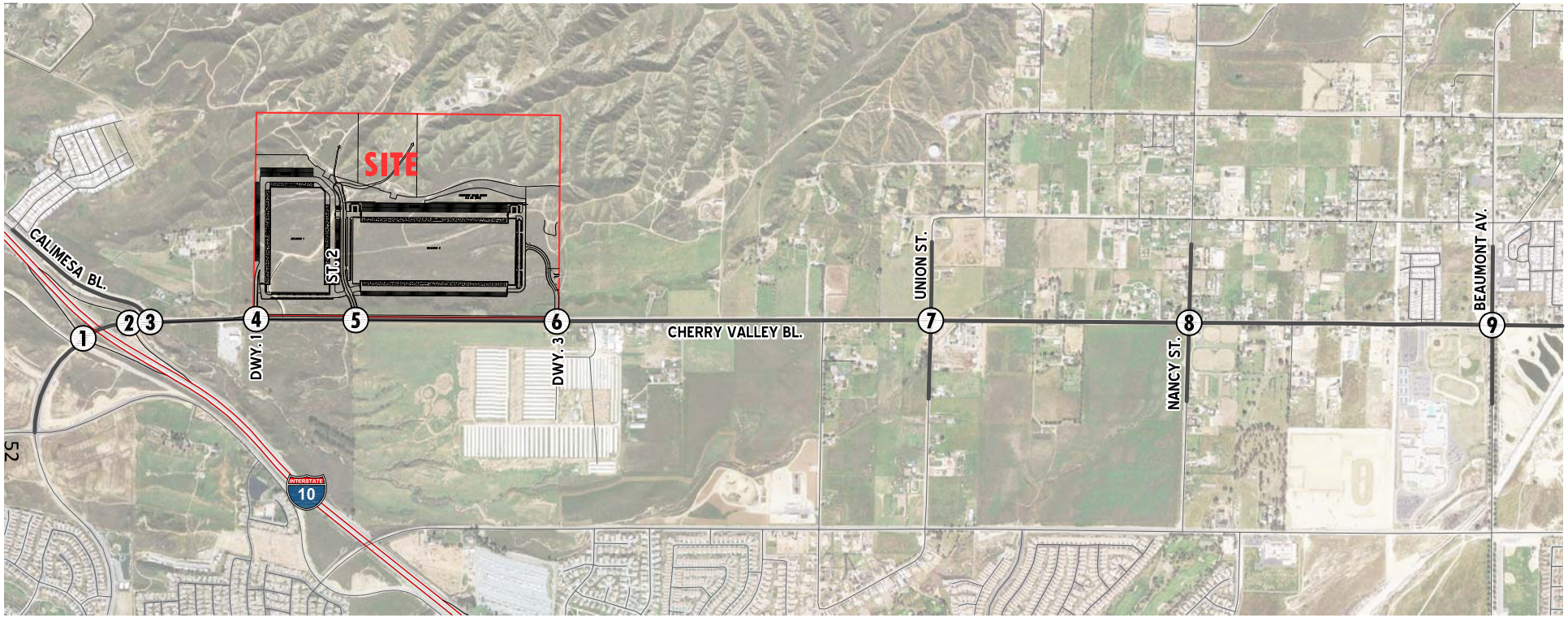
URBAN CROSSROADS

EXHIBIT 4-4: PROJECT ONLY AM PEAK HOUR INTERSECTION VOLUMES



1 I-10 EB Ramps & Cherry Valley Bl.	2 I-10 WB Ramps & Cherry Valley Bl.	3 Calimesa Bl. & Cherry Valley Bl.	4 Dwy. 1 & Cherry Valley Bl.	5 St. 2 & Cherry Valley Bl.	6 Dwy. 3 & Cherry Valley Bl.	7 Union St. & Cherry Valley Bl.	8 Nancy St. & Cherry Valley Bl.	9 Beaumont Av. & Cherry Valley Bl.
0 0 99 ← 0 ← 35	← 45 ← 35	0 0 ← 0 ← 80	15 ← 5 ← 65	60 9 ← 5 ← 10	5 ← 10 ← 10	0 0 0 ← 0 ← 15 ← 0	0 0 0 ← 0 ← 15 ← 0	0 0 0 ← 0 ← 0 ← 0
0 → 0 ↓	0 → 99 →	0 → 178 →	178 →	178 → 0 ↓	9 →	0 → 7 → 2 ↓	0 → 7 → 0 ↓	0 → 0 → 7 ↓
	0 0 79 ↑					5 0 0 ↑	0 0 0 ↑	15 0 0 ↑

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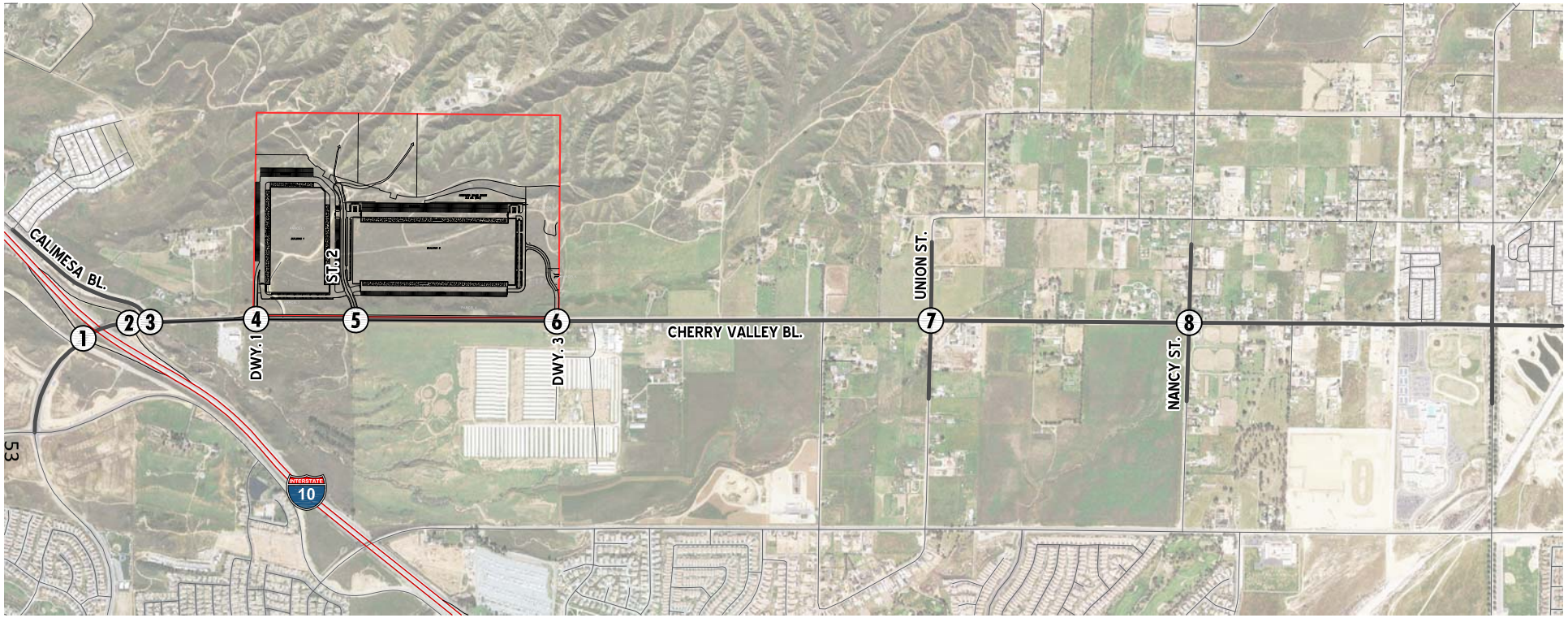
N

URBAN CROSSROADS

EXHIBIT 4-5: PROJECT ONLY PM PEAK HOUR INTERSECTION VOLUMES



1 I-10 EB Ramps & Cherry Valley Bl.	2 I-10 WB Ramps & Cherry Valley Bl.	3 Calimesa Bl. & Cherry Valley Bl.	4 Dwy. 1 & Cherry Valley Bl.	5 St. 2 & Cherry Valley Bl.	6 Dwy. 3 & Cherry Valley Bl.	7 Union St. & Cherry Valley Bl.	8 Nancy St. & Cherry Valley Bl.	9
0 0 52 ← 0 ← 94	← 116 ← 94	0 0 ← 0 ← 210	42 ← 2 ← 168	158 20 ← 2 ← 13	10 ← 5 ← 5	0 0 0 ← 0 ← 7 ← 0	0 0 0 ← 0 ← 7 ← 0	0 0 0 ← 0 ← 0 ← 0
0 → 0	0 → 52	0 → 94	94 →	94 → 0	20 →	0 → 15 → 5 ; ← 2 0 0	0 → 15 → 0 ; 0 0 0	0 → 0 → 15 ; ← 7 0 0

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URBAN CROSSROADS

intended to approximate regional traffic growth. The total ambient growth is 6.12% for 2017 traffic conditions (compounded growth of two percent per year over three years or $1.02^{3 \text{ years}}$). This ambient growth rate is added to existing traffic volumes to account for area-wide growth not reflected by cumulative development projects. Ambient growth has been added to daily and peak hour traffic volumes on surrounding roadways, in addition to traffic generated by the development of future projects that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies. Thus the cumulative impact analysis performed in this report is conservative.

The adopted Southern California Association of Governments (SCAG) 2012 Regional Transportation Plan (RTP) (April 2012) growth forecasts for Riverside County identifies projected growth in population of 2,128,000 in 2008 to 3,324,000 in 2035, or a 56.2% increase over the 27 year period. The change in population equates to roughly a 1.67 percent growth rate compounded annually. Similarly, growth over the same 27 year period in households is projected to increase by 60.8 percent, or 1.78 percent annual growth rate. Finally, growth in employment over the same 27 year period is projected to increase by 87.2 percent, or a 2.35 percent annual growth rate. (6) Therefore, the annual growth rate of 2% in conjunction with cumulative project traffic would appear to be conservative and tend to overstate as opposed to understate future traffic growth..

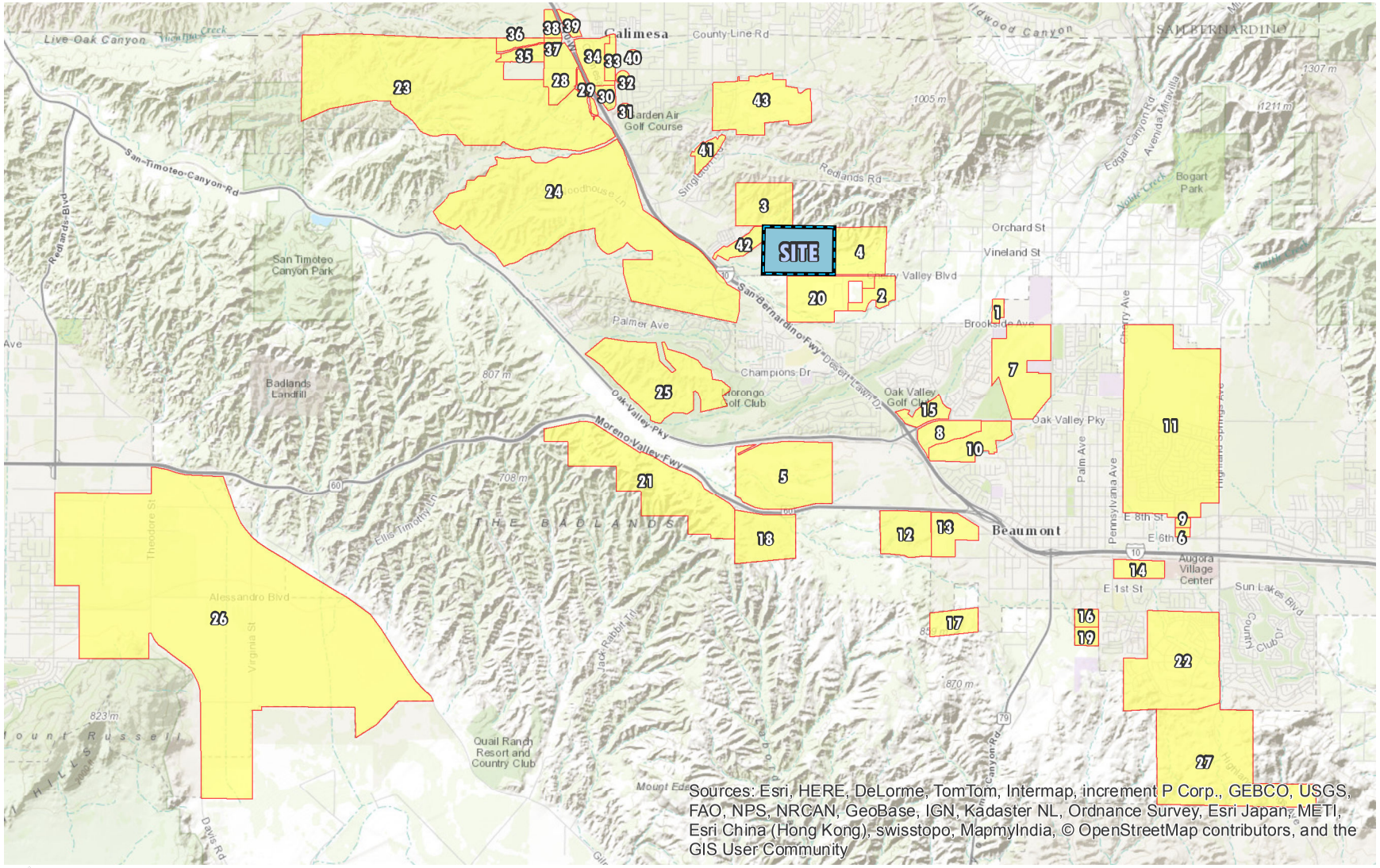
4.6 CUMULATIVE DEVELOPMENT TRAFFIC

CEQA guidelines require that other reasonably foreseeable development projects which are either approved or being processed concurrently in the study area also be included as part of a cumulative analysis scenario. A cumulative project list was developed for the purposes of this analysis through consultation with staff from the County of Riverside. In addition, cumulative development projects were also obtained from adjacent jurisdictions (i.e., City of Beaumont and City of Calimesa). Exhibit 4-6 illustrates the cumulative development location map. A summary of cumulative development projects and their proposed land uses are shown on Table 4-3. If applicable, the traffic generated by individual cumulative projects was manually added to both the EAPC (2017) and Horizon Year (2035) forecasts to ensure that traffic generated by the listed cumulative development projects in Table 4-3 are reflected as part of the background traffic.

4.7 TRAFFIC FORECASTS

To provide a comprehensive assessment of the potential future cumulative traffic impacts, two types of analyses, “buildup” and “buildout”, have been performed for the purposes of this report. The “buildup” method was used to approximate the EAP (2017) traffic conditions, and is intended to identify the significant impacts on both the existing and planned opening year circulation system. The EAP (2017) traffic conditions include background traffic in addition to the traffic generated by the proposed Project. The “buildup” method was also utilized to

EXHIBIT 4-6: CUMULATIVE DEVELOPMENT LOCATION MAP



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URBAN CROSSROADS

Table 4-3

Summary of Cumulative Development Projects

No.	Project Name	Land Use	Quantity[1,2]	
1	CUP 03629	Mini-warehouse	90.000	TSF
2	TR 31966	Single Family Residential	60	DU
3	TTM 30545 Holbert Ranch	Single Family Residential	131	DU
4	Borstein Property	Single Family Residential	209	DU
5	Heartland[3]	Single Family Residential	988	DU
		Commercial Retail	126.000	TSF
6	Tuscany Townhomes	Condos/Townhomes	188	DU
7	Noble Creek Vistas	Single Family Residential	648	DU
8	Oak Valley Village (Mountain Bridge)	Commercial Retail	441.709	TSF
9	Beaumont Commons	Single Family Residential	120	DU
	American Villas	Single Family Residential	36	DU
	8th Street Condos	Condos/Townhomes	16	DU
	Pennsylvania Ave Apartments	Apartments	8	DU
10	Kirkwood Ranch	Single Family Residential	403	DU
11	Sundance	Single Family Residential	4716	DU
		Commercial Retail	163.350	TSF
12	Rolling Hills Ranch Industrial Prologis[4]	High-Cube Warehouse	1200.000	TSF
13	Dowling Orchard Business Park[4]	High-Cube Warehouse	548.820	TSF
14	Farmer Boys	Commercial Retail	6.752	TSF
	Ramona Tire / Firestone	Commercial Retail	4.792	TSF
15	Oak Valley Senior Center	Senior Attached Housing	372	DU
16	Aspen Creek (TT 31426)	Single Family Residential	106	DU
17	Taurek (Tract No. 31162)	Single Family Residential	244	DU
18	Hidden Canyon Industrial	High-Cube Warehouse	2890.000	TSF
19	Pacific Scene (Tract No. 32850)	Single Family Residential	95	DU
20	Sunny-Cal Specific Plan	Single Family Residential	497	DU
21	Jack Rabbit Trail	Single Family Residential	2000	DU
		Commercial Retail	49.005	TSF
22	Four Seasons (Tract NO. 31462)	Single Family Residential	2041	DU
		Commercial	95.832	TSF
23	TTM 33931 Fiesta Oak Valley / Mesa Verde Estates	Single Family Residential	3535	DU
		Condos/Townhomes	453	DU
		Active Park	48	AC
		Recreational Community Center	9.000	TSF
		Elementary School	1200	ST
		Commercial Retail	200.000	TSF
24	Summerwind Ranch	Single Family Residential	3683	DU
		Middle School	900	ST
		Elementary School	1200	ST
		Commercial Retail	1000.000	TSF
		Business Park	1579	TSF
25	Sun Cal / Various Builders	Single Family Residential	2366	DU
		Commercial Retail	505.296	TSF
26	World Logistics Center	High-Cube Warehouse	21450.000	TSF
27	Potrero Creek Estates	Single Family Residential	700	DU
28	TAZ-28	Single Family Detached	193	DU
		General Office Building	182.342	TSF
		Shopping Center	130.244	TSF
29	TAZ-29	Business Park	59.512	TSF
		Shopping Center	49.876	TSF
		Gen. Lt. Industrial	26.737	TSF
		General Office Building	69.827	TSF
30	TAZ-30	General Office Building	2.363	TSF
		Shopping Center	1.688	TSF
31	TAZ-31	Shopping Center	62.019	TSF
		General Office Building	86.826	TSF

Table 4-3

Page 2 of 2

No.	Project Name	Land Use	Quantity[1,2]	
32	TAZ-32	Single Family Detached	94	DU
33	TAZ-33	Shopping Center	6.861	TSF
		General Office Building	9.605	TSF
		Gen. Lt. Industrial	35.109	TSF
		Business Park	78.147	TSF
		Apartment	41	DU
34	TAZ-34	Shopping Center	54.613	TSF
		General Office Building	76.459	TSF
35	TAZ-35	Single Family Detached	28	DU
36	TAZ-36	Single Family Detached	17	DU
37	TAZ-37	Shopping Center	11.87	TSF
		General Office Building	16.618	TSF
		Single Family Detached	6	DU
38	TAZ-38	Shopping Center	69.478	TSF
		General Office Building	97.269	TSF
39	TAZ-39	Shopping Center	103.023	TSF
		General Office Building	42.46	TSF
40	TAZ-40	Single Family Detached	478	DU
41	Singleton Heights (Mastercraft) TR 26811	Single Family Detached	268	DU
42	Sunset Ranch (Osborne/Dunham) TR 31450	Single Family Detached	231	DU
43	JP Ranch	Single Family Detached	689	DU
		Commercial Retail	72.7	TSF

[1] TSF = Thousand Square Feet; DU = Dwelling Unit; ST=Students

[2] Commercial / Industrial Square Footage calculated based on FAR of 0.25

[3] General Plan Land Use obtained from Heartland Tentative Tract Map 27971 TIA, October 3, 2006 by Urban Crossroads

[4] Land Use and Quantity obtained from Potrero Blvd Interchange, Phase 1 Focused Traffic Analysis, September 26, 2011 by Urban Crossroads

approximate the EAPC (2017) conditions, and is intended to identify the cumulative impacts on both the existing and planned opening year circulation system. The EAPC (2017) traffic conditions include background traffic, traffic generated by other cumulative development projects within the study area and the traffic generated by the proposed Project. The buildout approach is used to forecast the long-range Horizon Year (2035) conditions of the focused study area.

4.8 OPENING YEAR (2017) CONDITIONS

The "buildup" approach combines existing traffic counts with a background ambient growth factor to forecast the opening year 2017 traffic conditions. An ambient growth factor of 6.12% (2017) account for background (area-wide) traffic increases that occur over time up to the year 2017 from the year 2014 (compounded two percent per year growth over a three year period). Traffic volumes generated by the Project are then added to assess the EAP and EAPC (2017) traffic conditions. The 2017 roadway networks are similar to the existing conditions roadway network with the exception of the Project driveways.

The opening year traffic analysis includes the following traffic conditions, with the various traffic components:

- EAP (2017) Conditions
    - Existing 2014 counts
    - Ambient growth traffic (6.12%)
    - Project traffic
- EAPC (2017) Conditions
    - Existing 2014 counts
    - Ambient growth traffic (6.12%)
    - Project Traffic
    - Cumulative Development traffic

4.9 HORIZON YEAR (2035) CONDITIONS

Traffic projections for Horizon Year (2035) with Project conditions were derived from the County of Riverside Traffic Analysis Model (RivTAM) using accepted procedures for model forecast refinement and smoothing. The traffic forecasts reflect the area-wide growth anticipated between Existing conditions and Horizon Year (2035) conditions. In many cases, the traffic model zone structure is not designed to provide accurate turning movements at each study area intersection along arterial roadways unless refinement and reasonableness checking is performed. Therefore, the Horizon Year (2035) peak hour forecasts were refined using the long-range forecasts, along with existing peak hour traffic count data collected at each study area intersections. Future estimated peak hour traffic data has been used for new intersections and intersections with an anticipated change in travel patterns in an effort to further refine the Horizon Year (2035) peak hour forecasts. Lastly, Horizon Year (2035) turning volumes were compared to EAPC (2017) volumes in order to ensure reasonable growth as a part of the

refinement process. A minimum of ten percent growth between EAPC (2017) and Horizon Year (2035) traffic conditions has been used to account for traffic generated by cumulative development projects and the ambient growth between existing and EAPC (2017) conditions.

Post processing worksheets for Horizon Year (2035) without Project traffic conditions are provided in Appendix "4.1".

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5 EXISTING PLUS PROJECT TRAFFIC CONDITIONS

This section discusses the traffic forecasts for Existing plus Project (E+P) conditions and the resulting intersection and freeway mainline operations.

5.1 EXISTING PLUS PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes existing (2014) traffic volumes plus Project traffic. Exhibit 5-1 shows the ADT volumes which can be expected for E+P traffic conditions. E+P AM and PM peak hour intersection turning movement volumes are shown on Exhibits 5-2 and 5-3, respectively.

5.2 INTERSECTION OPERATIONS ANALYSIS

E+P peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 Methodologies of this TIA. The intersection analysis results are summarized in Table 5-1. There are no additional intersections anticipated to operate at an unacceptable LOS under E+P traffic conditions in addition to the intersections previously identified under Existing (2014) conditions.

Exhibit 5-4 summarizes the weekday AM and weekday PM peak hour study area intersection LOS under E+P traffic conditions, consistent with the summary provided in Table 5-1. The intersection operations analysis worksheets for E+P traffic conditions are included in Appendix "5.1" of this TIA.

5.3 EXISTING PLUS PROJECT TRAFFIC SIGNAL WARRANTS ANALYSIS

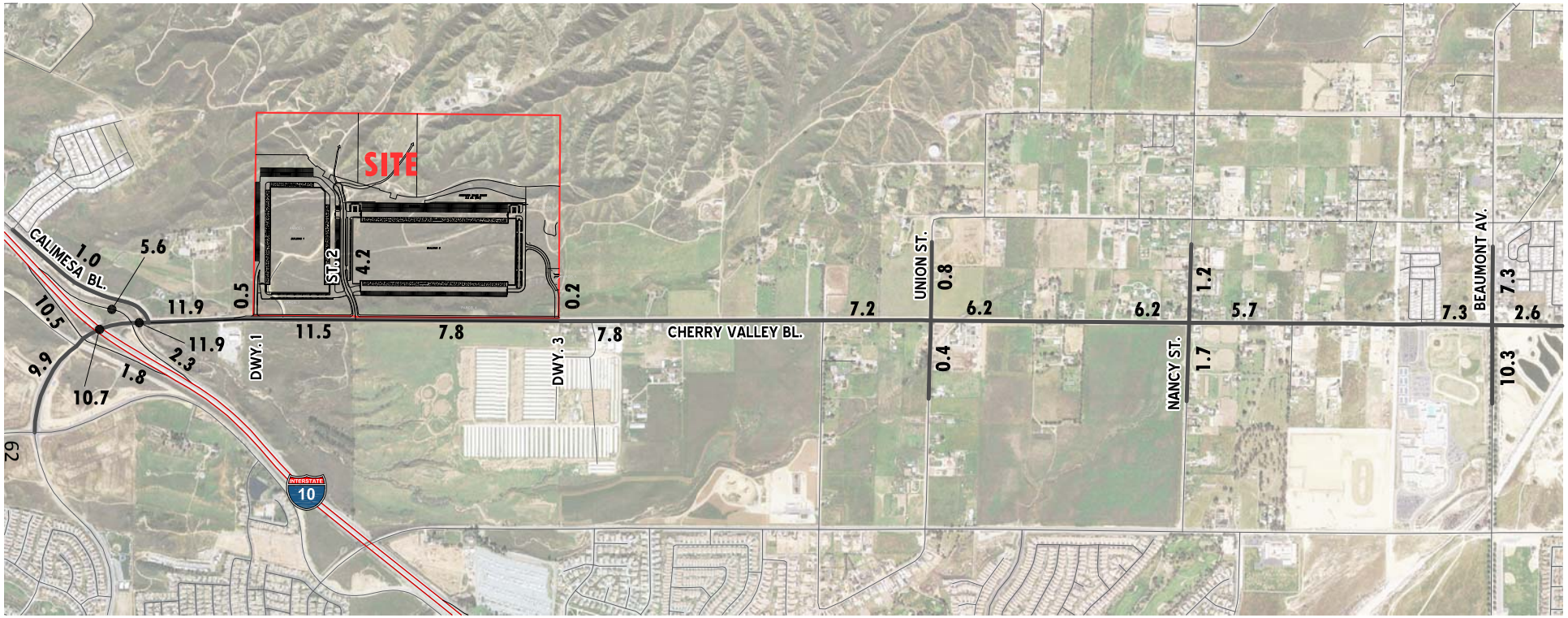
Traffic signal warrants for E+P traffic conditions are based on E+P volumes. For E+P conditions, the following intersections appear to warrant a traffic signal, in addition to the intersections identified in Section 3.7 *Existing Conditions Traffic Signal Warrants Analysis* (See Appendix "5.2"):

ID	Intersection Location	Jurisdiction
2	I-10 WB Ramps / Cherry Valley Boulevard	Caltrans
5	Street 2 / Cherry Valley Boulevard	Riverside County

5.4 BASIC FREEWAY SEGMENT ANALYSIS

E+P mainline directional volumes for the AM and PM peak hours are provided on Exhibit 5-5. Mainline segment analysis results for the AM and PM peak hours are summarized on Table 5-2. As shown on Table 5-2, the freeway segments analyzed along the I-10 Freeway are anticipated to operate at acceptable levels of service (i.e., LOS "D" or better) during the peak hours for E+P traffic conditions. E+P basic freeway segment analysis worksheets are provided in Appendix "5.3".

EXHIBIT 5-1: EXISTING PLUS PROJECT AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

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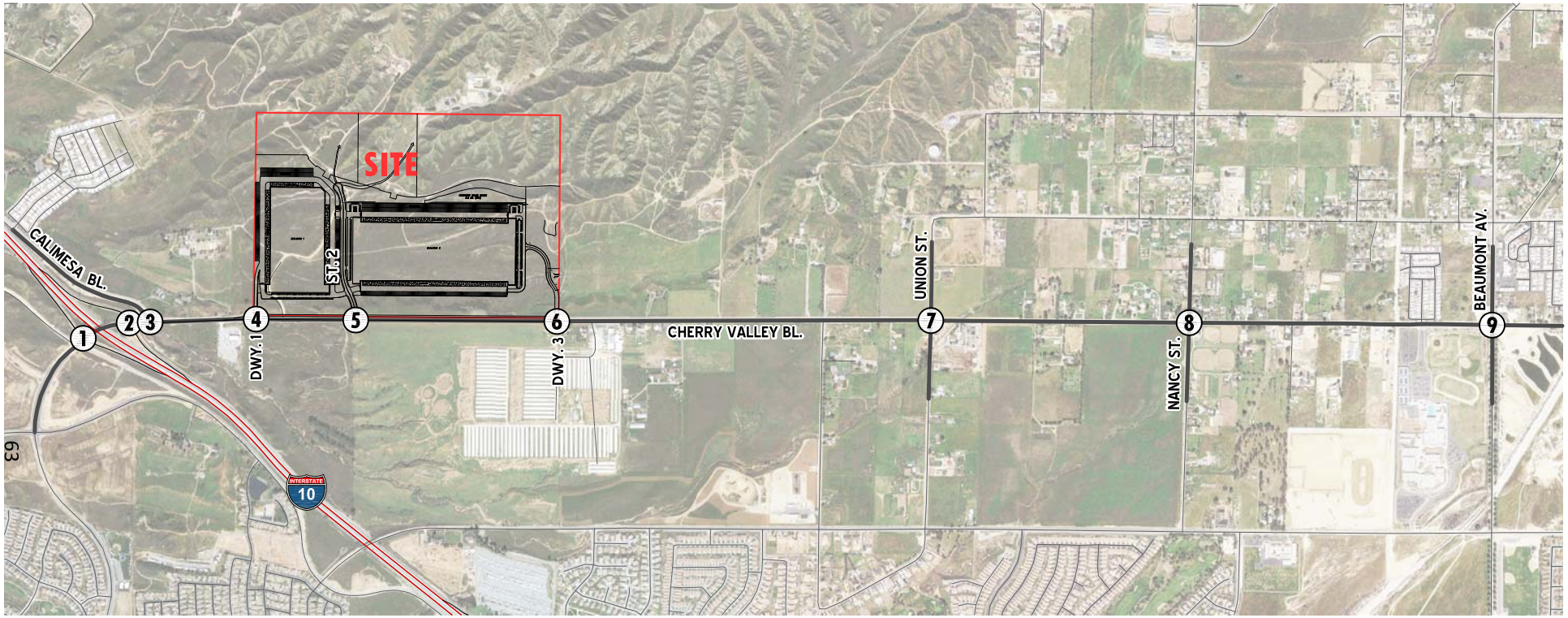
URBAN CROSSROADS

EXHIBIT 5-2: EXISTING PLUS PROJECT AM PEAK HOUR INTERSECTION VOLUMES



1 I-10 EB Ramps & Cherry Valley Bl.	2 I-10 WB Ramps & Cherry Valley Bl.	3 Calimesa Bl. & Cherry Valley Bl.	4 Dwy. 1 & Cherry Valley Bl.	5 St. 2 & Cherry Valley Bl.	6 Dwy. 3 & Cherry Valley Bl.	7 Union St. & Cherry Valley Bl.	8 Nancy St. & Cherry Valley Bl.	9 Beaumont Av. & Cherry Valley Bl.
84 1 216 ← 84 55	→ 423 ← 113	19 18 → 10 ← 516	15 → 5 ← 511	60 9 → 5 ← 456	5 → 10 ← 456	68 1 1 → 1 ← 318 3	60 28 14 → 4 ← 223 47	69 181 5 → 8 ← 236 15
555 → 67 ↓	480 → 291 ↓	17 → 361 ↓	379 →	178 → 201 ↓	210 →	16 → 174 → 5 ↓	12 → 134 → 35 ↓	35 → 104 → 245 ↓
	26 0 87 ↑					17 0 3 ↑	34 22 122 ↑	267 101 4 ↑

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URBAN CROSSROADS

EXHIBIT 5-3: EXISTING PLUS PROJECT PM PEAK HOUR INTERSECTION VOLUMES

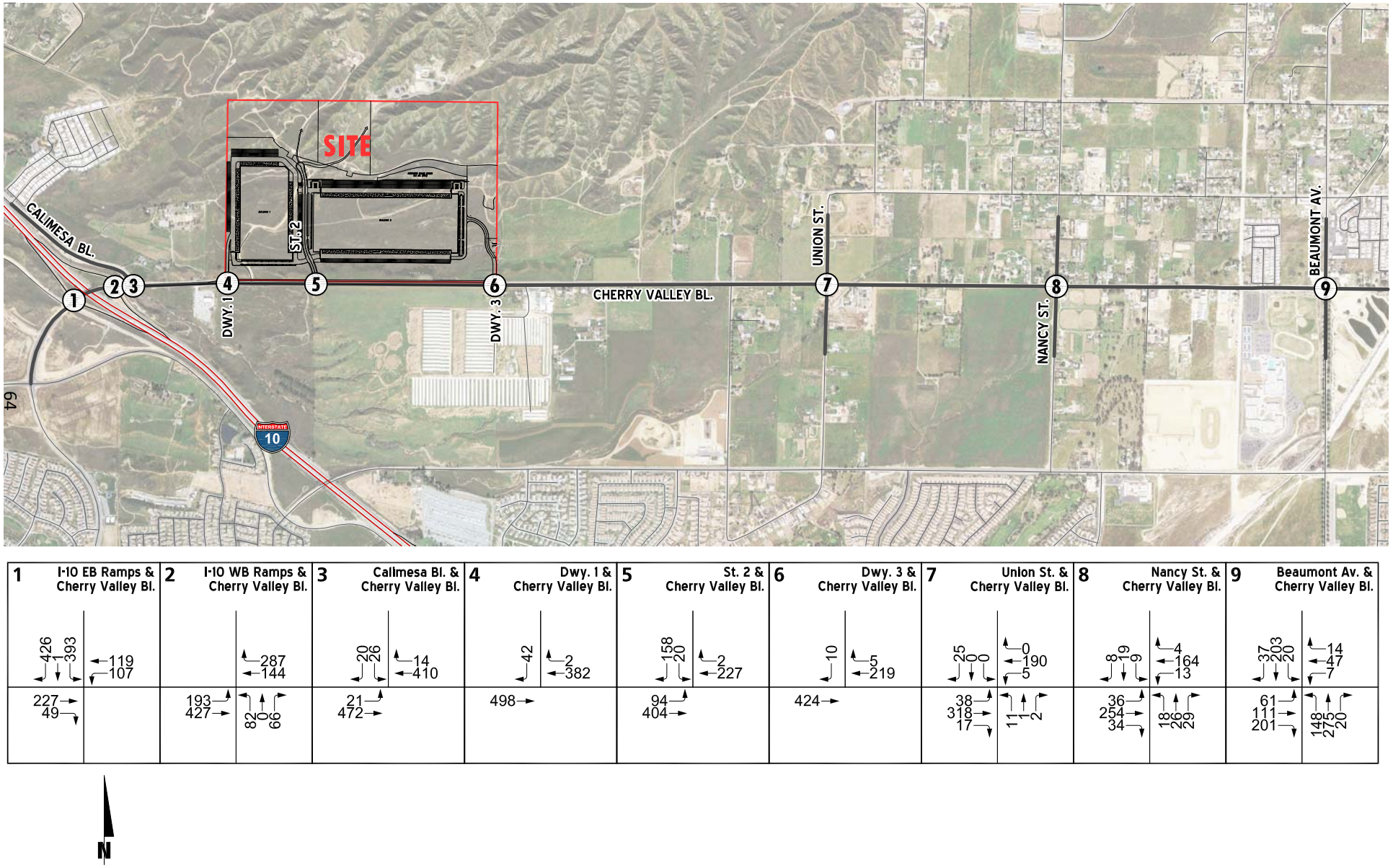

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Table 5-1

Intersection Analysis for Existing plus Project Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Existing (2014)				Existing plus Project			
			Northbound			Southbound			Eastbound			Westbound			Delay[2] (secs.)		Level of Service		Delay[2] (secs.)		Level of Service	
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM	AM	PM
1	I-10 EB Ramps / Cherry Valley Bl.	CSS	0	0	0	0	1	0	0	1	0	0	1	0	19.3	**89.9**	C	**F**	**61.5**	**>100.0**	**F**	**F**
2	I-10 WB Ramps / Cherry Valley Bl.	CSS	0	1	0	0	0	0	0	1	0	0	1	0	**>100.0**	28.8	**F**	D	**>100.0**	**50.5**	**F**	**F**
3	Calimesa Boulevard / Cherry Valley Bl.	CSS	0	0	0	0	1	0	0	1	0	0	1	0	13.8	13.0	B	B	17.3	18.1	C	C
4	Driveway 1 / Cherry Valley Bl.	**CSS**	0	0	0	0	0	**1**	0	1	0	0	1	0	Not Applicable				12.0	11.0	B	B
5	Street 2 / Cherry Valley Bl.	**TS**	0	0	0	**1**	**1**	0	**1**	1	0	0	1	0	Not Applicable				10.0	8.6	B	A
6	Driveway 3 / Cherry Valley Bl.	**CSS**	0	0	0	0	0	**1**	0	1	0	0	1	0	Not Applicable				11.3	9.5	B	A
7	Union St. (NS) / Cherry Valley Bl.	CSS	0	1	0	0	1	0	0	1	0	0	1	0	15.4	13.9	C	B	16.5	14.4	C	B
8	Nancy Av. (NS) / Cherry Valley Bl.	AWS	0	1	0	0	1	0	0	1	1	0	1	1	12.9	10.3	B	B	13.6	10.6	B	B
9	Beaumont Ave. / Cherry Valley Bl.	TS	1	1	d	1	1	d	1	1	1	1	1	0	29.7	17.5	C	B	31.3	17.6	C	B

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

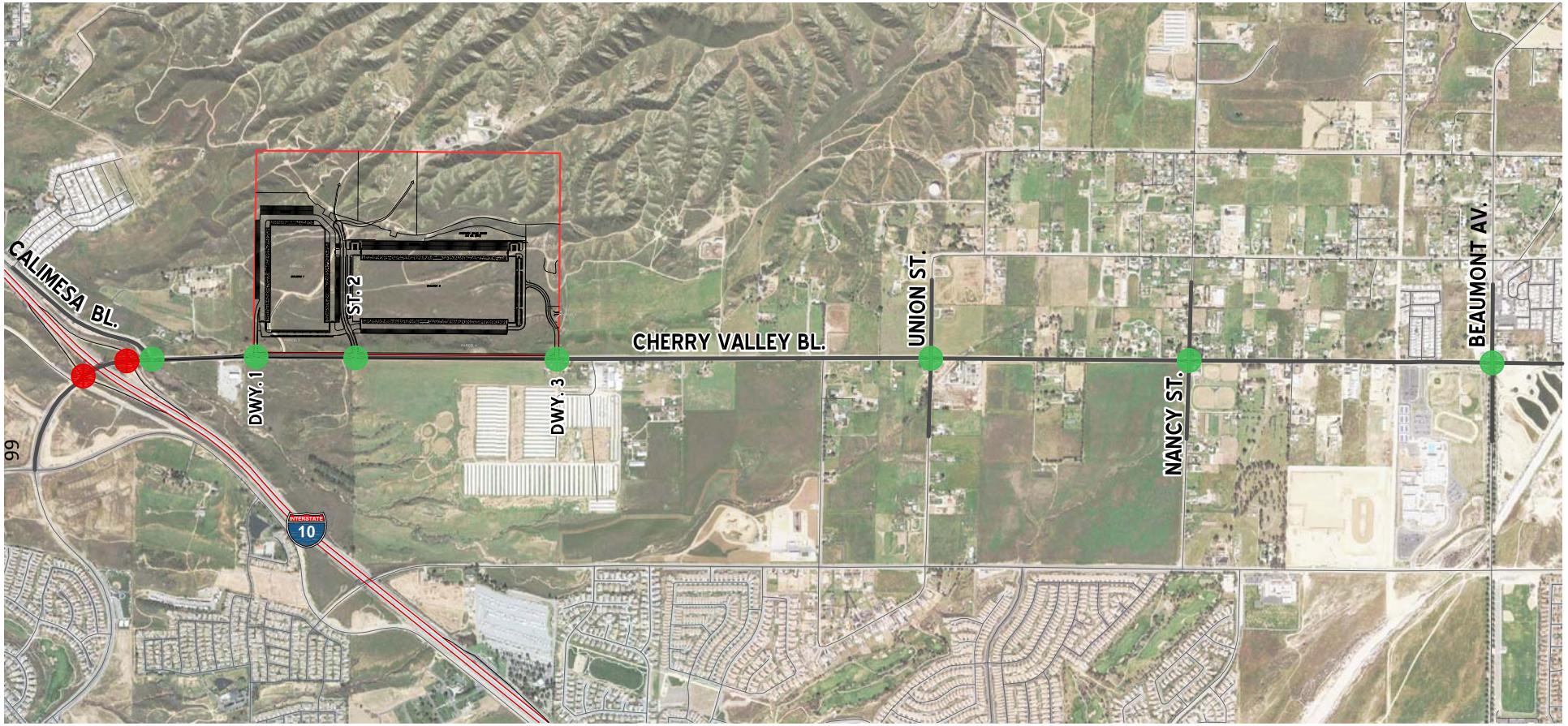
L = Left; T = Through; R = Right; > = Right-Turn Overlap Phasing; d = Defacto Right Turn Lane; **1** = Improvement

[2] Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] TS = Traffic Signal; AWS = All-Way Stop; CSS = Cross-street Stop

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

EXHIBIT 5-4: SUMMARY OF PEAK HOUR INTERSECTION LOS FOR EXISTING PLUS PROJECT CONDITIONS



LEGEND:

- = AM PEAK HOUR ACCEPTABLE LOS
- = AM PEAK HOUR DEFICIENT LOS
- = PM PEAK HOUR ACCEPTABLE LOS
- = PM PEAK HOUR DEFICIENT LOS

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EXHIBIT 5-5: EXISTING PLUS PROJECT I-10 FREEWAY MAINLINE VOLUMES



Table 5-2

Basic Freeway Segment Analysis for Existing plus Project Conditions

Freeway	Direction	Mainline Segment	Lanes[1]	Existing (2014)								Existing plus Project							
				Volume		Truck %		Density[2]		LOS		Volume		Truck %		Density[2]		LOS	
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
I-10	EB	West of Cherry Valley Boulevard	3	2,195	3,248	12%	10%	13.0	19.0	B	C	2,262	3,281	13%	10%	13.4	19.2	B	C
		East of Cherry Valley Boulevard	3	2,026	2,591	13%	13%	12.0	15.4	B	B	2,050	2,651	13%	14%	12.2	15.8	B	B
	WB	West of Cherry Valley Boulevard	3	4,137	3,515	11%	12%	24.5	20.8	C	C	4,169	3,590	11%	13%	24.7	21.3	C	C
		East of Cherry Valley Boulevard	3	3,382	3,246	13%	13%	20.1	19.3	C	C	3,435	3,272	13%	13%	20.4	19.4	C	C

[1] Number of lanes are in the specified direction and is based on existing conditions. No future improvements are currently plannec

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln)

5.5 FREEWAY MERGE/DIVERGE ANALYSIS

Ramp merge and diverge operations were also evaluated for E+P conditions and are presented in Table 5-3. As shown in Table 5-3, the I-10 Freeway ramp merge and diverge areas were found to operate at acceptable levels of service (i.e., LOS "D" or better) during the peak hours under E+P traffic conditions. E+P freeway ramp junction operations analysis worksheets are provided in Appendix "5.4".

Table 5-3

Freeway Ramp Junction Merge/Diverge Analysis for Existing plus Project Conditions

Freeway	Direction	Ramp or Segment	Lanes on Freeway[1]	Existing (2014)				Existing plus Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Density[2]	LOS	Density[2]	LOS	Density[2]	LOS	Density[2]	LOS
I-10	EB	Off-Ramp at Cherry Valley Boulevard	3	14.8	B	21.8	C	15.4	B	22.1	C
		On-Ramp at Cherry Valley Boulevard	3	14.2	B	16.9	B	14.2	B	17.4	B
	WB	On-Ramp at Cherry Valley Boulevard	3	26.6	C	22.1	C	26.8	C	22.8	C
		Off-Ramp at Cherry Valley Boulevard	3	21.8	C	21.1	C	22.2	C	21.3	C

[1] Number of lanes are in the specified direction and is based on existing conditions

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln)

6 OPENING YEAR (2017) TRAFFIC ANALYSIS

This section discusses the methods used to develop EAP (2017) and EAPC (2017) traffic forecasts, and the resulting intersection operations.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for EAP (2017) and EAPC (2017) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for EAP (2017) and EAPC (2017) conditions.

6.2 EAP (2017) TRAFFIC VOLUME FORECASTS

This scenario includes Existing (2014) traffic volumes plus an ambient growth factor of 6.12% and the addition of Project traffic. The weekday ADT volumes which can be expected for EAP (2017) traffic conditions are shown on Exhibit 6-1. Exhibits 6-2 and 6-3 show the weekday AM and weekday PM peak hour intersection turning movement volumes for EAP (2017) traffic conditions.

6.3 EAPC (2017) TRAFFIC VOLUME FORECASTS

This scenario includes Existing (2014) traffic volumes, an ambient growth factor of 6.12%, traffic from pending and approved but not yet constructed known development projects in the area and the addition of Project traffic. The ADT volumes which can be expected for EAPC (2017) traffic conditions are shown on Exhibit 6-4. Exhibits 6-5 and 6-6 show the weekday AM and weekend PM peak hour intersection turning movement volumes for EAPC (2017) traffic conditions.

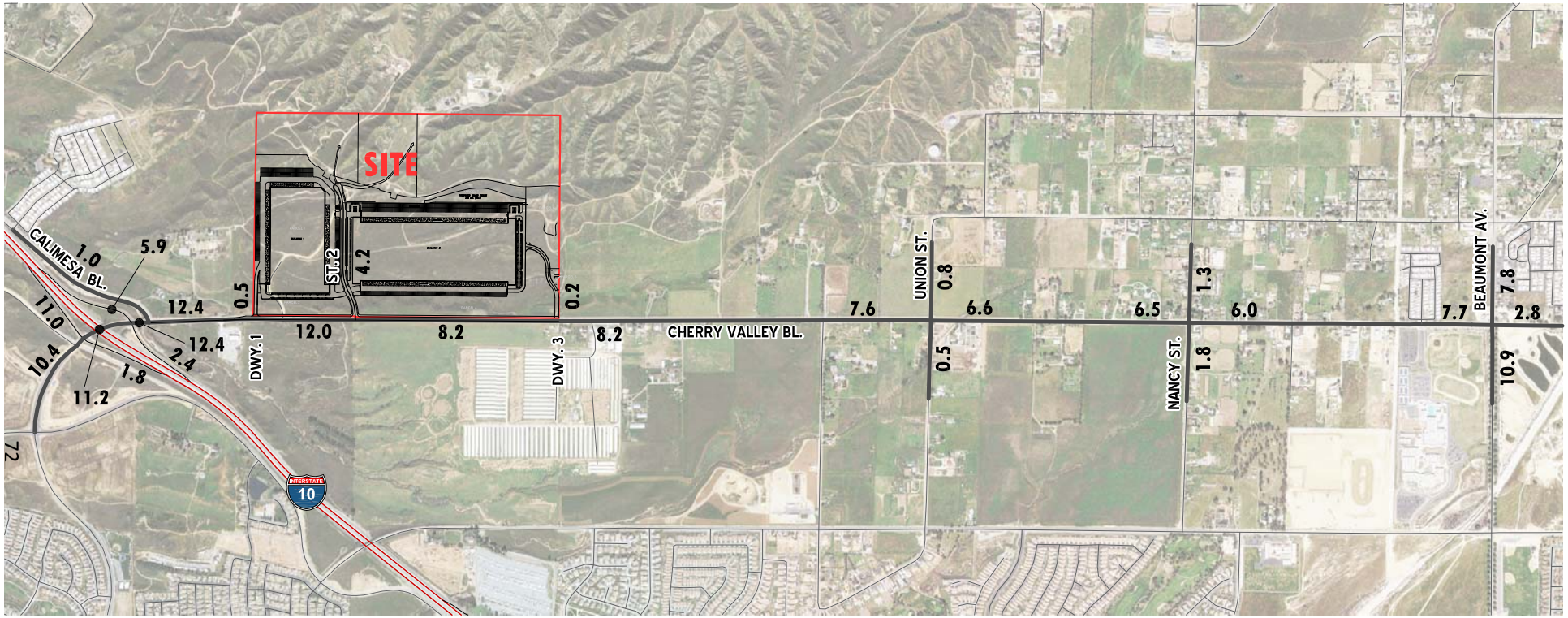
6.4 INTERSECTION OPERATIONS ANALYSIS

6.4.1 EAP (2017) TRAFFIC CONDITIONS

Level of service calculations were conducted for the study intersections to evaluate their operations under EAP (2017) conditions with existing roadway and intersection geometrics consistent with Exhibit 3-1. As shown in Table 6-1, there are no additional intersections anticipated to operate at an unacceptable LOS under EAP (2017) traffic conditions beyond those previously identified for Existing (2014) conditions.

Consistent with Table 6-1, the weekday AM and PM peak hour intersection LOS are summarized on Exhibit 6-7 for EAP (2017) traffic conditions. The intersection operations analysis worksheets for EAP (2017) conditions are included in Appendix "6.1" of this TIA. Recommended improvements necessary to bring peak hour intersection operations within acceptable levels for EAP (2017) traffic conditions are discussed in Section 6.8 *Recommended Improvements for EAP and EAPC (2017) Conditions*.

EXHIBIT 6-1: EXISTING PLUS AMBIENT GROWTH PLUS PROJECT AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

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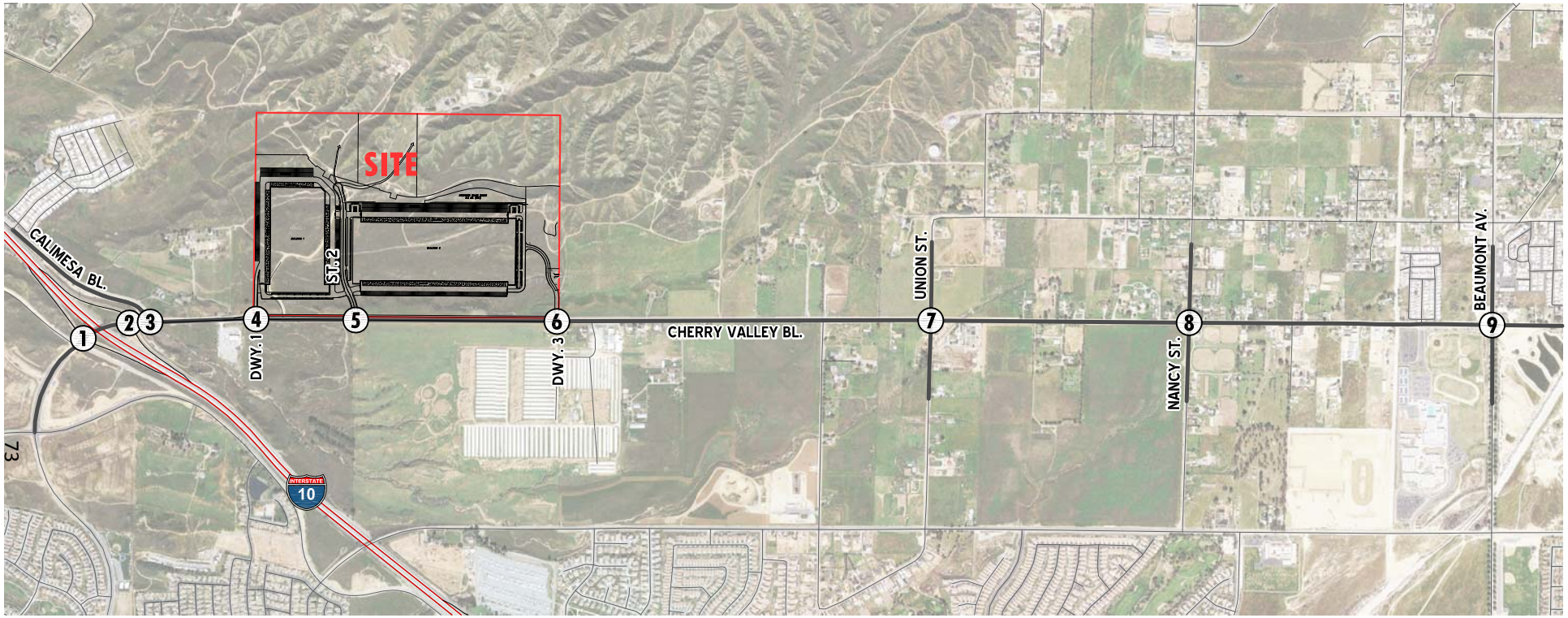
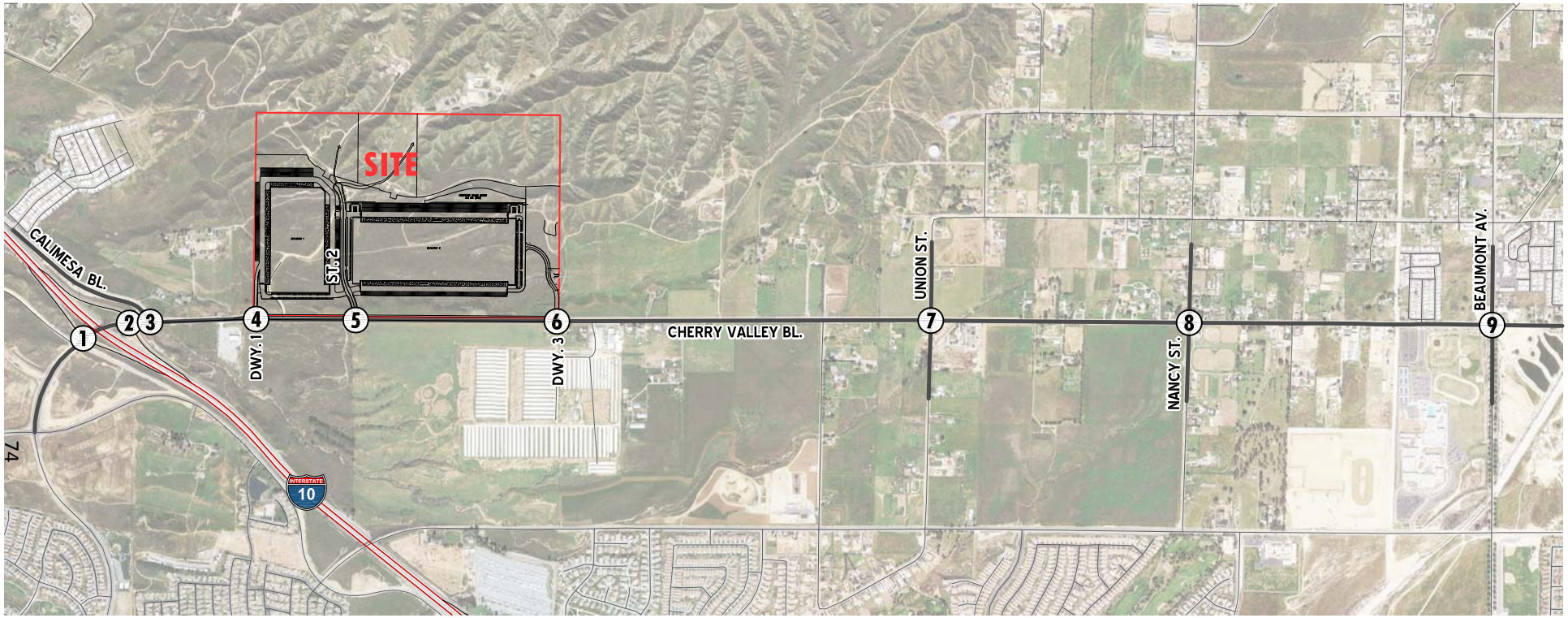
EXHIBIT 6-2: EXISTING PLUS AMBIENT GROWTH PLUS PROJECT AM PEAK HOUR INTERSECTION VOLUMES



1 I-10 EB Ramps & Cherry Valley Bl.	2 I-10 WB Ramps & Cherry Valley Bl.	3 Calimesa Bl. & Cherry Valley Bl.	4 Dwy. 1 & Cherry Valley Bl.	5 St. 2 & Cherry Valley Bl.	6 Dwy. 3 & Cherry Valley Bl.	7 Union St. & Cherry Valley Bl.	8 Nancy St. & Cherry Valley Bl.	9 Beaumont Av. & Cherry Valley Bl.
89 81 222 ← 89 56	→ 445 ← 117	20 19 → 11 ← 542	15 → 5 ← 538	60 9 → 5 ← 483	5 → 10 ← 483	72 1 1 → 1 ← 336 3	64 29 15 → 4 ← 235 49	73 192 5 → 8 ← 250 16
588 → 70 ↓	508 → 303 → 28 0 87 ↑	18 → 372 →	391 →	178 → 213 →	222 →	16 → 184 → 5 ↓ 18 0 3 ↑	13 → 142 → 37 ↓ 36 23 129 ↑	37 → 110 → 259 ↓ 282 107 4 ↑

EXHIBIT 6-3: EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PM PEAK HOUR INTERSECTION VOLUMES



1 I-10 EB Ramps & Cherry Valley Bl.	2 I-10 WB Ramps & Cherry Valley Bl.	3 Calimesa Bl. & Cherry Valley Bl.	4 Dwy. 1 & Cherry Valley Bl.	5 St. 2 & Cherry Valley Bl.	6 Dwy. 3 & Cherry Valley Bl.	7 Union St. & Cherry Valley Bl.	8 Nancy St. & Cherry Valley Bl.	9 Beaumont Av. & Cherry Valley Bl.
452 1 413 ← 126 ← 108	→ 297 ← 146	21 28 → 15 ← 422	42 → 2 ← 395	158 20 → 2 ← 240	10 → 5 ← 232	27 0 0 → 0 ← 200 ← 5	8 20 10 → 4 ← 173 ← 14	39 215 21 → 15 ← 50 ← 7
241 → 52 ↓	205 → 449 → 87 0 67 ↑	22 → 494 →	522 →	94 → 428 →	448 →	40 → 336 → 18 ↓ 12 1 2 ↑	38 → 268 → 36 ↓ 19 28 31 ↑	65 → 118 → 212 ↓ 156 292 21 ↑

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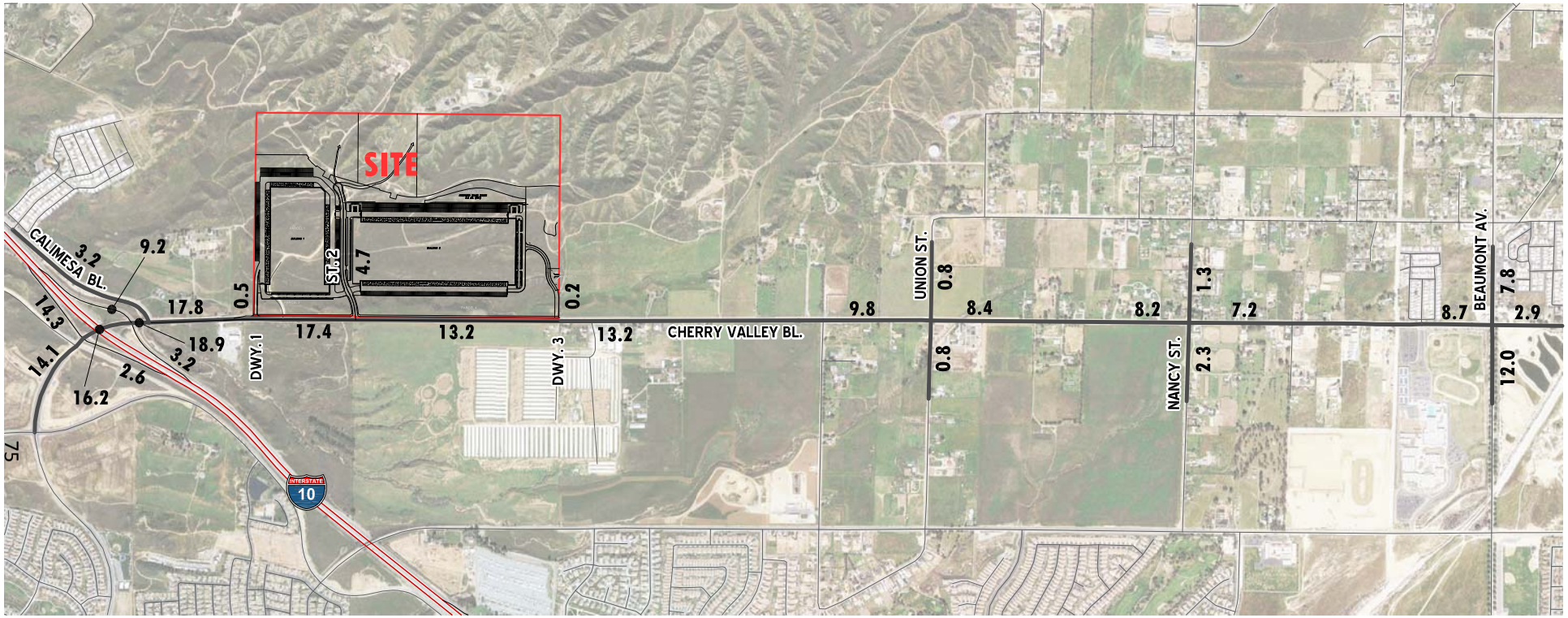
URBAN CROSSROADS

EXHIBIT 6-4: EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

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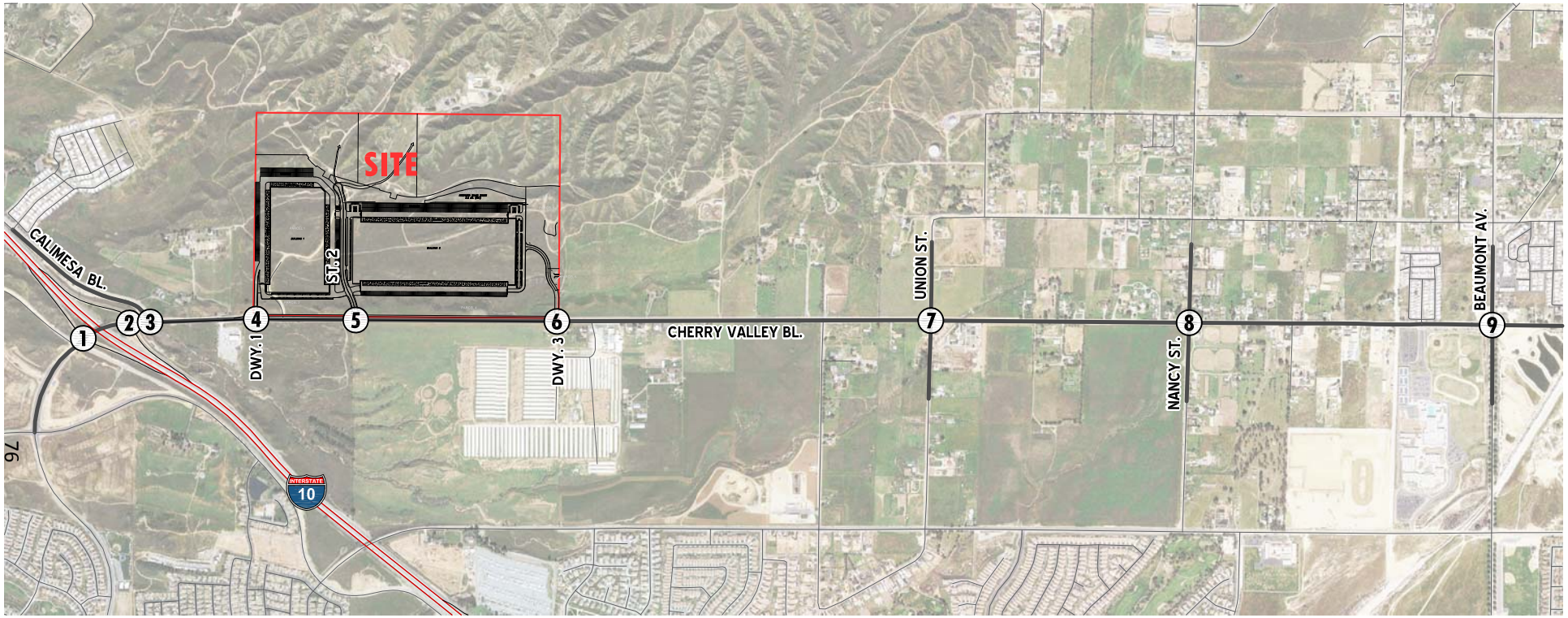
EXHIBIT 6-5: EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE AM PEAK HOUR INTERSECTION VOLUMES



1 I-10 EB Ramps & Cherry Valley Bl.	2 I-10 WB Ramps & Cherry Valley Bl.	3 Calimesa Bl. & Cherry Valley Bl.	4 Dwy. 1 & Cherry Valley Bl.	5 St. 2 & Cherry Valley Bl.	6 Dwy. 3 & Cherry Valley Bl.	7 Union St. & Cherry Valley Bl.	8 Nancy St. & Cherry Valley Bl.	9 Beaumont Av. & Cherry Valley Bl.
137 1 332 ← 120 ← 142	→ 703 ← 228	120 43 → 43 ← 811	18 → 8 ← 836	104 17 → 9 ← 739	7 → 16 ← 742	72 1 1 → 1 ← 394 ← 4	64 29 15 → 4 ← 275 ← 49	73 193 5 → 8 ← 250 ← 18
780 → 89 ↓	651 → 462 ↓	55 → 541 ↓	583 →	234 → 349 ↓	366 →	16 → 277 → 27 ↓	13 → 200 → 71 ↓	37 → 110 → 313 ↓
	34 ↑ 0 ↑ 133 ↑					28 ↑ 0 ↑ 3 ↑	47 ↑ 23 ↑ 129 ↑	319 ↑ 111 ↑ 9 ↑

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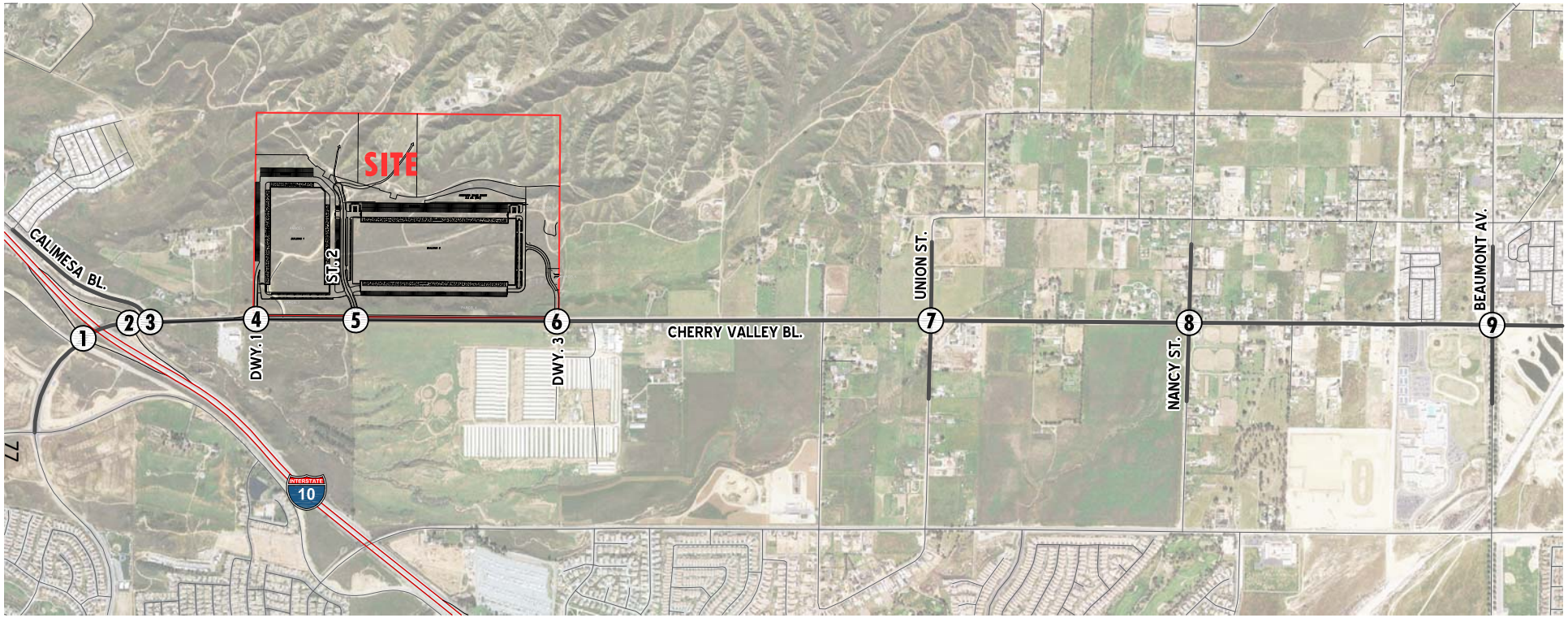
URBAN CROSSROADS

EXHIBIT 6-6: EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE PM PEAK HOUR INTERSECTION VOLUMES



1 I-10 EB Ramps & Cherry Valley Bl.	2 I-10 WB Ramps & Cherry Valley Bl.	3 Calimesa Bl. & Cherry Valley Bl.	4 Dwy. 1 & Cherry Valley Bl.	5 St. 2 & Cherry Valley Bl.	6 Dwy. 3 & Cherry Valley Bl.	7 Union St. & Cherry Valley Bl.	8 Nancy St. & Cherry Valley Bl.	9 Beaumont Av. & Cherry Valley Bl.
613 1 699 ← 205 ← 174	→ 480 → 272	90 68 → 48 → 661	44 → 4 → 665	202 36 → 8 → 467	17 → 8 → 458	27 0 0 → 0 ← 312 ← 6	8 20 10 → 4 → 244 → 14	39 219 21 → 15 → 50 → 13
377 → 64 ↓	299 → 776 → 107 0 ↑ 161	135 → 803 →	870 →	142 → 727 →	763 →	40 → 428 → 35 ↓ 38 ↑ 1 ↑ 3	38 → 330 → 58 ↓ 56 ↑ 28 ↑ 31	65 → 118 → 268 ↓ 222 ↑ 294 ↑ 25

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URBAN CROSSROADS

Table 6-1

Intersection Analysis for Existing plus Ambient Growth plus Project (2017) Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Existing (2014)				EAP (2017)			
			Northbound			Southbound			Eastbound			Westbound			Delay[2] (secs.)		Level of Service		Delay[2] (secs.)		Level of Service	
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM	AM	PM
1	I-10 EB Ramps / Cherry Valley Bl.	CSS	0	0	0	0	1	0	0	1	0	0	1	0	19.3	**89.9**	C	**F**	**84.6**	**>100.0**	**F**	**F**
2	I-10 WB Ramps / Cherry Valley Bl.	CSS	0	1	0	0	0	0	0	1	0	0	1	0	**>100.0**	28.8	**F**	D	**>100.0**	**69.8**	**F**	**F**
3	Calimesa Boulevard / Cherry Valley Bl.	CSS	0	0	0	0	1	0	0	1	0	0	1	0	13.8	13.0	B	B	18.3	19.1	C	C
4	Driveway 1 / Cherry Valley Bl.	**CSS**	0	0	0	0	0	**1**	0	1	0	0	1	0	Not Applicable				12.2	11.2	B	B
5	Street 2 / Cherry Valley Bl.	**TS**	0	0	0	**1**	**1**	0	**1**	1	0	0	1	0	Not Applicable				10.1	8.6	B	A
6	Driveway 3 / Cherry Valley Bl.	**CSS**	0	0	0	0	0	**1**	0	1	0	0	1	0	Not Applicable				11.6	9.6	B	A
7	Union St. (NS) / Cherry Valley Bl.	CSS	0	1	0	0	1	0	0	1	0	0	1	0	15.4	13.9	C	B	17.6	15.1	C	C
8	Nancy Av. (NS) / Cherry Valley Bl.	AWS	0	1	0	0	1	0	0	1	1	0	1	1	12.9	10.3	B	B	14.7	11.0	B	B
9	Beaumont Ave. / Cherry Valley Bl.	TS	1	1	d	1	1	d	1	1	1	1	1	0	29.7	17.5	C	B	34.6	18.1	C	B

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

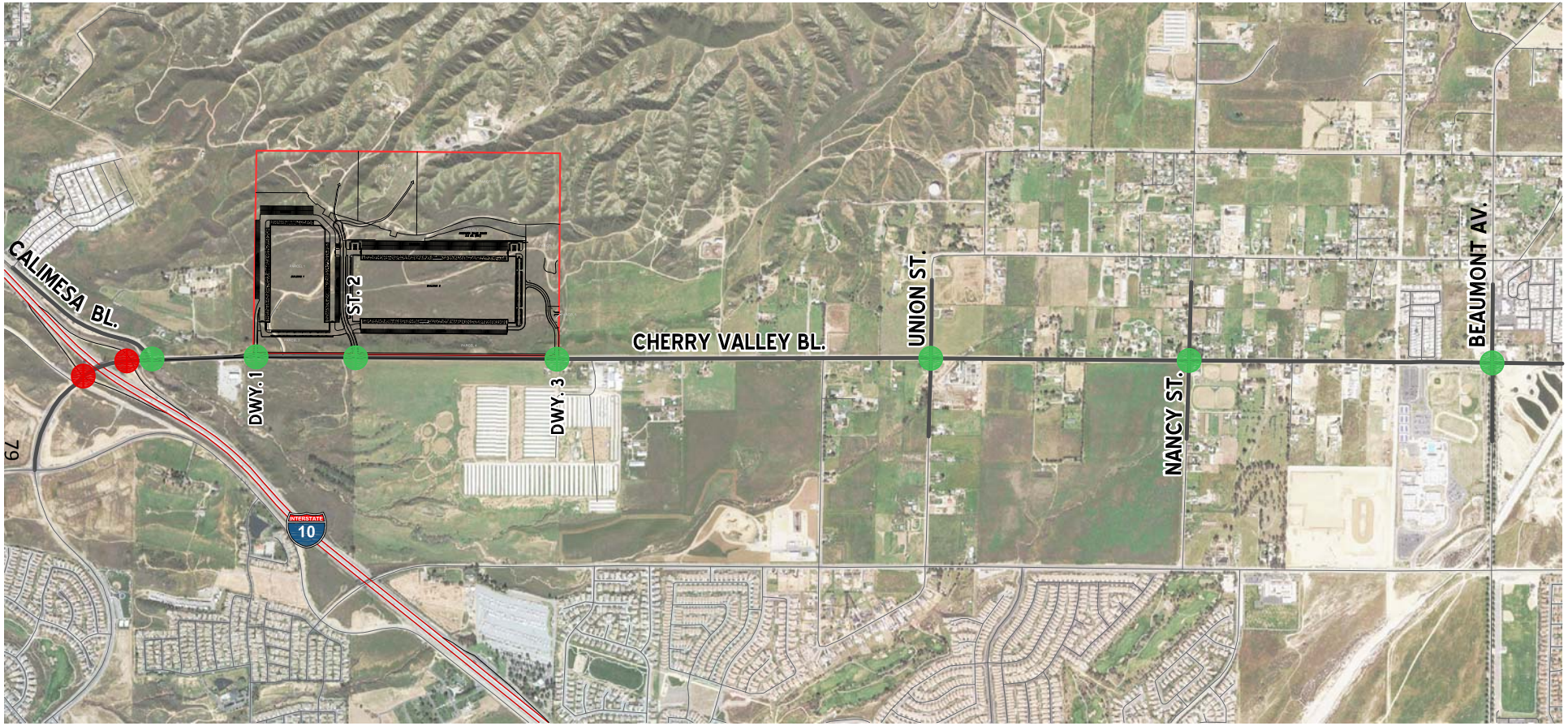
L = Left; T = Through; R = Right; > = Right-Turn Overlap Phasing; d = Defacto Right Turn Lane; **1** = Improvement

[2] Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] TS = Traffic Signal; AWS = All-Way Stop; CSS = Cross-street Stop

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

EXHIBIT 6-7: SUMMARY OF PEAK HOUR INTERSECTION LOS FOR EXISTING PLUS AMBIENT GROWTH PROJECT CONDITIONS



LEGEND:

- = AM PEAK HOUR ACCEPTABLE LOS
- = AM PEAK HOUR DEFICIENT LOS
- = PM PEAK HOUR ACCEPTABLE LOS
- = PM PEAK HOUR DEFICIENT LOS

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6.4.2 EAPC (2017) TRAFFIC CONDITIONS

Level of service calculations were conducted for the study intersections to evaluate their operations under EAPC (2017) conditions with existing roadway and intersection geometrics consistent with Exhibit 3-1. As shown in Table 6-2, the following additional intersection is anticipated to operate at unacceptable LOS as compared to those previously identified under Existing (2014) and EAP (2017) traffic conditions.

ID	Intersection Location
3	Calimesa Bl. / Cherry Valley Bl. – LOS "F" AM and PM Peak Hours

Consistent with Table 6-2, the weekday AM and PM peak hour intersection LOS are summarized on Exhibit 6-8 for EAPC (2017) traffic conditions. The intersection operations analysis worksheets for EAPC (2017) conditions are included in Appendix "6.2" of this TIA. Recommended improvements necessary to bring peak hour intersection operations within acceptable levels for EAPC (2017) traffic conditions are discussed in Section 6.8 *Recommended Improvements for EAP and EAPC (2017) Conditions*.

6.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for EAP (2017) and EAPC (2017) traffic conditions are based on EAP (2017) and EAPC (2017) volumes, respectively.

For EAP (2017) traffic conditions, no additional intersections appear to warrant a traffic signal in addition to the intersections identified in previously under Existing (2014) and E+P traffic conditions (see Appendix "6.3").

For EAPC (2017) traffic conditions, the following additional intersection appear to warrant a traffic signal in addition to the intersections identified previously (see Appendix "6.4").

ID	Intersection Location	Jurisdiction
3	Calimesa Boulevard / Cherry Valley Boulevard	Calimesa

6.6 BASIC FREEWAY SEGMENT ANALYSIS

EAP (2017) and EAPC (2017) peak hour mainline directional volumes are provided on Exhibits 6-9 and 6-10, respectively. The Opening Year (2017) freeway analysis assumes the existing mixed-flow lanes only, and does not include any improvements that may be constructed by Caltrans at a later date. Segment analysis results for the AM and PM peak hours are summarized on Table 6-3. As shown on Table 6-3, the study area mainline segments are anticipated to operate at acceptable service levels for both EAP (2017) and EAPC (2017) traffic conditions (i.e., LOS "D" or better).

Table 6-2

Intersection Analysis for Existing plus Ambient Growth plus Project plus Cumulative (2017) Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												EAPC (2017)			
			Northbound			Southbound			Eastbound			Westbound			Delay[2] (secs.)		Level of Service	
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	I-10 EB Ramps / Cherry Valley Bl.	CSS	0	0	0	0	1	0	0	1	0	0	1	0	**>100.0**	**>100.0**	**F**	**F**
2	I-10 WB Ramps / Cherry Valley Bl.	CSS	0	1	0	0	0	0	0	1	0	0	1	0	**>100.0**	**>100.0**	**F**	**F**
3	Calimesa Boulevard / Cherry Valley Bl.	CSS	0	0	0	0	1	0	0	1	0	0	1	0	**>100.0**	**>100.0**	**F**	**F**
4	Driveway 1 / Cherry Valley Bl.	**CSS**	0	0	0	0	0	**1**	0	1	0	0	1	0	16.4	14.5	C	B
5	Street 2 / Cherry Valley Bl.	**TS**	0	0	0	**1**	**1**	0	**1**	1	0	0	1	0	23.9	11.5	C	B
6	Driveway 3 / Cherry Valley Bl.	**CSS**	0	0	0	0	0	**1**	0	1	0	0	1	0	14.6	11.5	B	B
7	Union St. (NS) / Cherry Valley Bl.	CSS	0	1	0	0	1	0	0	1	0	0	1	0	25.0	22.2	D	C
8	Nancy Av. (NS) / Cherry Valley Bl.	AWS	0	1	0	0	1	0	0	1	1	0	1	1	20.2	13.7	C	B
9	Beaumont Ave. / Cherry Valley Bl.	TS	1	1	d	1	1	d	1	1	1	1	1	0	42.6	22.7	D	C

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes

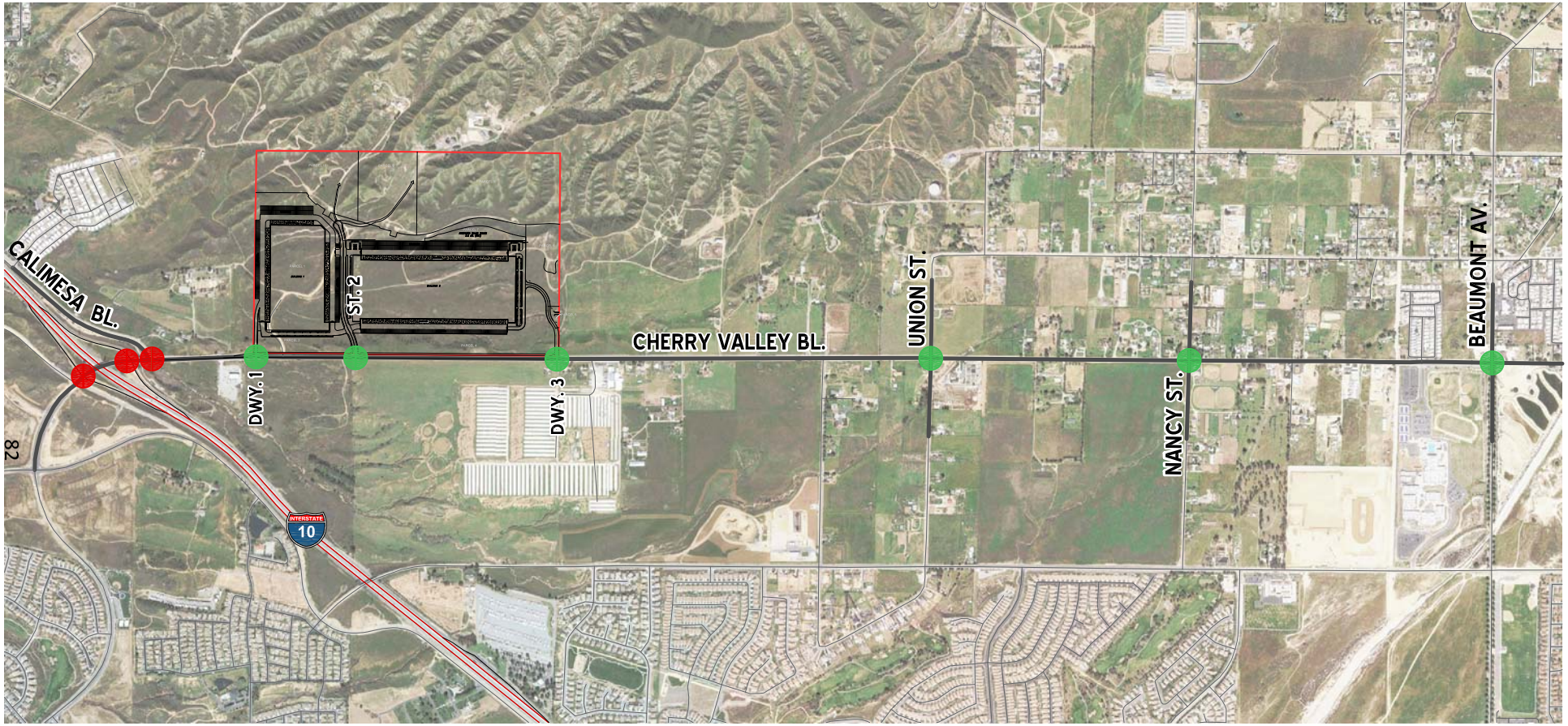
L = Left; T = Through; R = Right; > = Right-Turn Overlap Phasing; d = Defacto Right Turn Lane; **1** = Improvement

[2] Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (o movements sharing a single lane) are shown.

[3] TS = Traffic Signal; AWS = All-Way Stop; CSS = Cross-street Stop

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS)

EXHIBIT 6-8: SUMMARY OF PEAK HOUR INTERSECTION LOS FOR EXISTING PLUS AMBIENT GROWTH PROJECT PLUS CUMULATIVE CONDITIONS



LEGEND:

- = AM PEAK HOUR ACCEPTABLE LOS
- = AM PEAK HOUR DEFICIENT LOS
- = PM PEAK HOUR ACCEPTABLE LOS
- = PM PEAK HOUR DEFICIENT LOS

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EXHIBIT 6-9: EXISTING PLUS AMBIENT GROWTH PROJECT I-10 FREEWAY MAINLINE VOLUMES



EXHIBIT 6-10: EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE I-10 FREEWAY MAINLINE VOLUMES



Table 6-3

Basic Freeway Segment Analysis for Opening Year (2017) Conditions

Freeway	Direction	Mainline Segment	Lanes[1]	EAP (2017)								EAPC (2017)							
				Volume		Truck %		Density[2]		LOS		Volume		Truck %		Density[2]		LOS	
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
I-10	EB	West of Cherry Valley Boulevard	3	2,396	3,479	13%	10%	14.2	20.4	B	C	2,643	4,307	12%	9%	15.6	25.4	B	C
		East of Cherry Valley Boulevard	3	2,174	2,809	13%	14%	12.9	16.8	B	B	2,385	3,264	13%	12%	14.2	19.3	B	C
	WB	West of Cherry Valley Boulevard	3	4,423	3,805	11%	13%	26.5	22.6	D	C	5,097	4,344	10%	11%	31.8	25.9	D	C
		East of Cherry Valley Boulevard	3	3,642	3,471	13%	13%	21.6	20.6	C	C	3,961	3,859	12%	12%	23.5	22.8	C	C

[1] Number of lanes are in the specified direction and is based on existing conditions. No future improvements are currently plannec

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln)

EAP (2017) freeway mainline level of service analysis worksheets are provided in Appendix "6.5". EAPC (2017) freeway mainline level of service analysis worksheets are provided in Appendix "6.6".

6.7 FREEWAY MERGE/DIVERGE ANALYSIS

Ramp merge and diverge operations have been evaluated for EAP (2017) and EAPC (2017) traffic conditions at the I-10 / Cherry Valley Boulevard interchange. As shown on Table 6-4, it is anticipated that all the freeway ramp junctions are anticipated to operate projected to operate at LOS "D" or better for both EAP (2017) and EAPC (2017) traffic conditions.

The EAP (2017) freeway ramp operations analysis worksheets are provided in Appendix "6.7" and EAPC (2017) freeway ramp operations analysis worksheets are provided in Appendix "6.8".

6.8 RECOMMENDED IMPROVEMENTS FOR EAP AND EAPC (2017) CONDITIONS

6.8.1 INTERSECTIONS

Table 6-5 identifies the necessary improvements required to achieve requisite LOS standards under EAP (2017) conditions while Table 6-6 identifies the necessary improvements under EAPC (2017) conditions. It should be noted that the improvements required under EAP (2017) conditions for each intersection are consistent with those previously identified for Existing traffic conditions.

Roundabouts have been assessed as an alternative to signalization at the I-10 Freeway at Cherry Valley Boulevard interchange ramps. It is our understanding that although preliminary discussions have occurred between the City of Calimesa and Caltrans, a final design has not yet been established. As such, the effectiveness of roundabouts as an alternative to signalization in addressing deficiencies identified in this study at the I-10 Eastbound and Westbound ramps at Cherry Valley Boulevard has been based on the 2025 interim concept previously presented in the *Roundabout Feasibility Study for Interstate 10 and Cherry Valley Boulevard Interchange*. (3) As shown on Tables 6-5 and 6-6, the results of the assessment indicate that the implementation of roundabouts at the I-10 Freeway at Cherry Valley Boulevard interchange are anticipated to operate at acceptable LOS under both EAP and EAPC (2017) conditions. As mentioned in the feasibility study, the final geometric layouts of the roundabouts will require a more detailed design examination accounting stopping sight distance, intersection sight distance, entry angle and view angles and other design criteria that are typically not considered in the "preliminary roundabout concept development" process. These essential geometric considerations affect the safety and capacity performance of roundabouts.

EAP and EAPC (2017) intersection operations analysis worksheets, with improvements, are provided in Appendices "6.9" and "6.10", respectively.

6.8.2 FREEWAY OFF-RAMP QUEUING

A traffic progression analysis has been performed for the off-ramps at the I-10 Freeway at Cherry Valley Boulevard interchange to assess peak hour vehicle queues that may potentially impact the freeway mainline if spillback were to occur. Progression analysis findings are

Table 6-4

Freeway Ramp Junction Merge/Diverge Analysis for Opening Year (2017) Conditions

Freeway	Direction	Ramp or Segment	Lanes on Freeway[1]	EAP (2017)				EAPC (2017)			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Density[2]	LOS	Density[2]	LOS	Density[2]	LOS	Density[2]	LOS
I-10	EB	Off-Ramp at Cherry Valley Boulevard	3	16.3	B	23.2	C	18.0	B	28.3	D
		On-Ramp at Cherry Valley Boulevard	3	14.8	B	18.3	B	16.2	B	20.7	C
	WB	On-Ramp at Cherry Valley Boulevard	3	28.3	D	24.0	C	32.8	D	27.6	C
		Off-Ramp at Cherry Valley Boulevard	3	23.3	C	22.4	C	25.0	C	24.6	C

[1] Number of lanes are in the specified direction and is based on existing conditions. No future improvements are currently plannec

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln)

Table 6-5

Recommended Improvements for Existing plus Ambient Growth plus Project (2017) Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	I-10 EB Ramps / Cherry Valley Bl.																	
	- Without Improvements	CSS	0	0	0	0	1	0	0	1	0	0	1	0	**84.6**	**>100.0**	**F**	**F**
	- With Improvements	**TS**	0	0	0	0	1	**1**	0	1	0	**1**	1	0	25.4	24.1	C	C
	- With Roundabout Alternative[4]	**RA**	0	0	0	0	1	**1**	0	1	**1**	0	1	0	2.6	3.1	A	A
2	I-10 WB Ramps / Cherry Valley Bl.																	
	- Without Improvements	CSS	0	1	0	0	0	0	0	1	0	0	1	0	**>100.0**	**69.8**	**F**	**F**
	- With Improvements	**TS**	0	1	0	0	0	0	**1**	1	0	0	1	**1**	28.6	18.2	C	B
	- With Roundabout Alternative[4]	**RA**	**1**	1	**1**	0	0	0	**1**	1	0	0	1	**1**	4.0	2.2	A	A
3	Calimesa Boulevard / Cherry Valley Bl.																	
	- Without Improvements	CSS	0	0	0	0	1	0	0	1	0	0	1	0	18.3	19.1	C	C
	- With Improvements	CSS	0	0	0	0	1	0	**1**	1	0	0	1	0	14.6	14.5	B	B

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes

L = Left; T = Through; R = Right; > = Right-Turn Overlap Phasing; d= Defacto Right Turn Lane; **1** = Improvement

[2] Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (o movements sharing a single lane) are shown. The signalized I-10 ramp locations at Cherry Valley Boulevard have been analyzed using the Synchro software

[3] CSS = Cross-street Stop; TS = Traffic Signal; RA = Roundabout

[4] The roundabout concept utilized to perform this LOS assessment is preliminary and is based on the 2025 interim concept previously presented in the *Roundabout Feasibility Study for Interstate 10 and Cherry Valley Boulevard* Interchange published by Omni-means, Ltd. (September 2013). If a roundabout were to be selected for implementation, additional design and operational analysis consistent with both the Caltrans *Geometric Design Guidance, Final Report* (June 2007), and R*eport 672 Roundabouts: An Informational Guide (Second Edition)* published by the National Cooperative Highway Research Program (NCHRP) and the Federal Highway Administration (FHWA) will need to be performed.

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS)

Table 6-6

Recommended Improvements for Existing plus Ambient Growth plus Project plus Cumulative (2017) Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	I-10 EB Ramps / Cherry Valley Bl.																	
	- Without Improvements	CSS	0	0	0	0	1	0	0	1	0	0	1	0	**>100.0**	**>100.0**	**F**	**F**
	- With Improvements	**TS**	0	0	0	0	1	**1**	0	1	0	**1**	1	0	51.1	44.6	D	D
	- With Roundabout Alternative[4]	**RA**	0	0	0	0	1	**1**	0	1	**1**	0	1	0	7.3	6.7	A	A
2	I-10 WB Ramps / Cherry Valley Bl.																	
	- Without Improvements	CSS	0	1	0	0	0	0	0	1	0	0	1	0	**>100.0**	**>100.0**	**F**	**F**
	- With Improvements	**TS**	0	1	0	0	0	0	**1**	1	0	0	1	**1**	39.8	20.6	D	C
	- With Roundabout Alternative[4]	**RA**	**1**	1	**1**	0	0	0	**1**	1	0	0	1	**1**	10.7	2.8	B	A
3	Calimesa Boulevard / Cherry Valley Bl.																	
	- Without Improvements	CSS	0	0	0	0	1	0	0	1	0	0	1	0	>100.0	**>100.0**	**F**	**F**
	- With Improvements	**TS**	0	0	0	0	1	0	**1**	1	0	0	1	0	15.1	15.1	A	B

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes

L = Left; T = Through; R = Right; > = Right-Turn Overlap Phasing; d= Defacto Right Turn Lane;**1** = Improvement

[2] Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (o movements sharing a single lane) are shown. The signalized I-10 ramp locations at Cherry Valley Boulevard have been analyzed using the Synchro software

[3] CSS = Cross-street Stop; TS = Traffic Signal; RA = Roundabout

[4] The roundabout concept utilized to perform this LOS assessment is preliminary and is based on the 2025 interim concept previously presented in the *Roundabout Feasibility Study for Interstate 10 and Cherry Valley Boulevard* Interchange published by Omni-means, Ltd. (September 2013). If a roundabout were to be selected for implementation, additional design and operational analysis consistent with both the Caltrans *Geometric Design Guidance, Final Report* (June 2007), and R*eport 672 Roundabouts: An Informational Guide (Second Edition)* published by the National Cooperative Highway Research Program (NCHRP) and the Federal Highway Administration (FHWA) will need to be performed.

presented in Table 6-7 for the EAP (2017) and EAPC (2017) traffic conditions, with improvements analyses. As shown on Table 6-7, there are no potential queuing issues anticipated during either the AM and PM peak 95th percentile traffic flows for EAP (2017) or EAPC (2017), with improvements traffic conditions.

Worksheets for the off-ramp queuing analysis at the I-10 Freeway and Cherry Valley Boulevard interchange are provided in Appendix "6.11" for EAP (2017) and Appendix "6.12" for EAPC (2017).

6.9 MITIGATION MEASURES

While ultimate improvement plans have not yet been finalized for the I-10 interchange at Cherry Valley Boulevard, a roundabout concept is being proposed by the City of Calimesa. As timing of future improvements to the interchange are uncertain, the project applicant proposes, and Mitigation Measures 1A and 1B require, payment of the project's fair share toward the construction of the interchange improvements or, if a fair share contribution program has not been established, construction of interim improvements at the I-10 at Cherry Valley interchange to mitigate project impacts.

Mitigation Measure 1A

(c) Prior to the issuance of occupancy permits, the project applicant shall pay the project's fair share toward the construction of the new interchange at the I-10 eastbound and westbound intersections at Cherry Valley Boulevard, provided that the City of Calimesa has established a fair share contribution program for such improvements. The County shall determine whether a fair share program exists in the City of Calimesa and, if one does exist, the fair share payment due from the applicant to the City of Calimesa shall be 5.8 % at the I-10 EB ramps/Cherry Valley Boulevard and 10.6% at I-10 WB ramps/Cherry Valley Boulevard, as determined in the traffic study.

(d) If a fair share contribution program has not been established, and provided that both Caltrans and the City of Calimesa authorize construction within their respective jurisdictional control, the project applicant shall construct the following interim improvements prior to the issuance of occupancy permits:

- Install traffic signals at I-10 eastbound and westbound ramp intersections at Cherry Valley Boulevard,
- Restripe to provide eastbound and westbound left turn pockets within the existing width of the Cherry Valley Boulevard bridge,
- Add a southbound right turn lane on the off ramp at the intersection of I-10 EB ramps at Cherry Valley Boulevard, and
- Add a westbound right turn lane at the intersection of I-10 WB ramps at Cherry Valley Boulevard.

Table 6-7

Peak Hour Freeway Off-Ramp Queuing Summary for Opening Year (2017) Conditions

Intersection	Movement	Available Stacking Distance (Feet)	EAP (2017)				EAPC (2017)			
			95th Percentile Queue (Feet)		Acceptable? [1]		95th Percentile Queue (Feet)		Acceptable? [1]	
			AM	PM	AM	PM	AM	PM	AM	PM
I-10 EB Ramps / Cherry Valley Bl.	SBL/T/R	1,145	202	295	Yes	Yes	470 [2]	699 [2]	Yes	Yes
I-10 WB Ramps / Cherry Valley Bl.	NBL/T/R	1,030	106	169	Yes	Yes	105	201	Yes	Yes

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

[2] 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Mitigation Measure 1B

(c) Prior to the issuance of occupancy permits, the project applicant shall pay the project's fair share costs to realign Calimesa Boulevard approximately 550 feet east of the I-10 westbound ramps and construct an eastbound left turn lane at the intersection of Calimesa Boulevard and Cherry Valley Boulevard, provided that the City of Calimesa has established a fair share contribution program for this intersection. The County shall determine whether a fair share program exists in the City of Calimesa and, if one does exist, the fair share payment due from the applicant to the City of Calimesa shall be 12.1%, as determined in the traffic study.

(d) If a fair share contribution program has not been established, and provided that the City of Calimesa authorizes construction within its jurisdictional control, the project applicant shall, prior to the issuance of occupancy permits:

- Realign Calimesa Boulevard approximately 550 feet east of the I-10 westbound ramps; and
- Construct an eastbound left turn lane at the intersection of Calimesa Boulevard and Cherry Valley Boulevard.

A supplemental traffic analysis to assess the interim traffic signals and other improvements at the interchange ramps, including vehicle queues and potential impact to operations of the adjacent Calimesa Boulevard at Cherry Valley Boulevard intersection is provided in *San Gorgonio Crossing Supplemental Traffic Analysis* dated June 9, 2016, prepared by Urban Crossroads.

7 HORIZON YEAR (2035) TRAFFIC ANALYSIS

This section discusses the methods used to develop Horizon Year (2035) traffic forecasts for without and with Project conditions and the resulting intersection, roadway segment and freeway mainline operations.

7.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Horizon Year (2035) traffic conditions are consistent with those shown previously on Exhibit 3-1, with the exception of Project driveways and those facilities assumed to be constructed by the Project or cumulative development projects to provide site access are also assumed to be in place for Horizon Year (2035) conditions.

7.2 HORIZON YEAR (2035) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from the County of Riverside Traffic Analysis Model (RivTAM). The volumes have been developed to assume the currently adopted roadway circulation network in the immediate vicinity of the proposed Project site. The weekday ADT volumes which can be expected for Horizon Year (2035) without Project traffic conditions are shown on Exhibit 7-1. Exhibits 7-2 and 7-3 show the AM and PM peak hour intersection turning movement volumes for Horizon Year (2035) without Project traffic conditions.

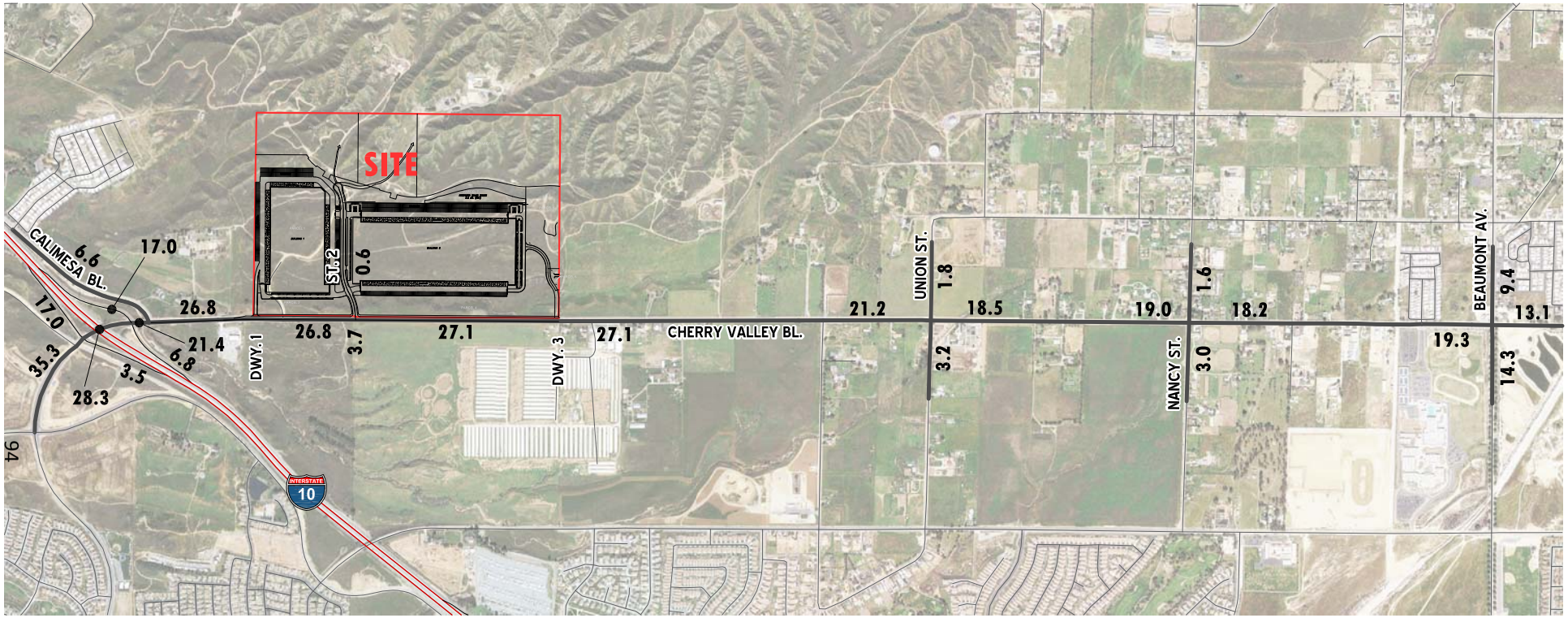
7.3 HORIZON YEAR (2035) WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-processed volumes obtained from the RivTAM plus traffic generated by the proposed Project. The weekday ADT volumes which can be expected for Horizon Year (2035) with Project traffic conditions are shown on Exhibit 7-4. Exhibits 7-5 and 7-6 show the AM and PM peak hour intersection turning movement volumes for Horizon Year (2035) with Project traffic conditions.

7.4 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their peak hour operations under Horizon Year (2035) without and with Project conditions with existing roadway and intersection geometrics consistent with Exhibit 3-1. The intersection analysis results are summarized in Table 7-1 which indicates the following intersection locations will experience unacceptable LOS "E" or worse conditions during one or both of the peak hours under Horizon Year (2035) without and with Project traffic conditions:

EXHIBIT 7-1: HORIZON YEAR (2035) WITHOUT PROJECT AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

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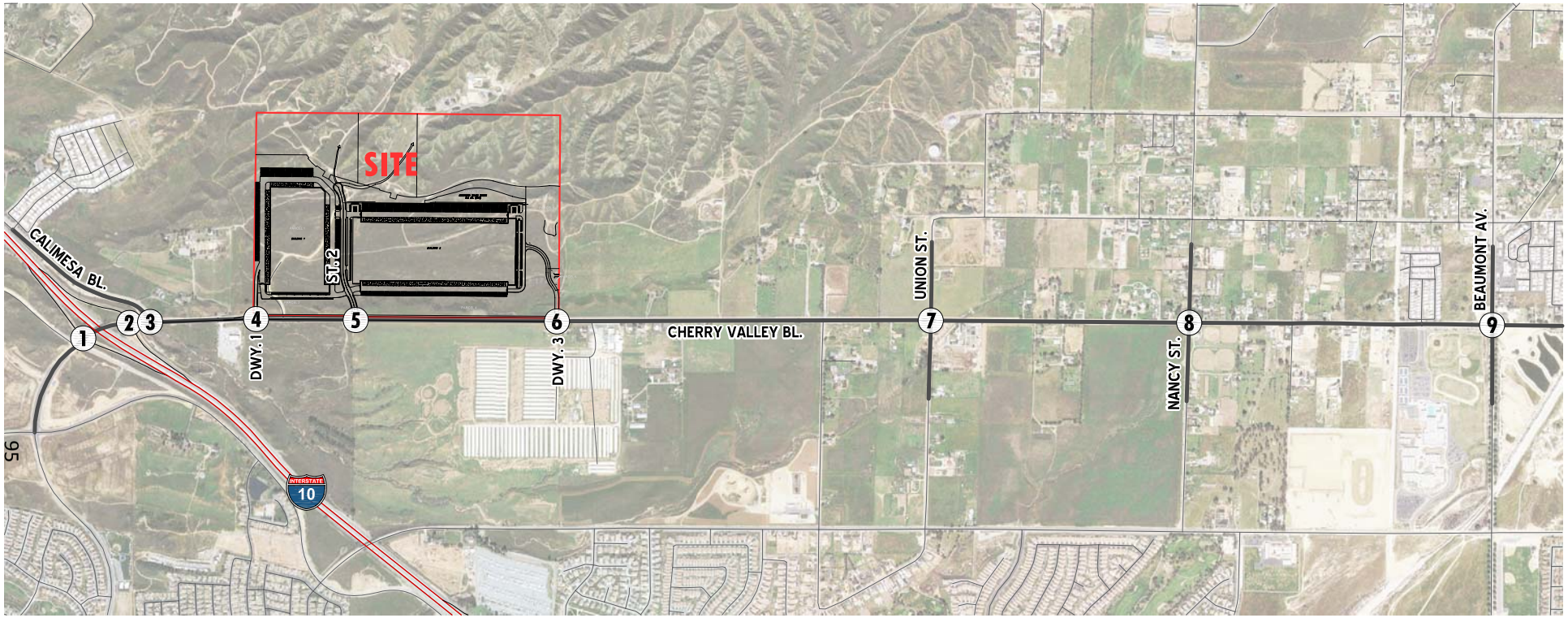
EXHIBIT 7-2: HORIZON YEAR (2035) WITHOUT PROJECT AM PEAK HOUR INTERSECTION VOLUMES



1 I-10 EB Ramps & Cherry Valley Bl.	2 I-10 WB Ramps & Cherry Valley Bl.	3 Calimesa Bl. & Cherry Valley Bl.	4 Dwy. 1 & Cherry Valley Bl.	5 St. 2 & Cherry Valley Bl.	6 Dwy. 3 & Cherry Valley Bl.	7 Union St. & Cherry Valley Bl.	8 Nancy St. & Cherry Valley Bl.	9 Beaumont Av. & Cherry Valley Bl.
530 L, 1 T, 266 R	724 R	132 L, 47 T, 285 R	Intersection Does Not Exist	58 L, NOM T, 9 R	Intersection Does Not Exist	101 L, 16 T, 3 R	70 L, 32 T, 18 R	111 L, 335 T, 40 R
414 L, 148 T	283 T	875 T		4 L, 1265 T, 19 R		2 L, 898 T, 20 R	18 L, 870 T, 64 R	31 L, 655 T, 51 R
1510 T, 244 R	845 T, 931 R	129 L, 1086 T		62 L, 874 T, 31 R		35 L, 785 T, 142 R	39 L, 710 T, 82 R	71 L, 473 T, 337 R
	279 L, 0 T, 284 R			97 L, NOM T, 23 R		122 L, 14 T, 17 R	53 L, 25 T, 142 R	336 L, 233 T, 47 R

N

LEGEND:

NOM = NOMINAL

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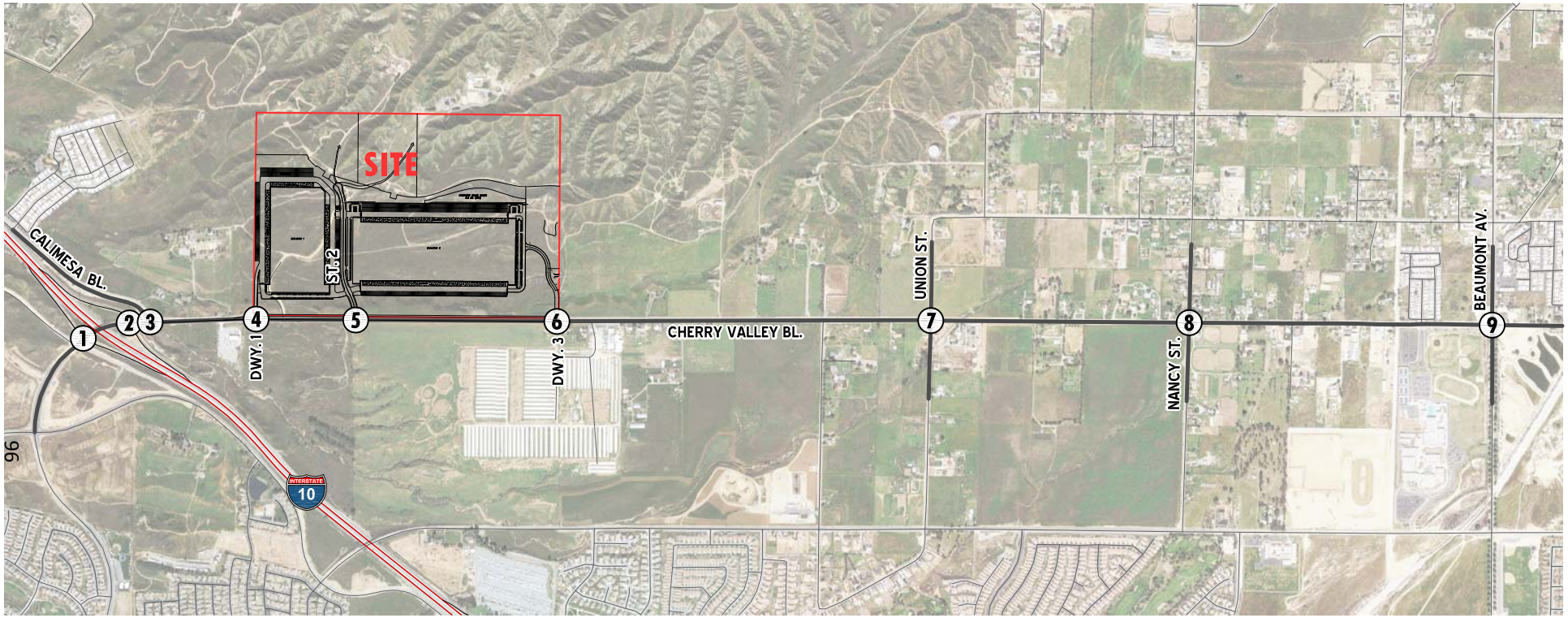
EXHIBIT 7-3: HORIZON YEAR (2035) WITHOUT PROJECT PM PEAK HOUR INTERSECTION VOLUMES



1 I-10 EB Ramps & Cherry Valley Bl.	2 I-10 WB Ramps & Cherry Valley Bl.	3 Calimesa Bl. & Cherry Valley Bl.	4 Dwy. 1 & Cherry Valley Bl.	5 St. 2 & Cherry Valley Bl.	6 Dwy. 3 & Cherry Valley Bl.	7 Union St. & Cherry Valley Bl.	8 Nancy St. & Cherry Valley Bl.	9 Beaumont Av. & Cherry Valley Bl.
1036 → 0 → 717 ← 924 ← 88	→ 442 ← 456	99 → 187 ← 338 ← 799	Intersection Does Not Exist	48 → NOM → 18 ← 9 ← 1508 ← 98	Intersection Does Not Exist	44 → 2 → 4 ← 7 ← 1040 ← 9	22 → 22 → 12 ← 15 ← 1004 ← 33	101 → 290 → 45 ← 29 ← 626 ← 70
1326 → 301 →	754 → 1289 → 556 ← 0 ← 313 ←	211 → 1391 →		65 → 1508 → 97 → 127 ← NOM ← 123 ←		104 → 1075 → 84 → 206 ← 1 ← 31 ←	42 → 1079 → 64 → 62 ← 58 ← 34 ←	108 → 670 → 410 → 364 ← 433 ← 87 ←

N

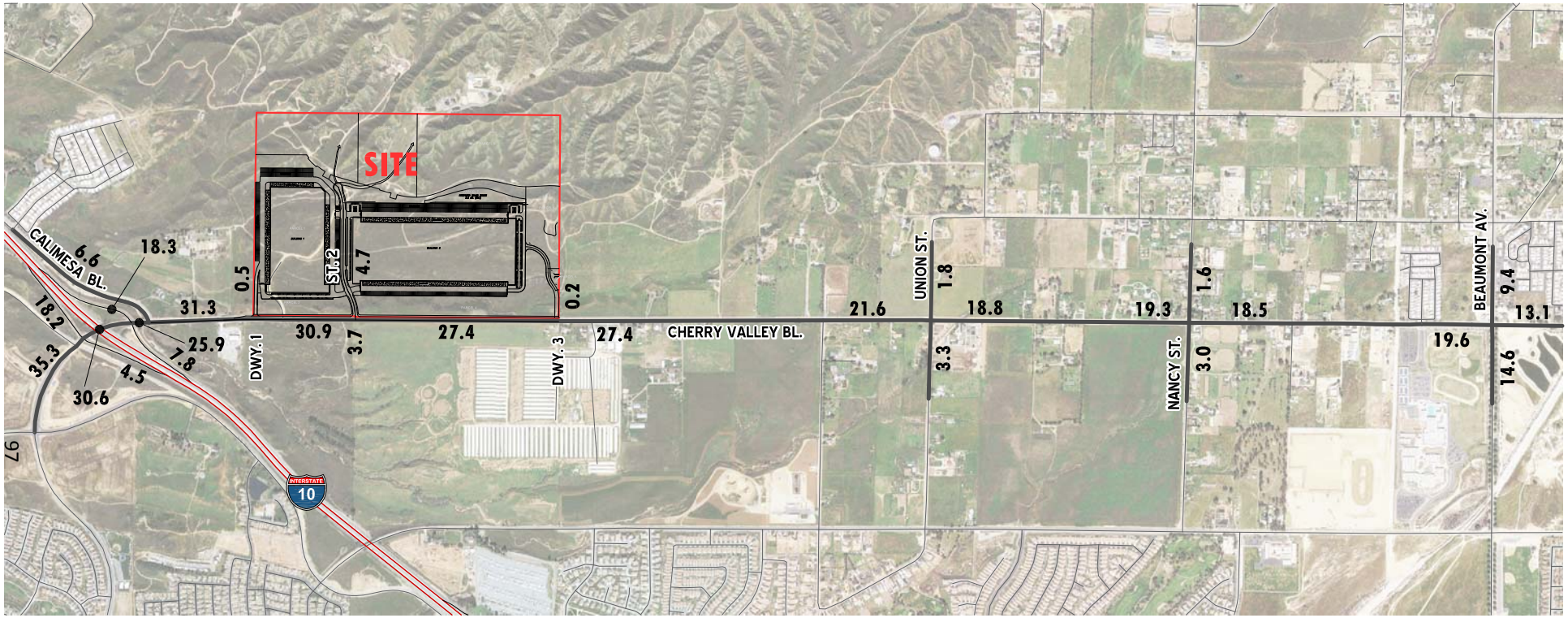
LEGEND:

NOM = NOMINAL

CVAR_11291

URBAN CROSSROADS

EXHIBIT 7-4: HORIZON YEAR (2035) WITH PROJECT AVERAGE DAILY TRAFFIC (ADT)



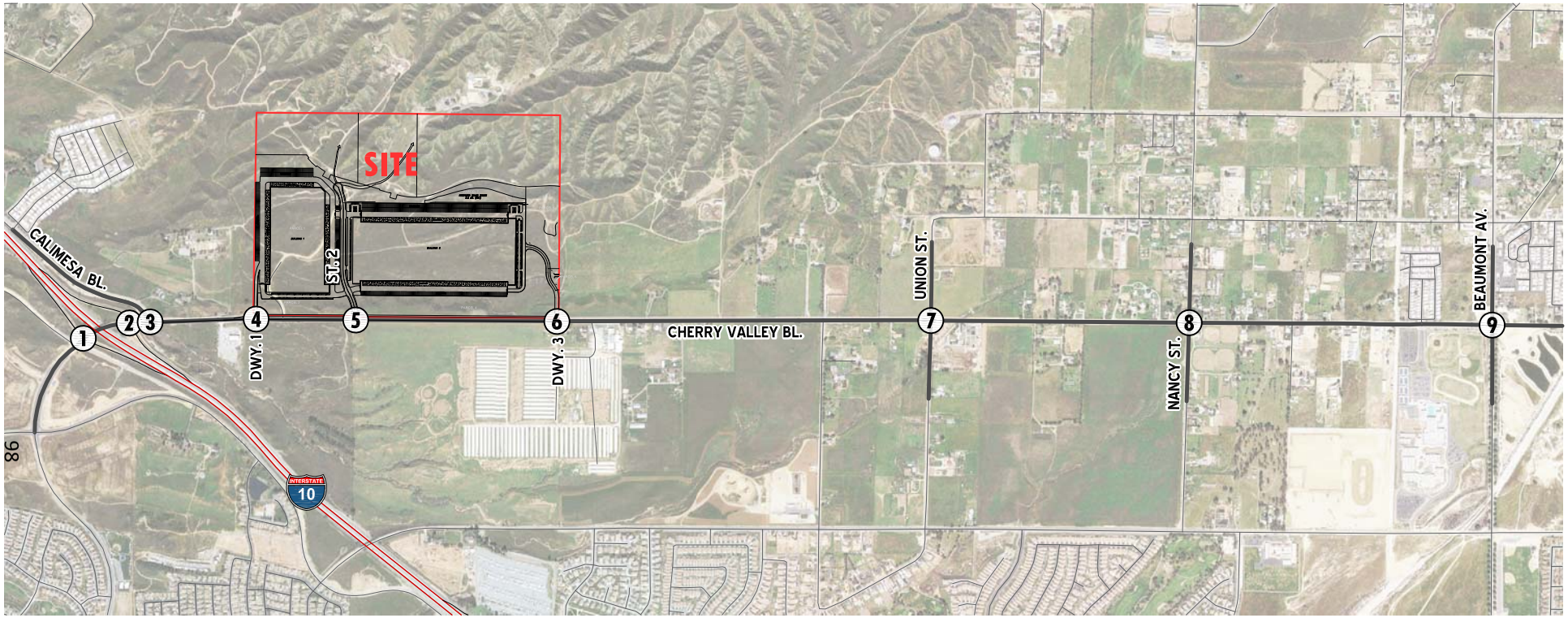
LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

CVAR_11292

N

EXHIBIT 7-5: HORIZON YEAR (2035) WITH PROJECT AM PEAK HOUR INTERSECTION VOLUMES



1 I-10 EB Ramps & Cherry Valley Bl.	2 I-10 WB Ramps & Cherry Valley Bl.	3 Calimesa Bl. & Cherry Valley Bl.	4 Dwy. 1 & Cherry Valley Bl.	5 St. 2 & Cherry Valley Bl.	6 Dwy. 3 & Cherry Valley Bl.	7 Union St. & Cherry Valley Bl.	8 Nancy St. & Cherry Valley Bl.	9 Beaumont Av. & Cherry Valley Bl.
530 1 365 ← 414 ← 183	→ 769 → 318	132 47 → 285 → 955	15 → 5 → 1485	118 NOM 18 → 9 → 1275 → 19	5 → 10 → 1298	101 16 3 → 2 → 913 → 20	70 32 18 → 18 → 885 → 64	111 335 40 → 31 → 655 → 51
1510 → 244 ↓	845 → 1030 → 279 0 363 ↑	129 → 1264 →	1145 →	240 → 874 → 31 ↓ 97 NOM 23 ↑	915 →	35 → 792 → 144 ↓ 127 14 17 ↑	39 → 717 → 82 ↓ 53 25 142 ↑	71 → 473 → 344 ↓ 351 233 47 ↑

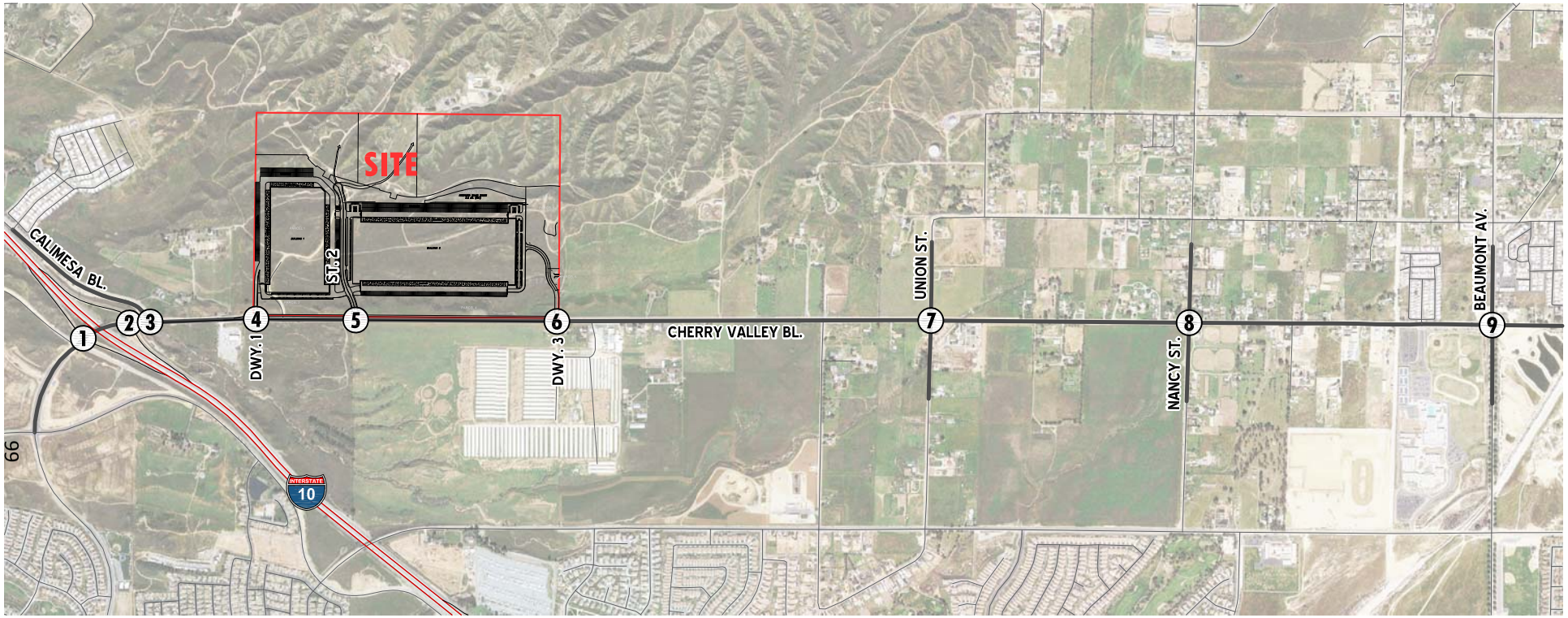
LEGEND:

NOM = NOMINAL

CVAR_11293

URBAN CROSSROADS

EXHIBIT 7-6: HORIZON YEAR (2035) WITH PROJECT PM PEAK HOUR INTERSECTION VOLUMES



1 I-10 EB Ramps & Cherry Valley Bl.	2 I-10 WB Ramps & Cherry Valley Bl.	3 Calimesa Bl. & Cherry Valley Bl.	4 Dwy. 1 & Cherry Valley Bl.	5 St. 2 & Cherry Valley Bl.	6 Dwy. 3 & Cherry Valley Bl.	7 Union St. & Cherry Valley Bl.	8 Nancy St. & Cherry Valley Bl.	9 Beaumont Av. & Cherry Valley Bl.
1036 0 769 → 924 ← 182	→ 558 ← 550	99 187 → 338 ← 1009	Intersection Does Not Exist	206 NOM 38 → 11 ← 1521 ← 98	Intersection Does Not Exist	44 2 4 → 7 ← 1047 ← 9	22 22 12 → 15 ← 1011 ← 33	101 290 45 → 29 ← 626 ← 70
1326 301 →	754 1341 →	211 1485 →		159 1508 97 →		104 1090 89 →	42 1094 64 →	108 670 425 →
	556 0 355 ←			127 NOM 123 ←		208 1 31 ←	62 58 34 ←	371 433 87 ←

N

LEGEND:

NOM = NOMINAL

CVAR_11294

URBAN CROSSROADS

Table 7-1

Intersection Analysis for Horizon Year (2035) Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												2035 Without Project				2035 With Project			
			Northbound			Southbound			Eastbound			Westbound			Delay[2] (secs.)		Level of Service		Delay[2] (secs.)		Level of Service	
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM	AM	PM
1	I-10 EB Ramps / Cherry Valley Bl.	CSS	0	0	0	0	1	0	0	1	0	0	1	0	**>100.0**	**>100.0**	**F**	**F**	**>100.0**	**>100.0**	**F**	**F**
2	I-10 WB Ramps / Cherry Valley Bl.	CSS	0	1	0	0	0	0	0	1	0	0	1	0	**>100.0**	**>100.0**	**F**	**F**	**>100.0**	**>100.0**	**F**	**F**
3	Calimesa Boulevard / Cherry Valley Bl.	CSS	0	0	0	0	1	0	0	1	0	0	1	0	**>100.0**	**>100.0**	**F**	**F**	**>100.0**	**>100.0**	**F**	**F**
4	Driveway 1 / Cherry Valley Bl.	**CSS**	0	0	0	0	0	**1**	0	**2**	0	0	**2**	0	Not Applicable				16.6	23.3	C	C
5	Patton Rd / Street 2 / Cherry Valley Bl.	**TS**	0	0	0	**1**	**1**	0	**1**	1	0	0	1	0	Not Applicable[4]				Not Applicable[4]			
6	Driveway 3 / Cherry Valley Bl.	**CSS**	0	0	0	0	0	**1**	0	**2**	0	0	**2**	0	Not Applicable				14.6	17.8	B	C
7	Union St. (NS) / Cherry Valley Bl.	CSS	0	1	0	0	1	0	0	1	0	0	1	0	**>100.0**	**>100.0**	**F**	**F**	**>100.0**	**>100.0**	**F**	**F**
8	Nancy Av. (NS) / Cherry Valley Bl.	AWS	0	1	0	0	1	0	0	1	1	0	1	1	**55.3**	**56.1**	**F**	**F**	**55.4**	**56.2**	**F**	**F**
9	Beaumont Ave. / Cherry Valley Bl.	TS	1	1	d	1	1	d	1	1	1	1	1	0	**85.9**	**110.3**	**F**	**F**	**87.0**	**113.1**	**F**	**F**

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; > = Right-Turn Overlap Phasing; d = Defacto Right Turn Lane; **1** = Improvement

[2] Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] TS = Traffic Signal; AWS = All-Way Stop; CSS = Cross-street Stop

[4] Existing intersection configuration is not applicable due to the addition of a 4th leg (Future Patton Road). Analysis of the intersection a 4 leg is shown in Table 7-4.

ID	Intersection Location
1	I-10 EB Ramps / Cherry Valley Boulevard – LOS "F" AM and PM Peak Hours
2	I-10 WB Ramps / Cherry Valley Boulevard – LOS "F" AM and PM Peak Hours
3	Calimesa Boulevard / Cherry Valley Boulevard – LOS "F" AM and PM Peak Hours
7	Union St. / Cherry Valley Boulevard – LOS "F" AM and PM Peak Hours
8	Nancy Av. / Cherry Valley Boulevard – LOS "F" AM and PM Peak Hours
9	Beaumont Av. / Cherry Valley Boulevard – LOS "F" AM and PM Peak Hours

Consistent with Table 7-1, Horizon Year (2035) without and with Project peak hour intersection LOS are shown on Exhibits 7-7 and 7-8, respectively. The intersection operations analysis worksheets for Horizon Year (2035) without Project conditions are included in Appendix "7.1" of this TIA. The intersection operations analysis worksheets for Horizon Year (2035) with Project conditions are included in Appendix "7.2" of this TIA.

Measures to address cumulative impacts for Horizon Year (2035) traffic conditions are discussed in Section 7.8 *Recommended Improvements for Horizon Year (2035)*.

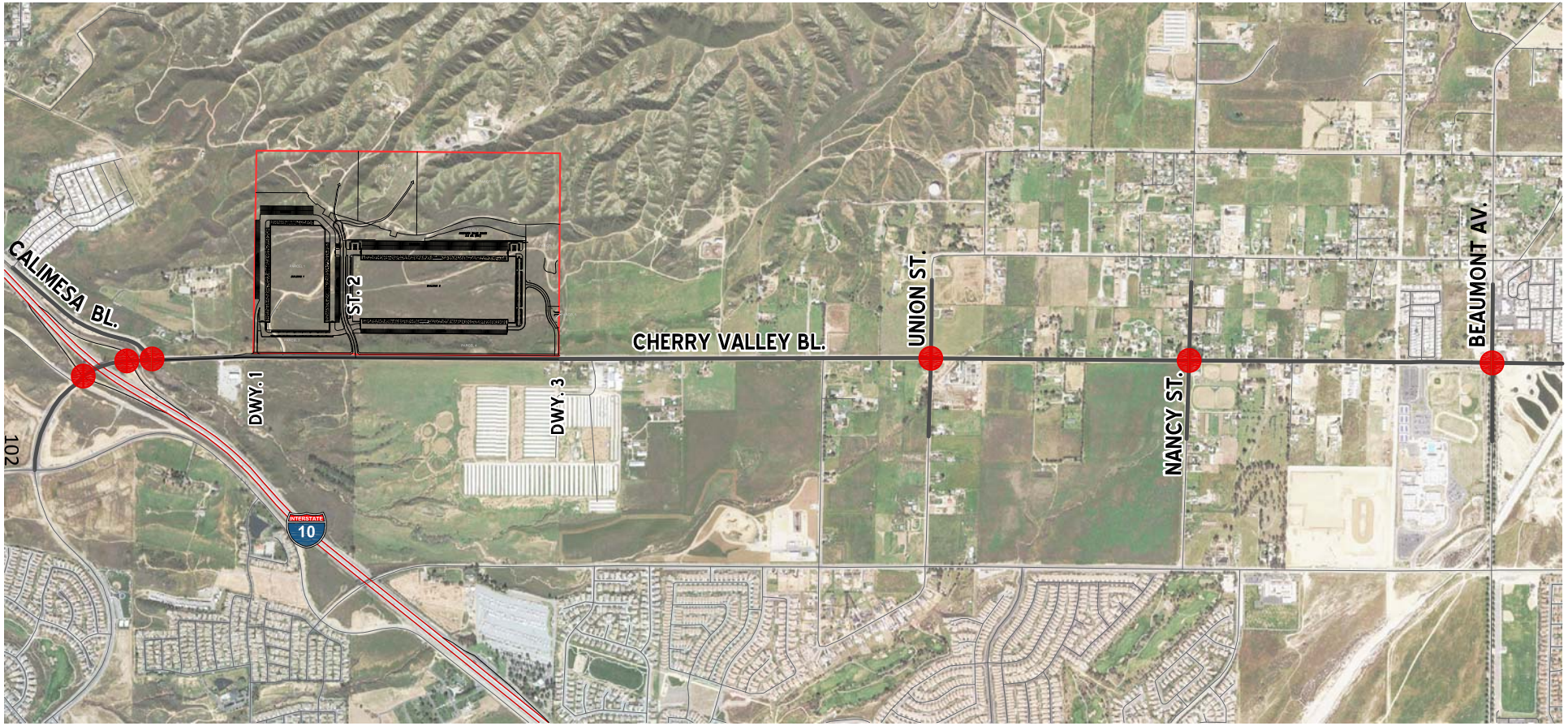
7.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

For Horizon Year (2035) without Project conditions, traffic signals appear to be warranted at the following intersections (See Appendix "7.3"):

ID	Intersection Location	Jurisdiction
3	Calimesa Boulevard / Cherry Valley Boulevard	RivCo, Calimesa
7	Union Street / Cherry Valley Boulevard	Riverside County
8	Nancy Avenue / Cherry Valley Boulevard	Riverside County

For Horizon Year (2035) with Project conditions, there are no additional traffic signals that appear to be warranted with the addition of Project traffic in comparison to those warranted under Horizon Year (2035) without Project conditions.

EXHIBIT 7-7: SUMMARY OF PEAK HOUR INTERSECTION LOS FOR HORIZON YEAR (2035) WITHOUT PROJECT CONDITIONS



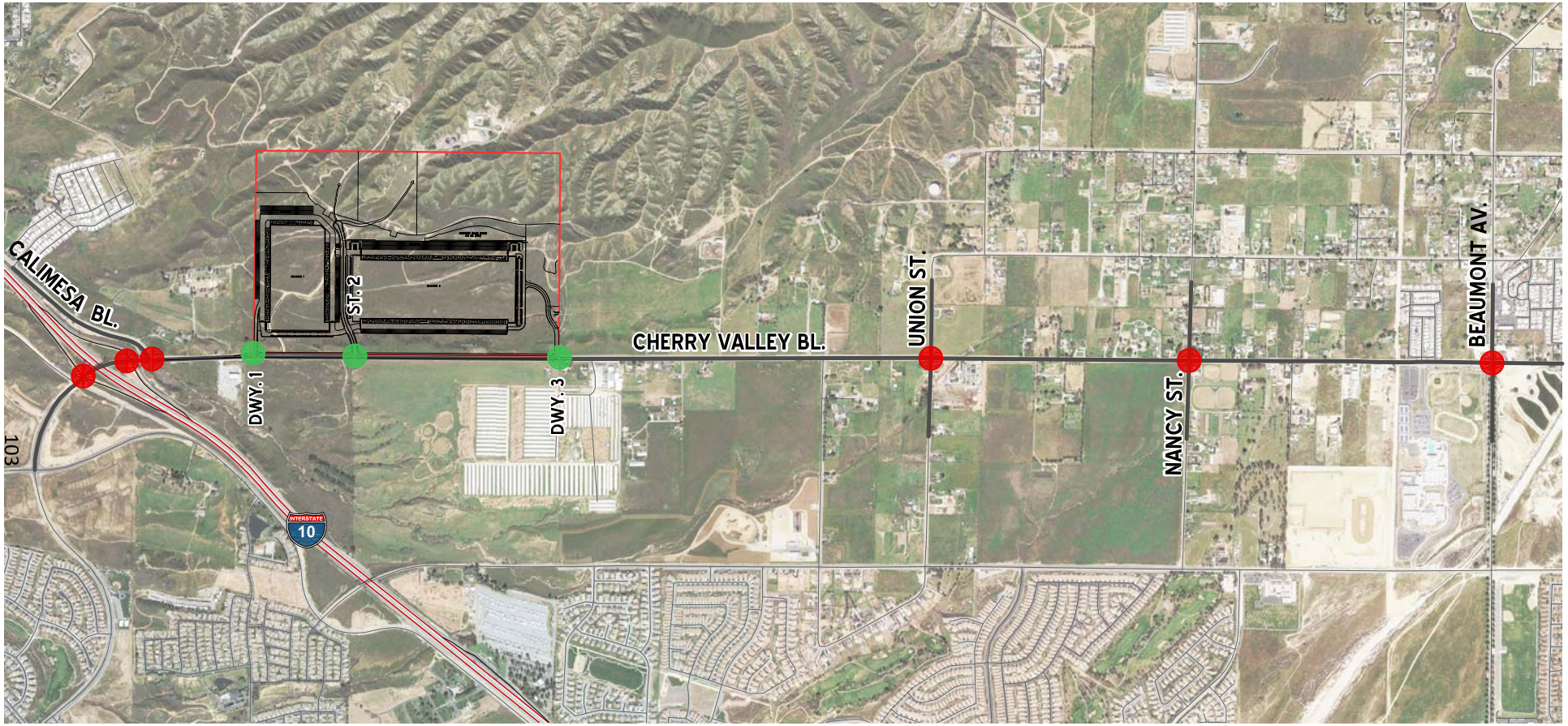
LEGEND:

- = AM PEAK HOUR ACCEPTABLE LOS
- = AM PEAK HOUR DEFICIENT LOS
- = PM PEAK HOUR ACCEPTABLE LOS
- = PM PEAK HOUR DEFICIENT LOS

CVAR_11297

N

EXHIBIT 7-8: SUMMARY OF PEAK HOUR INTERSECTION LOS FOR HORIZON YEAR (2035) WITH PROJECT CONDITIONS



LEGEND:

- = AM PEAK HOUR ACCEPTABLE LOS
- = AM PEAK HOUR DEFICIENT LOS
- = PM PEAK HOUR ACCEPTABLE LOS
- = PM PEAK HOUR DEFICIENT LOS

CVAR_11298

N

7.6 BASIC FREEWAY SEGMENT ANALYSIS

Horizon Year (2035) without and with Project peak hour mainline directional volumes are provided on Exhibits 7-9 and 7-10, respectively. The Horizon Year (2035) freeway analysis assumes the existing mixed-flow lanes only, and does not include any improvements that may be constructed by Caltrans at a later date. Segment analysis results for the AM and PM peak hours are summarized on Table 7-2. As shown on Table 7-2, the following study area mainline segments are anticipated to operate at unacceptable service levels for Horizon Year (2035) without and with Project conditions:

Freeway Mainline Segments
I-10 Freeway – Eastbound, east of Cherry Valley Boulevard – LOS "F" AM and PM Peak Hours
I-10 Freeway – Eastbound, west of Cherry Valley Boulevard – LOS "F" AM and PM Peak Hours
I-10 Freeway – Westbound, east of Cherry Valley Boulevard – LOS "F" AM and PM Peak Hours
I-10 Freeway – Westbound, west of Cherry Valley Boulevard – LOS "F" AM and PM Peak Hours

Horizon Year (2035) without Project freeway mainline level of service analysis worksheets are provided in Appendix "7.4". Horizon Year (2035) with Project freeway mainline level of service analysis worksheets are provided in Appendix "7.5".

7.7 FREEWAY MERGE/DIVERGE ANALYSIS

Ramp merge and diverge operations have been evaluated for Horizon Year (2035) traffic conditions at the I-10 Freeway and Cherry Valley Boulevard interchange. As shown on Table 7-3, it is anticipated that the following ramp junctions along the I-10 Freeway are projected to operate at unacceptable service levels for both Horizon Year (2035) without and with Project conditions:

Freeway Merge/Diverge Ramp Junctions
I-10 Freeway – Eastbound, Off-Ramp at Cherry Valley Boulevard – LOS "F" AM and PM Peak Hours
I-10 Freeway – Eastbound, On-Ramp at Cherry Valley Boulevard – LOS "F" AM and PM Peak Hours
I-10 Freeway – Westbound, On-Ramp at Cherry Valley Boulevard – LOS "F" AM and PM Peak Hours
I-10 Freeway – Westbound, Off-Ramp at Cherry Valley Boulevard – LOS "F" AM and PM Peak Hours

Horizon Year (2035) without Project freeway ramp operations analysis worksheets are provided in Appendix "7.6" and Horizon Year (2035) with Project freeway ramp operations analysis worksheets are provided in Appendix "7.7".

EXHIBIT 7-9: HORIZON YEAR (2035) WITHOUT PROJECT I-10 FREEWAY MAINLINE VOLUMES



EXHIBIT 7-10: HORIZON YEAR (2035) WITH PROJECT I-10 FREEWAY MAINLINE VOLUMES



Table 7-2

Basic Freeway Segment Analysis for Horizon Year (2035) Conditions

Freeway	Direction	Mainline Segment	Lanes[1]	2035 Without Project								2035 With Project							
				Volume		Truck %		Density[2]		LOS		Volume		Truck %		Density[2]		LOS	
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
I-10	EB	West of Cherry Valley Boulevard	3	6,741	9,975	11%	8%	**56.8**	--	**F**	**F**	6,808	10,008	12%	8%	**59.3**	--	**F**	**F**
		East of Cherry Valley Boulevard	3	6,336	8,611	12%	11%	**48.8**	**231.2**	**F**	**F**	6,360	8,671	12%	12%	**49.3**	**273.4**	**F**	**F**
	WB	West of Cherry Valley Boulevard	3	12,708	10,797	10%	11%	--	--	**F**	**F**	12,740	10,872	10%	11%	--	--	**F**	**F**
		East of Cherry Valley Boulevard	3	11,702	10,470	12%	12%	--	--	**F**	**F**	11,755	10,496	12%	12%	--	--	**F**	**F**

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS)

[1] Number of lanes are in the specified direction and is based on existing conditions. No future improvements are currently plannec

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln)

Table 7-3

Freeway Ramp Junction Merge/Diverge Analysis for Horizon Year (2035) Conditions

Freeway	Direction	Ramp or Segment	Lanes on Freeway[1]	2035 Without Project				2035 With Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Density[2]	LOS	Density[2]	LOS	Density[2]	LOS	Density[2]	LOS
I-10	EB	Off-Ramp at Cherry Valley Boulevard	3	**42.4**	**F**	**72.9**	**F**	**43.4**	**F**	**73.2**	**F**
		On-Ramp at Cherry Valley Boulevard	3	**38.7**	**F**	**58.5**	**F**	**38.9**	**F**	**59.1**	**F**
	WB	On-Ramp at Cherry Valley Boulevard	3	**94.0**	**F**	**77.6**	**F**	**94.2**	**F**	**78.3**	**F**
		Off-Ramp at Cherry Valley Boulevard	3	**92.2**	**F**	**80.0**	**F**	**92.7**	**F**	**80.2**	**F**

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS)

[1] Number of lanes are in the specified direction and is based on existing conditions. No future improvements are currently plannec

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln)

7.8 RECOMMENDED IMPROVEMENTS FOR HORIZON YEAR (2035) CONDITIONS

7.8.1 INTERSECTIONS

Improvements have been recommended at intersections that have been identified as deficient to reduce each location's peak hour delay and improve the associated LOS grade to an acceptable LOS. The effectiveness of the recommended improvements to address deficiencies for Horizon Year (2035) with Project traffic conditions are presented in Table 7-4.

Based on discussions with Caltrans District 8 staff, it is our understanding that specific improvement plans have not yet been finalized for the Cherry Valley Boulevard interchange at the I-10 Freeway. As such, an approved future interchange design at Cherry Valley Boulevard and the I-10 Freeway is currently unavailable. Based on review of this interchange conducted in the field and review of aerial imagery, the recommended improvements include lane additions and signal modifications which will require widening of the bridge (overcrossing) over the I-10 Freeway in conjunction with additional improvements to accommodate signal interconnect. The existing Cherry Valley Boulevard interchange is currently a tight-diamond interchange and improvements have been recommended to build off the existing configuration per discussion with Caltrans District 8 staff. In depth alternative interchange designs will likely be assessed as part of a future interchange study (PSR or Project Study Report) at the I-10 Freeway at Cherry Valley Boulevard interchange. As shown on Table 7-4, a preliminary assessment of a roundabout alternative for this interchange has also been included in this report. The preliminary roundabout design has been based on the 2035 ultimate roundabout concept presented in the *Roundabout Feasibility Study for Interstate 10 and Cherry Valley Boulevard Interchange*. (3) As mentioned previously, the final geometric layouts of the roundabouts will require a more detailed design examination accounting stopping sight distance, intersection sight distance, entry angle and view angles and other design criteria that are typically not considered in the "preliminary roundabout concept development" process. These essential geometric considerations affect the safety and capacity performance of roundabouts.

As shown on Table 7-4, the results of the assessment indicate that the implementation of roundabouts at the I-10 Freeway at Cherry Valley Boulevard interchange are anticipated to operate at acceptable LOS under Horizon Year (2035) with Project conditions.

Worksheets for Horizon Year (2035) without and with Project conditions, with improvements, HCM calculations are provided in Appendices "7.8" and "7.9", respectively.

7.8.2 FREEWAY OFF-RAMP QUEUING

A traffic progression analysis has been performed for the off-ramps at the I-10 Freeway at Cherry Valley Boulevard interchange to assess peak hour vehicle queues that may potentially impact the freeway mainline if spillback were to occur. Progression analysis findings are presented in Table 7-5 for Horizon Year (2035) with Project conditions, with improvements.

Table 7-4

Recommended Improvements for Horizon Year (2035) With Project Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	I-10 EB Ramps / Cherry Valley Bl.																	
	- Without Improvements	CSS	0	0	0	0	1	0	0	1	0	0	1	0	**>100.0**	**>100.0**	**F**	**F**
	- With Improvements	**TS**	0	0	0	0	1	**1>>**	0	**2**	**1**	**1**	**2**	0	34.8	54.6	C	D
	- With Roundabout Alternative[4]	**RA**	0	0	0	0	1	**1**	0	**2**	**1**	0	**2**	0	8.4	50.7	A	D
2	I-10 WB Ramps / Cherry Valley Bl.																	
	- Without Improvements	CSS	0	1	0	0	0	0	0	1	0	0	1	0	**>100.0**	**>100.0**	**F**	**F**
	- With Improvements	**TS**	**1**	1	0	0	0	0	**2**	**2**	0	0	**2**	**1**	19.0	26.7	B	C
	- With Roundabout Alternative[4]	**RA**	**1**	1	**1**	0	0	0	**1**	**2**	0	0	**2**	**1**	2.7	3.8	A	A
3	Calimesa Boulevard / Cherry Valley Bl.																	
	- Without Improvements	CSS	0	0	0	0	1	0	0	1	0	0	1	0	**>100.0**	**>100.0**	**F**	**F**
	- With Improvements	**TS**	0	0	0	**1**	**0**	**1**	**1**	**2**	0	0	**2**	**1>**	2.9	7.5	A	A
5	Patton Rd / Street 2 / Cherry Valley Bl.																	
	- Without Improvements	**TS**	0	0	0	**1**	**1**	0	**1**	1	0	0	1	0	Not Applicable			
	- With Improvements Without Project	**TS**	**1**	**1**	0	**1**	**1**	0	**1**	**2**	0	**1**	**2**	0	22.7	36.4	C	D
	- With Improvements With Project	**TS**	**1**	**1**	0	**1**	**1**	0	**1**	**2**	0	**1**	**2**	0	28.0	36.9	C	D
7	Union St. (NS) / Cherry Valley Bl.																	
	- Without Improvements	CSS	0	1	0	0	1	0	0	1	0	0	1	0	**>100.0**	**>100.0**	**F**	**F**
	- With Improvements	**TS**	**1**	1	0	**1**	1	0	**1**	**2**	0	**1**	**2**	0	16.3	17.1	B	B
8	Nancy Av. (NS) / Cherry Valley Bl.																	
	- Without Improvements	AWS	0	1	0	0	1	0	0	1	1	0	1	1	**55.4**	**56.2**	**F**	**F**
	- With Improvements	**TS**	0	1	0	0	1	0	**1**	**2**	**0**	**1**	**2**	**0**	24.3	28.3	C	C
9	Beaumont Ave. / Cherry Valley Bl.																	
	- Without Improvements	TS	1	1	d	1	1	d	1	1	1	1	1	0	**87.0**	**113.1**	**F**	**F**
	- With Improvements	TS	1	1	d	1	1	d	1	**2**	**1>**	1	**2**	0	37.1	43.6	D	D

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS)

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes

L = Left; T = Through; R = Right; > = Right-Turn Overlap Phasing; d= Defacto Right Turn Lane; >> = Free Right Turn Lane; **1** = Improvement

[2] Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (o movements sharing a single lane) are shown. The signalized I-10 ramp locations at Cherry Valley Boulevard have been analyzed using the Synchro software

[3] AWS = All-Way Stop; CSS = Cross-street Stop; TS = Traffic Signal; RA = Roundabout

[4] The roundabout concept utilized to perform this LOS assessment is preliminary and is based on the 2035 ultimate roundabout concept previously presented in the *Roundabout Feasibility Study for Interstate 10 and Cherry Valley Boulevard* Interchange published by Omni-means, Ltd. (September 2013). If a roundabout were to be selected for implementation, additional design and operational analysis consistent with both the Caltrans *Geometric Design Guidance, Final Report* (June 2007), and R*eport 672 Roundabouts: An Informational Guide (Second Edition)* published by the National Cooperative Highway Research Program (NCHRP) and the Federal Highway Administration (FHWA) will need to be performed.

Table 7-5

Peak Hour Freeway Off-Ramp Queuing Summary for Horizon Year (2035) Conditions

Intersection	Movement	Available Stacking Distance (Feet)	95th Percentile Queue (Feet)		Acceptable? [1]	
			AM	PM	AM	PM
I-10 EB Ramps / Cherry Valley Bl.	SBL/T	1,145	488 [2]	969 [2]	Yes	Yes
I-10 WB Ramps / Cherry Valley Bl.	**NBL**	**200**	311 [3]	574 [2,3]	Yes	Yes
	NBT/R	1,030	470 [2]	424	Yes	Yes

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided. An additional 15 feet of stacking which is assumed to be provided in the transition for turn pockets is reflected in the stacking distance shown on this table, where applicable.

[2] 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

[3] Although the 95th percentile queue length exceeds turn pocket capacity, the total queue length of the ramp is anticipated to accommodate excess turn pocket queues and is not considered to result in any deficiencies.

NBL = Improvement

As shown on Table 7-5, there are no potential queuing issues anticipated during both AM and PM peak 95th percentile traffic flows for Horizon Year (2035), with Project, with improvements, traffic conditions.

Worksheets for the off-ramp queuing analysis are provided in Appendix "7.10".

7.8.3 RECOMMENDED IMPROVEMENTS TO ADDRESS CUMULATIVE IMPACTS ON FREEWAY FACILITIES

The mainline and ramp junctions of the I-10 Freeway east and west of Cherry Valley Boulevard would operate at LOS "F" even without the Project under Horizon Year (2035) traffic conditions. In fact, the Project's contribution to cumulative impacts under Horizon Year (2035) conditions is relatively de minimis, involving only a small percentage (approximately 1% or less) of the forecasted traffic occurring on the identified freeway mainline and ramp junction under 2035 conditions.

The Riverside County Transportation Commission (RCTC) shows long range plans to add an eastbound truck climbing lane from the San Bernardino County line to SR-60. The Caltrans I-10 Route Concept Report, which is currently being updated, shows plans for adding an HOV lane (3)from San Bernardino County Line to SR-60. As the timing and funding of these future improvements are uncertain, they were not included as part of this analysis.

At this time, Caltrans has no fee programs or other mitigation programs in place for the mitigation of direct or cumulative impacts caused by development projects in Riverside County on State Highway System (SHS) roadway segments. Mitigation of cumulative impacts to freeway ramps are satisfied by mandatory participation in the TUMF program.

8 SITE ACCESS AND ON-SITE CIRCULATION

Section 8 summarizes Project site access and on-site circulation recommendations.

8.1 ON-SITE ROADWAY IMPROVEMENTS

The Project is proposed to have access on Cherry Valley Boulevard via Driveway 1, Street 2 and Driveway 3. Street 2 is proposed to be full-access. Driveways 1 and 3 will be restricted to right-in/right-out access only.

Roadway improvements necessary to provide site access and on-site circulation are assumed to be constructed in conjunction with site development and are described below. These improvements should be in place prior to occupancy.

The recommended site-adjacent roadway improvements for the Project are described below. Exhibit 8-1 illustrates the site-adjacent roadway improvement recommendations.

Cherry Valley Boulevard - Construct Cherry Valley Boulevard from the westerly Project boundary to the easterly Project boundary at its ultimate half-section width as an Arterial Highway (128-foot right-of-way) consistent with the Riverside County General Plan Circulation Element. Construct a raised median on Cherry Valley Boulevard to enforce right-in/right-out access at Driveway 1 and Driveway 3.

Street 2 - Construct Street 2 from the Project's Private Roadway to Cherry Valley Boulevard as a Public Street at its ultimate full-section width as an Industrial Collector (78-foot right-of-way).

Private Roadway - Construct Project's Private Roadway from northerly Project boundary to its connection with Street 2 as a 56-foot paved section.

Driveway 3 - Construct Driveway 3, north of Cherry Valley Boulevard, at its ultimate full-section width as an Industrial Collector (78-foot right-of-way).

Specific lane geometrics at each Project access point are discussed subsequently in *Section 8.2 Site Access Improvements*.

8.2 SITE ACCESS IMPROVEMENTS

The recommended site access driveway improvements for the Project are described below. Exhibit 8-2 illustrates the on-site and the minimum site adjacent recommended roadway lane improvements. Construction of on-site and site adjacent improvements shall occur in conjunction with adjacent Project development activity or as needed for Project access purposes.

Driveway 1 at Cherry Valley Boulevard – Install a stop control on the southbound approach and construct the intersection with right-in/right-out access only in conjunction with the following geometrics:

Northbound Approach: N/A

Southbound Approach: One right turn lane.

EXHIBIT 8-1: SITE ADJACENT ROADWAY RECOMMENDATIONS

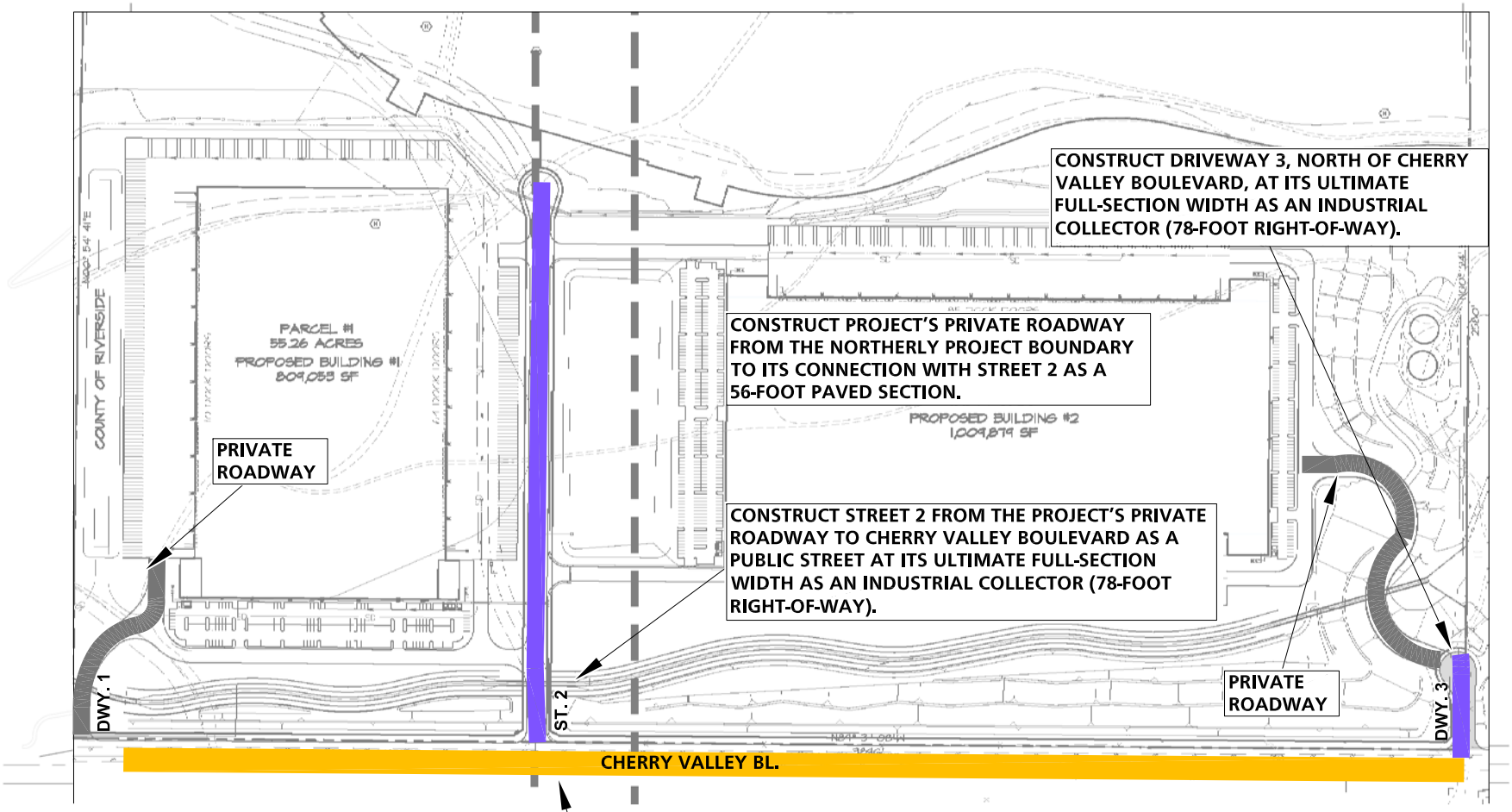


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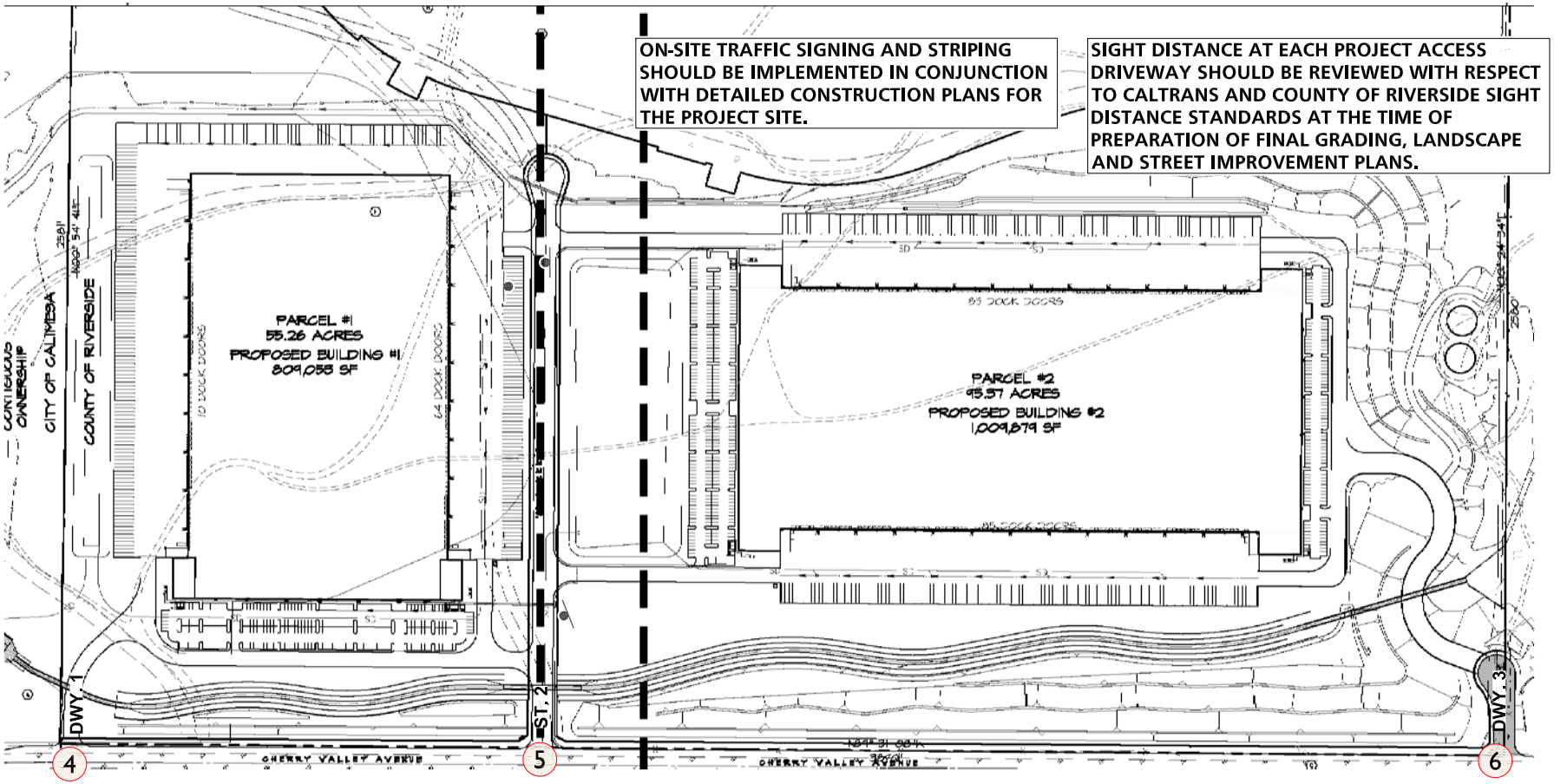
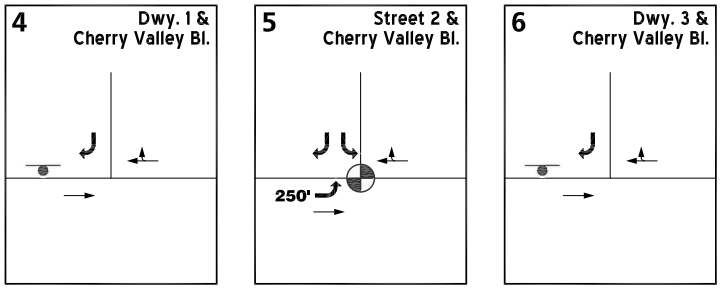
EXHIBIT 8-2: SITE ACCESS ON-SITE CIRCULATION RECOMMENDATIONS





LEGEND:

- = TRAFFIC SIGNAL
- = STOP SIGN
- = EXISTING LANE
- = LANE IMPROVEMENT
- 250' = TURN POCKET LENGTH

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08312 - on-site recs.dwg

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Eastbound Approach: One through lane.

Westbound Approach: One shared through-right turn lane.

Street 2 at Cherry Valley Boulevard – Install a traffic signal and construct the intersection with the following geometrics:

Northbound Approach: N/A.

Southbound Approach: One left turn lane and one shared through-right turn lane.

Eastbound Approach: One left turn lane with a minimum of 250-feet of storage and one though lane. Westbound Approach: One shared through-right turn lane.

Driveway 3 at Cherry Valley Boulevard – Install a stop control on the southbound approach and construct the intersection with right-in/right-out access only in conjunction with the following geometrics:

Northbound Approach: N/A

Southbound Approach: One right turn lane.

Eastbound Approach: One through lane.

Westbound Approach: One shared through-right turn lane.

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the Project site.

Sight distance at each Project access driveway should be reviewed with respect to Caltrans and County of Riverside sight distance standards at the time of preparation of final grading, landscape and street improvement plans.

8.3 ON-SITE CIRCULATION

The Project is anticipated to construct curb and gutter improvements and sidewalks along the Project frontage on Cherry Valley Boulevard. Truck turning templates should be utilized at the Project driveways to ensure that each Project access point is designed to support the ingress and egress of heavy vehicles to and from the site.

8.4 QUEUING ANALYSIS

The 95th percentile queue for the eastbound left-turn lane at intersection #5 (Street 2 and Cherry Valley Boulevard) was assessed using Synchro (version 8 Build 805). The queuing analysis was conducted for both AM and PM peak hours for EAP (2017), EAPC (2017) and Horizon Year (2035) With Project conditions. The results have been provided in Appendix "8.1". The queuing analysis shows that the 95th percentile queues are less than the 250' recommended storage length for the eastbound left-turn lane for all analysis scenarios.

9 LOCAL AND REGIONAL FUNDING MECHANISMS

Transportation improvements throughout Riverside County are funded through a combination of direct project mitigation, fair share contributions, established development impact fee programs and public funding (Measure A, state and federal gas taxes, etc.). Identification and timing of needed improvements is generally determined through local jurisdictions based upon a variety of factors. The proposed Project is located within a unique transportation improvement funding district designed to ensure timely impact mitigation with significant local control. Additional discussion of the relevant pre-existing transportation impact fee programs is provided below.

9.1 TRANSPORTATION UNIFORM MITIGATION FEE (TUMF) PROGRAM

The TUMF program is administered by Western Riverside Council of Governments (WRCOG) based upon a regional Nexus Study completed in early 2003 and updated in 2009 to address major changes in right of way acquisition and improvement cost factors. TUMF identifies a network of backbone and local roadways that are needed to accommodate growth through 2035. This regional program was put into place to ensure that development pays its fair share and that funding is in place for construction of facilities needed to maintain the requisite level of service and critical to mobility in the region. TUMF is a truly regional mitigation fee program, and is imposed and implemented in every jurisdiction in Western Riverside County except the City of Beaumont (where a locally implanted program duplicates the regional program).

TUMF fees are imposed on new residential, industrial, and commercial development through application of the TUMF fee ordinance and fees are collected at the building or occupancy permit stage.

Current TUMF rates are shown in Table 9-1. The fee for industrial use is $1.73 per square foot with an adjustment to the baseline square footage for high-cube logistics warehouse buildings. In addition, inflation adjustments are considered on an annual basis. In this way, TUMF fees are adjusted on a regular basis to ensure that the development impact fees collected keep pace with construction and labor costs, etc.

After the TUMF fees are collected, they are placed in a separate interest bearing account pursuant to the requirements of Government Code sections 66000 et seq. The TUMF funds specific local and regional projects in the arterial system. Local area projects receive about 48.7% of all funds. These local funds are programmed into five localized zones and fund the construction of eligible localized projects that are prioritized by the affected local jurisdictions within each zone. As shown in Table 1-5, a number of the facilities forecast to be cumulatively impacted by the proposed Project are programmed for improvements through the TUMF program.

The facilities planned through the TUMF program are constructed prior to the time at which the identified facility is expected to deteriorate to an inadequate level of service. WRCOG has a successful track record funding and overseeing the construction of improvements funded through the TUMF program. In total, the TUMF program is anticipated to generate nearly $5

Table 9-1

Estimated Fee Obligation

Transportation Uniform Mitigation Fee (TUMF)

FEE REFERENCE	SINGLE FAMILY RESIDENTIAL ($ PER DU)	MULTI-FAMILY ($ PER DU)	COMMERCIAL ($ PER SQ FT)	SERVICE ($ PER SQ FT)	INDUSTRIAL ($ PER SQ FT)
Transportation Uniform Mitigation Fee (TUMF)	$8,873	$6,231	$10.49	$4.19	$1.73

- All fees reflect full Nexus values

County of Riverside DIF

FEE REFERENCE	SINGLE FAMILY RESIDENTIAL ($ PER DU)	MULTI-FAMILY ($ PER DU)	COMMERCIAL[1] ($ PER ACRE)	INDUSTRIAL[1] ($ PER ACRE)	SURFACE MINING ($ PER ACRE)
DIF-Transportation - Roads, Bridges, Major Improvements	$757	$598	$2,820	$1,473	$1,296
DIF-Transportation - Signals	$420	$378	$6,971	$4,878	$4,293

Source: County of Riverside Ordinance 659

[1] Development Impact Fee (DIF) for commercial or industrial projects are based on units of developed acreage.

billion in transportation projects for Western Riverside County. The Project's contribution to TUMF appears to be sufficient to mitigate its impacts to TUMF-funded facilities.

9.2 DEVELOPMENT IMPACT FEE (DIF) PROGRAM

The study area is located within the County's San Gorgonio Pass Area and therefore will be subject to County of Riverside Development Impact Fees (DIF) in an effort by the County to mitigate development throughout its unincorporated area. The DIF program consists of two separate transportation components: Roads, Bridges and Major Improvements component and the Traffic Signals component. Eligible facilities for funding by the County DIF program are identified on the County's Public Needs List, which currently extends through the year 2010. A comprehensive review of the DIF program is now planned in order to update the nexus study. Table 9-1 shows the current fee schedule for the County's DIF program.

The cost of signalizing DIF network intersections is identified under the Traffic Signals component of the DIF program. County staff generally defines DIF eligible intersections as those consisting of two intersecting general plan roadways. If the intersection meets this requirement, it is potentially eligible for up to $235,000 of credit, which is subject to negotiations with the County.

9.3 MEASURE "A" FUNDS

In 1988, the voters of Riverside County approved Measure "A", a half cent sales tax for transportation projects including, but not limited to, infrastructure improvements, commuter public transit, and other identified improvements. Between 1989 and 2009, the Riverside County Transportation Commission has spent over One Billion Dollars raised by Measure "A" on identified roadway and transportation improvements. Funds are allocated to each of three districts: Western Riverside County, the Coachella Valley, and Palo Verde area in proportion to the amount of sales tax generated within each sub-region. In 2002, Measure "A" was extended by Riverside County voters and will continue to fund numerous transportation improvements through the year 2039. Programs like Measure "A" have been adopted in both San Bernardino and Orange County.

While Measure "A" is a self-executing sales tax administered by the Riverside County Transportation Commission (as opposed to a fee mitigation program imposed upon individual products) Measure "A" bears discussion here because the funds raised through Measure "A" have funded in the past and will continue to fund (in addition to the three identified mitigation programs discussed above) new transportation facilities in Riverside County. The Riverside County Transportation Commission has successfully implemented numerous projects that have been funded by Measure "A" and Measure "A" will continue to fund additional projects in the future.

9.4 FAIR SHARE CONTRIBUTION

Project mitigation may include a combination of fee payments to established programs, construction of specific improvements, payment of a fair share contribution toward future improvements or a combination of these approaches. Intersection improvements not included

in impact fee programs have been previously presented in Table 1-5. Improvements constructed by development may be eligible for a fee credit or reimbursement through established program where appropriate.

When off-site improvements are identified with a minor share of responsibility assigned to proposed development, the approving jurisdiction may elect to collect a fair share contribution or require the development to construct improvements. Detailed fair share calculations for each peak hour have been provided on Table 9-2 for the study area intersections.

A rough order of magnitude cost should be prepared to determine the appropriate contribution value based upon the project's fair share of traffic as part of the project approval process. The cost basis should be determined by the County based upon physical and community constraints, current bidding experiences and engineering preferences.

Table 9-2

Project Fair Share Calculations at Study Area Intersections

#	Intersection		Existing	Project	Year 2035 WP	Total New Traffic	Project % of New[1]
1	I-10 EB Ramps / Cherry Valley Bl.						
		AM:	927	134	3,247	2,320	**5.8%**
		PM:	1,175	146	4,538	3,363	4.3%
2	I-10 WB Ramps / Cherry Valley Bl.						
		AM:	1,161	258	3,604	2,443	**10.6%**
		PM:	894	304	4,114	3,220	9.4%
3	Calimesa Boulevard / Cherry Valley Bl.						
		AM:	683	258	2,812	2,129	**12.1%**
		PM:	659	304	3,329	2,670	11.4%
5	Patton Rd / Street 2 / Cherry Valley Bl.						
		AM:	647	262	2,704	2,057	**12.7%**
		PM:	618	287	3,888	3,270	8.8%
7	Union St. (NS) / Cherry Valley Bl.						
		AM:	577	29	2,184	1,607	**1.8%**
		PM:	578	29	2,636	2,058	1.4%
8	Nancy Av. (NS) / Cherry Valley Bl.						
		AM:	711	22	2,145	1,434	**1.5%**
		PM:	591	22	2,469	1,878	1.2%
9	Beaumont Ave. / Cherry Valley Bl.						
		AM:	1,246	22	2,742	1,496	**1.5%**
		PM:	1,121	22	3,255	2,134	1.0%

[1] Project percentage of new traffic between Existing (2014) and Horizon Year (2035) With Project conditions.

BOLD = Higher of the two peak hours.

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10 REFERENCES

1. **Riverside County Transportation Department.** *Traffic Impact Analysis Preparation Guide.* County of Riverside : s.n., Updated April 2008.

2. **Institute of Transportation Engineers.** *Trip Generation.* 9th Edition. 2012.

3. **Omni-means, Ltd.** *Roundabout Feasibility Study for Interstate 10 and Cherry Valley Boulevard Interchange.* County of Riverside : Omni-means, Ltd., 2013.

4. **Transportation Research Board.** *Highway Capacity Manual (HCM).* s.l. : National Academy of Sciences, 2010.

5. **Federal Highway Administration.** Manual on Uniform Traffic Control Devices (MUTCD). [book auth.] California Department of Transportation. *California Manual on Uniform Traffic Control Devices (CAMUTCD).* 2012.

6. **Southern California Association of Governments.** *2012-2035 Regional Transportation Plan.* April 2012.

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APPENDIX 1.1:

APPROVED TRAFFIC STUDY SCOPING AGREEMENT

NOTE: San Gorgonio Crossing previously named I-10 Gateway Job Center.

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ST on Planning case needed. before reviewing.

URBAN CROSSROADS

41 Corporate Park | Suite 300 | Irvine, CA 92606 | (949) 660-1994
www.urbanXroads.com

October 23, 2012

Mr. Kevin Tsang
COUNTY OF RIVERSIDE TRANSPORTATION DEPARTMENT
4080 Lemon Street, 8th Floor
Riverside, CA 92501

Subject: Traffic Impact Analysis Scoping Agreement for the Proposed I-10 Gateway Job Center (Parcel Map No. 36093)

The firm of Urban Crossroads, Inc. is pleased to submit this scoping letter regarding the traffic impact analysis for the proposed I-10 Gateway Job Center (Parcel Map No. 36093) ("Project"), which is generally located north of Cherry Valley Boulevard and approximately 1,800 feet east of the I-10/Cherry Valley Boulevard interchange in unincorporated County of Riverside. The Project includes the development of 2,560,000 square feet of high-cube logistics warehouse use between two (2) buildings. The proposed intensity for each of the buildings is listed below:

- Building 1 – 960,000 square feet of high-cube warehouse use with access to Cherry Valley Boulevard via Driveway 1 and Driveway 2.
- Building 2 – 1,600,000 square feet of high-cube warehouse use with access to Cherry Valley Boulevard via Driveway 2 and Driveway 3.

A preliminary land use plan for the proposed Project is shown on Exhibit 1. Exhibit 2 depicts the location of the proposed project in relation to the existing roadway network. It is anticipated that the Project would be developed within a single phase. The Project's opening year is anticipated to be 2014 (i.e., fully built and occupied). Access to the project site will be provided via Driveway 1, Driveway 2 and Driveway 3 to Cherry Valley Boulevard. Right-in/right-out access only is proposed at Driveway 1 and Driveway 3, with full access at Driveway 2.

Dwy 1 & 3: RIRO
Dwy 2: Full-access

TRIP GENERATION

In order to develop the traffic characteristics of the proposed project, trip-generation statistics published in the Institute of Transportation Engineers (ITE) Trip Generation (9th Edition, 2012) manual for the proposed land use (ITE Land Use Code 152 – High-Cube Warehousing) was used. This particular rate was selected based on our understanding of the Project's operating characteristics. Trip generation rates for the Project are shown in Table 1. Refinements to these raw trip generation estimates have been made to provide a more

detailed breakdown of trips by vehicle mix. Per County of Riverside standard practice, vehicle mix percentages were obtained from the City of Fontana *Truck Trip Generation Study* (August 2003), a recognized source throughout the County of Riverside and the County of San Bernardino for estimating the vehicle mix associated with industrial and warehouse uses. Although ITE provides truck trip generation information for the high-cube logistics warehouse use, this data is not considered as comprehensive as the data available in the Fontana Study nor is it specific to large warehouses/distribution centers in Southern California. As such, the vehicle-mix for the Fontana land use code 150 for Heavy Warehouse has been applied to ITE trip generation rates for land use code 152.

Finally, Passenger Car Equivalents (PCE) factors have been applied to the trip generation rates for heavy trucks (large 2-axles, 3-axles, 4+-axles). PCE factors have been utilized due to the expected heavy truck component for the proposed Project uses. PCE factors allow the typical "real-world" mix of vehicle types to be represented as a single, standardized unit, such as the passenger car, for the purposes of capacity and level of service analyses. PCE factors are applied to large truck types such as large two-axles, three-axles, 4+-axles. A PCE factor of 1.5 has been applied to large 2-axle trucks, a factor of 2.0 for 3-axle trucks and a factor of 3.0 for 4+-axle trucks. These PCE factors are consistent with the values recommended by the San Bernardino Associated Governments (SANBAG) and are accepted factors in the County of Riverside.

As shown in Table 1, the proposed Project is anticipated to generate a net total of approximately 5,635 PCE based trip-ends per day with 369 PCE based AM peak hour trips and 403 PCE based PM peak hour trips.

TRIP DISTRIBUTION

The Project passenger car trip distribution pattern is graphically depicted on Exhibit 3. The Project truck trip distribution pattern is graphically depicted on Exhibit 4.

ANALYSIS SCENARIOS

Consistent with the County's TIA guidelines, intersection analysis will be provided for the following analysis scenarios:

- Existing (2012) Conditions
- Existing plus Project Conditions – For Informational Purposes Only
- Existing plus Ambient Growth plus Project Conditions
- Existing plus Ambient Growth plus Project Plus Cumulative Projects
- Horizon Year (2035) Without Project Conditions
- Horizon Year (2035) With Project Conditions

The signalized study area intersections located along the Cherry Valley Boulevard (at the I-10 Freeway) will be analyzed using the SYNCHRO (Version 8.0) software consistent with Caltrans requirements.

In addition, the traffic impact analysis will include Basic Freeway Segment, Ramp Junction (Merge/Diverge) and ramp queuing analyses consistent with Caltrans requirements.

OPEN ITEMS – CUMULATIVE DEVELOPMENT PROJECTS

Please provide a list of cumulative development projects that should be included as part of this analysis along with the preferred absorption percentage for the Project's proposed opening year.

If you have any questions, please contact me directly at (949) 660-1994, extension 204.

Respectfully submitted,

Aric Evatt, PTP
Principal

JN:08312-02 Scope

EXHIBIT B

SCOPING AGREEMENT FOR TRAFFIC IMPACT STUDY

This letter acknowledges the Riverside County Transportation Department requirements for traffic impact analysis of the following project. The analysis must follow the Riverside County Transportation Department Traffic Study Guidelines dated February 2005.

Case No. ST 00944
Related Cases-
SP No.
EIR No.
GPA No.
CZ No.
Project Name: I-10 Gateway Job Center (Parcel Map No. 36093)
Project Address: North of Cherry Valley Bl. and approximately 1,800 feet east of the I-10/Cherry Valley Bl. Interchange
Project Description: Building 1 = 960,000 square feet of high-cube warehouse use; Building 2 = 1,600,000 square feet of high-cube warehouse uses

	Consultant	Developer
Name:	Urban Crossroads Inc. - Aric Evatt	TSG Cherry Valley LP (c/o Brian Rupp, Shopoff Group)
Address:	41 Corporate Park, Suite 300	2 Park Plaza, Suite 700
	Irvine, CA 92606	Irvine, CA 92614
Telephone:	(949) 660-1994 ext. 204	(949) 231-5068
Fax:	(949) 660-1911	(949) 417-1399

A. Trip Generation Source: ITE 9th Edition (2012) (See Table 1)

Current GP Land Use: Very-Low Density Residential — Proposed Land Use: I-P (Industrial Park)
Current Zoning: W-2 (Controlled Development Area) — Proposed Zoning: W-2 (Controlled Development Area)

	Current Trip Generation			Proposed Trip Generation		
	In	Out	Total	In	Out	Total
AM Trips	**0**	**0**	**0**	**255**	**114**	**369**
PM Trips	**0**	**0**	**0**	**125**	**278**	**403**

Internal Trip Allowance ☐ Yes ■ No (% Trip Discount)
Pass-By Trip Allowance ☐ Yes ■ No (% Trip Discount)

A passby trip discount of 25% is allowed for appropriate land uses. The passby trips at adjacent study area intersections and project driveways shall be indicated on a report figure.

B. Trip Geographic Distribution: (See attached Exhibits 3 & 4 for detailed assignment)
N **Varies %** S **Varies %** E **Varies %** W **Varies %**

C. Background Traffic
Project Build-out Year: 2014 — Annual Ambient Growth Rate: 2 %
Phase Year(s) 2014

Other area Projects to be analyzed: County to provide list of cumulative projects
Model/Forecast Methodology: RivTAM 2035

D. Study Intersections: *(NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments form other agencies).* (See Exhibit 2)

1. I-10 Freeway EB Ramps / Cherry Valley Bl.
2. I-10 Freeway WB Ramps / Cherry Valley Bl.
3. Calimesa Bl. / Cherry Valley Bl.
4. *Driveway 1 / Cherry Valley Bl. - Future Intersection (RIRO)*
5. *Driveway 2 / Cherry Valley Bl. - Future Intersection*
6. *Driveway 3 / Cherry Valley Bl. - Future Intersection (RIRO)*
7. Union St. / Cherry Valley Bl.
8. Nancy Av. / Cherry Valley Bl.
9. Beaumont Av. / Cherry Valley Bl.
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E. Study Roadway Segments: *(NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments form other agencies).*

1.
2.

F. Other Jurisdictional Impacts

Is this project within a City's Sphere of influence or one mile radius of City boundarie: ■ Yes ☐ No

If so, name of City jurisdiction: Calimesa; Beaumont obtain cumulatives from cities.

G. Site Plan (please attach reduced copy)

H. Specific issues to be addressed in the Study (in addition to the standard analysis described in the Guideline) (To be filled out by Transportation Department) Freeway mainline analysis.

(NOTE: If the traffic study states that "a traffic signal is warranted" (or "a traffic signal appears to be warranted", or similar statement) at an existing unsignalized intersection under existing conditions, 8-hour approach traffic volume information must be submitted in addition to the peak hourly turning movement counts for that intersection.

I. Existing Conditions

Traffic count data must be new or recent. Provide traffic count dates if using other than new counts.

Date of counts

***NOTE* Traffic Study Submittal Form and appropriate fee must be submitted with, or prior to submittal of this form. Transportation Department staff will not process the Scoping Agreement prior to receipt of the fee.**

Recommended by:

Consultant's Representative — Date: 10/23/2012

Approved Scoping Agreement:

Riverside County Transportation Department — Date: 12/18/2012

Scoping Agreement Revised on

Update table to show total truck trips before PCE factor is applied.

Table 1

Project Trip Generation Summary (Typical Approach for Riverside County)[1]

Land Use[1]	Units[3]	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			Inbound	Outbound	Total	Inbound	Outbound	Total	
High-Cube Warehouse[2]	TSF	152	0.076	0.034	0.110	0.037	0.083	0.120	1.680
79.57% Passenger Cars			0.060	0.027	0.088	0.030	0.066	0.095	1.337
3.46% 2-Axle Trucks (PCE = 1.5)			0.004	0.002	0.006	0.002	0.004	0.006	0.087
4.64% 3-Axle Trucks (PCE = 2.0)			0.007	0.003	0.010	0.003	0.008	0.011	0.156
12.33% 4-Axle+ Trucks (PCE = 3.0)			0.028	0.013	0.041	0.014	0.031	0.044	0.621

Land Use	Quantity	Units[3]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Building 1	960.000	TSF							
Passenger Cars:			58	26	84	28	63	92	1,283
Truck Trips:									
2-axle:			*4*	*2*	*5*	*2*	*4*	*6*	*84*
3-axle:			*7*	*3*	*10*	*3*	*7*	*11*	*150*
4+-axle:			*27*	*12*	*39*	*13*	*29*	*43*	*597*
- Net Truck Trips (PCE)[2]			*37*	*17*	*54*	*18*	*41*	*59*	*830*
Building 1 Subtotal			**95**	**43**	**138**	**47**	**104**	**151**	**2,113**
Building 2	1,600.000	TSF							
Passenger Cars:			97	43	140	47	105	153	2,139
Truck Trips:									
2-axle:			*6*	*3*	*9*	*3*	*7*	*10*	*140*
3-axle:			*11*	*5*	*16*	*6*	*12*	*18*	*249*
4+-axle:			*45*	*20*	*65*	*22*	*49*	*71*	*994*
- Net Truck Trips (PCE)[2]			*62*	*28*	*91*	*31*	*68*	*99*	*1,383*
Building 2 Subtotal			**159**	**71**	**231**	**78**	**174**	**252**	**3,522**
I-10 Gateway Job Center (PCE)[4]			**255**	**114**	**369**	**125**	**278**	**403**	**5,635**

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Ninth Edition (2012).

[2] Vehicle Mix Source: City of Fontana Truck Trip Generation Study for LU 150, August 2003. PCE rates are per SANBAG.

[3] TSF = thousand square feet

[3] TOTAL TRIPS (PCE) = Passenger Cars + Net Truck Trips (PCE).

Inform applicant that project may impact access of adjacent property owners.

What is the spacing between Driveway 1 and Roberts Road?

EXHIBIT 1

PRELIMINARY SITE PLAN

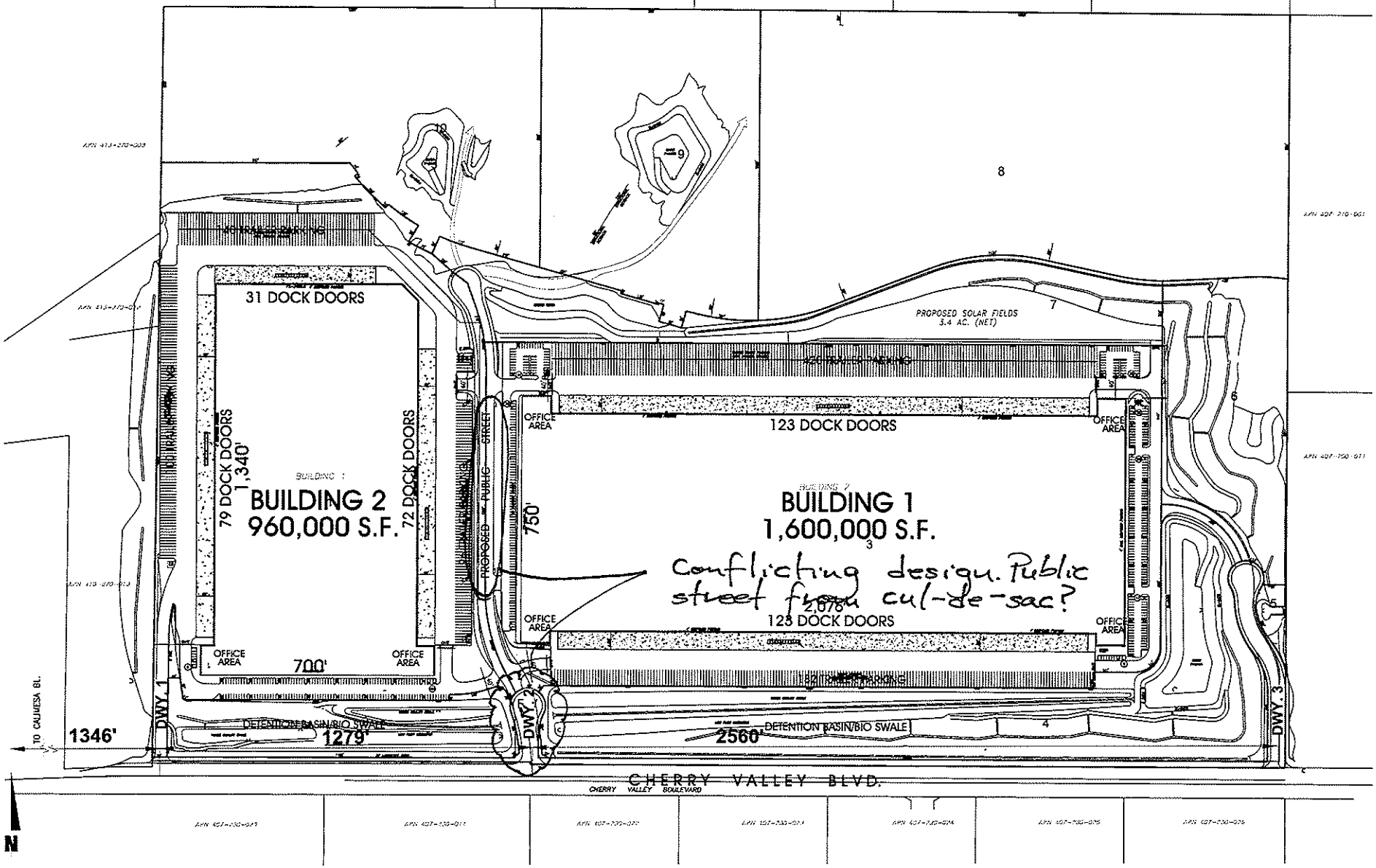

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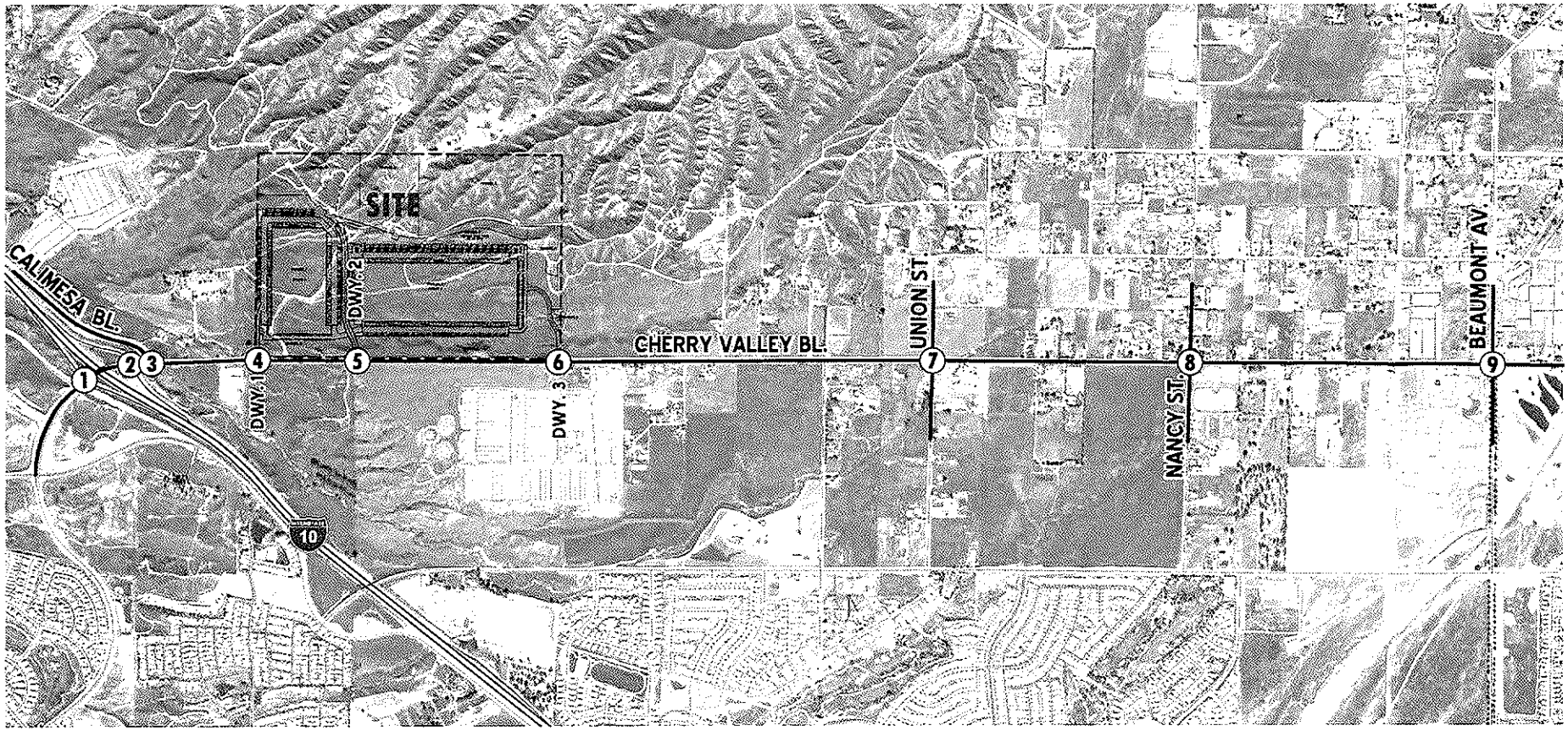
EXHIBIT 2

LOCATION MAP



LEGEND:

(1) = INTERSECTION ANALYSIS LOCATION

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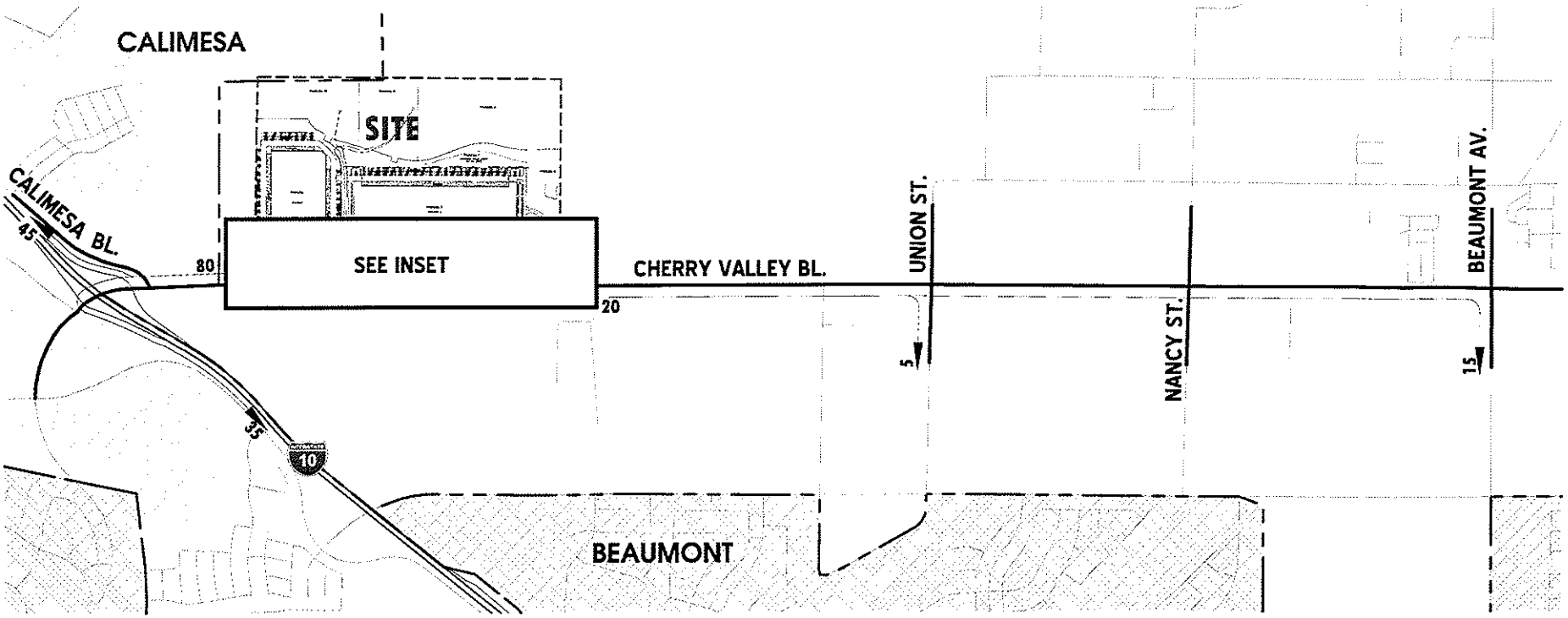
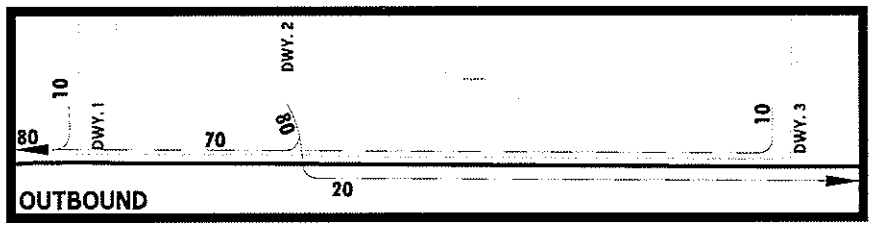
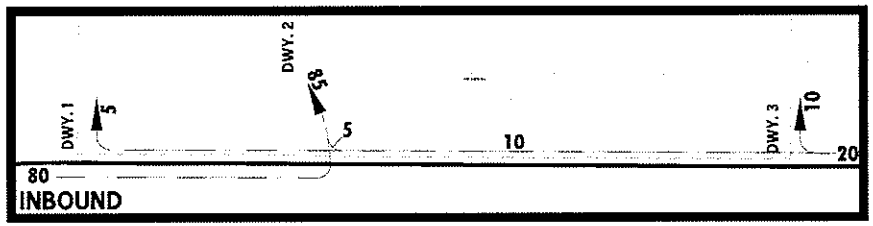
EXHIBIT 3

PROJECT (PASSENGER CAR) TRIP DISTRIBUTION







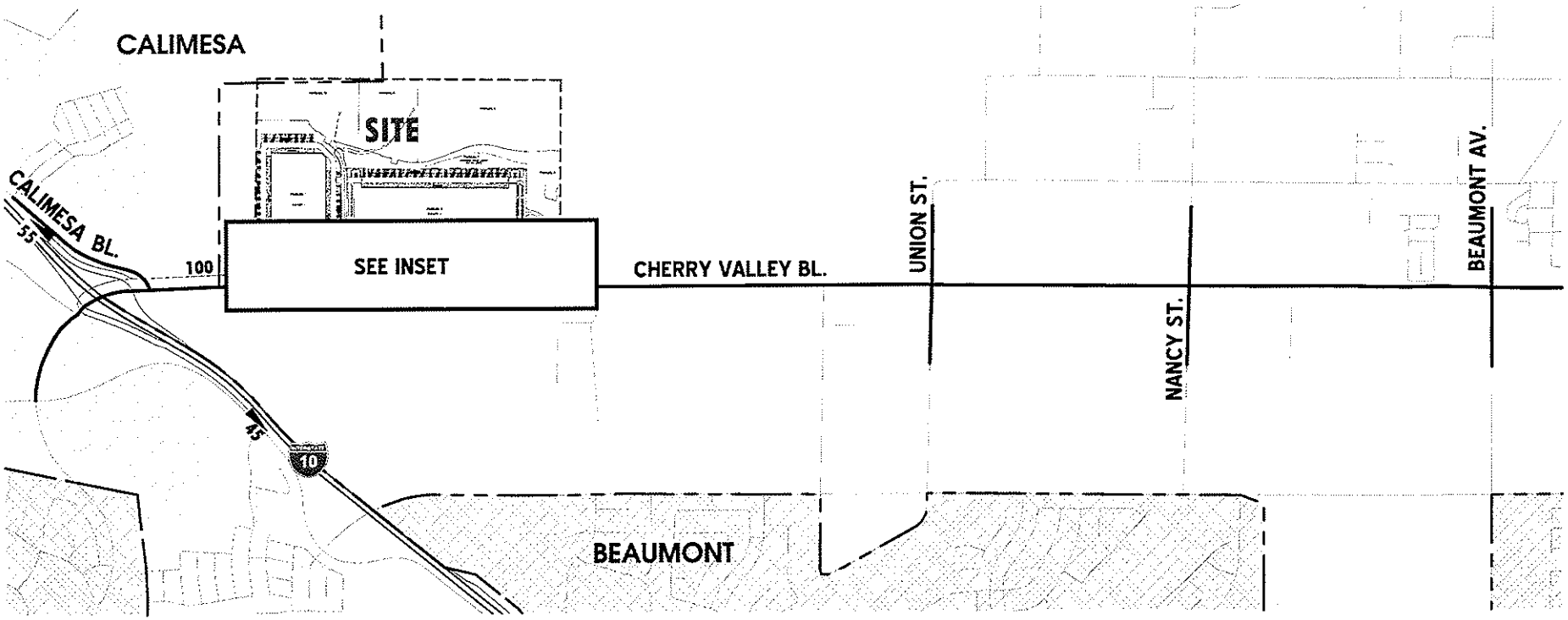
LEGEND:

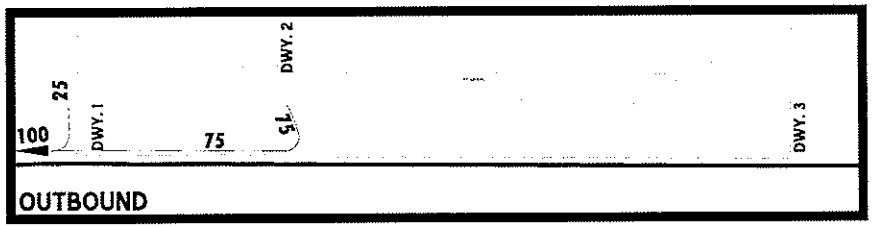
10 = PERCENT TO/FROM PROJECT

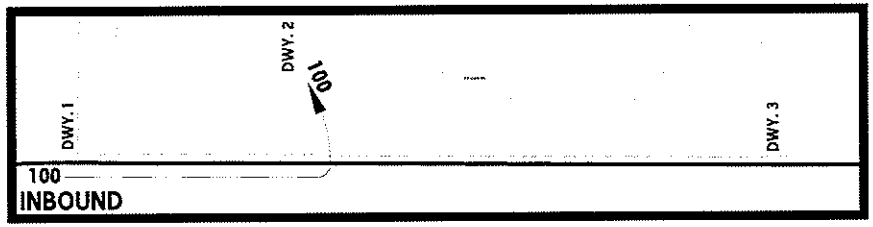
N

EXHIBIT 4

PROJECT (TRUCK) TRIP DISTRIBUTION







LEGEND:

10 = PERCENT TO/FROM PROJECT

N

1.1-10

CVAR_11331

The County of Riverside assumes no warranty or legal responsibility for the information contained on this map. Data and information represented on this map is subject to updates, modifications and may not be complete or appropriate for all purposes. County GIS and other sources should be queried for the most current information. Do not copy or resell this map.

N

CALIMESA

BEAUMONT

AVENUE L
5TH ST
4TH ST
3RD ST
MYRTLEWOOD DR
PUP0341
PUP0333
CHERRY LN
HOLLY LN
BELLE RD
2ND PL
BRYANT ST
DOUGLAS ST
FREMONT ST
RONDA CT
SEL ROCCO DR
LETA DR
VALGIO DR
COLONIAL DR
COUNTRY CLUB DR
I-10 NBOFF
PUP0504
PARKVIEW DR
HILLTOP CT
CANYON RIDGE
COYOTE LN
SANDY HILL DR
SINGLETON RD
CONDIT AVE
CHANDLER AVE
DALE MESA DR
BECKWITH AVE
KRONHOLM CT
WOODHOUSE RD
I-10 SBON
CALIMESA BLVD
SP00188
ROBERTS RD
1.1-11
ST00944
I-10 WBON
I-10 EBON
CUP03322
PP16147
DESERT LAWN DR
PATTON RD
CUP03155
LA ORO RD
GOODIE LN
TR28734
TR31966
HANNON RD
TR26415
BROOKSIDE AVE
UNION ST
NANCY AVE
PUP00839
PM29380
PM23571
ORCHARD ST
TR27337
VIEW DR
TR32528
LANCE LN
TAYLOR DR
VINELAND ST
PM29524
PM32244
PM35520
TR25045
PM32566
CHERRY VALLEY BLVD
DEMARET DR
STANDLER ST
PALMER AVE
MILLER PL
HAGEN RD
TREVINO TRL
PICARD PL
ANDERSON ST
SP00318
PP15641
CHAMPIONS DR
CENTRAL OVERLAND RD
FARGO RD
EAGLE LN
LEGENDS LN
PAR LN
BAY HILL DR
CALIFORNIA STAGE RD
OAK VALLEY PKWY
SH-60
SH-60
CVAR_11332
MULLIGAN DR
AMATUER WAY
DIVOT DR
GALLERY LN
HIGH RIDGE DR
BRUTUS WAY
ALBATROSS ST
OAK VALLEY PKWY
AMATEUR WAY
BUNKER PL
DESERT LAWN DR
I-10 SBOFF
RVP00099
RVP00132
N DEODAR DR
HIBISCUS CT
BRITTNEY RD
SARAZEN ST
LAS COLINAS RD
LA CANTERA WAY
LONG DR
BRENTWOOD RD
INDIGO ST
OAK VIEW DR
BRIDGES DR
GLENEAGLES RD
GOLF COURSE DR
FAIRWAY DR
CARDINAL ST
ALDER ST
I-10
I-10

ACTIVE CASES
APPROVED CASES
Cities (Outline)

0 1,000 2,000 4,000 Feet

Printed by ktsang on 6/16/10

Active Cases as of 12/13/2012

CASE NAME	STATUS	APPLIED DATE	APPROVAL DATE	EXPIRED DATE
CASE DESCRIPTION				
CUP03629	BOS	20090909	0	20000000
2 PHASE MINI-WAREHOUSE FACILITY WITH 99 VEHICLE ST				
TR31966	DRT	20040803	0	0
SUBDIVIDE 65.3 ACRES INTO 60 SF LOT/2 STORM BASINS				

CASE NAME	STATUS	APPLIED DATE	APPROVAL DATE	EXPIRED DATE
CASE DESCRIPTION				
CUP03155	APPROVED	12/19/1991	19940927	09/27/1998
WHOLESALE ARTISAN WATER BOTTLING FACILITY				
CUP03322	APPROVED	09/08/2000	20011016	NA
TRUCK AND EQUIPMENT GARAGE AND OFFICE				
PM23571	APPROVED	11/09/1989	19900703	07/03/1999
SUBDIVIDE LAND FOR A BUSINESS PARK				
PM29380	APPROVED	06/11/1999	20000829	08/29/2004
SCHED H DIVISION OF 5.15 AC INTO 4 RES. PARCELS				
PM29524	APPROVED	08/01/2000	20010227	02/27/2005
DIVIDE 9.66 AC INTO 4 PARCELS				
PM32244	APPROVED	07/07/2004	20060222	02/22/2010
SCHED H DIVISION OF 19 AC INTO 4 RES PARCLS W/RMND				
PM32566	APPROVED	08/18/2004	20050726	07/26/2008
SUBD 4.99 ACRES INTO 1 AC PARCELS				
PM35520	APPROVED	10/11/2007	20090309	03/09/2014
TENTATIVE PARCEL MAP NO. 35520 PROPOSES A SCHEDULE				
PP15641	APPROVED	09/09/1998	19981201	NA
36 HOLE GOLF COURSE W/ CLUBHOUSE/CORP OFFICES ETC.				
PP16147	APPROVED	09/14/1999	20000124	NA
UNMANNED TELECOMMUNICATION 10'X20'BLDG. 91'MONOPOL				
PUP00333	APPROVED	12/26/2000	0	NA
PUP00341	APPROVED	12/26/2000	0	NA
PUP00839	APPROVED	04/30/2001	20020226	NA
75 FT MONOPOLE W/UNMANNED COMMUNICATION FACILITY				
PUP0333	APPROVED	08/07/2000	0	NA
PUP0341	APPROVED	08/07/2000	0	NA
PUP0504	APPROVED	08/07/2000	0	NA
RVP00099	APPROVED	10/08/1992	19921208	12/08/1994
RVP TO PP 13173 - ADD FOOD AND BEVARAGE TRAILER				
RVP00132	APPROVED	03/10/1994	19940418	04/17/1996
RVP TO PP 13173 - EXTEND THE LIFE OF APPROVED GOLF				
SP00188	ANNEXED	01/04/1984	19860128	NA
RESIDENTIAL, COMMERCIAL & OPEN SPACE				
SP00318	ANNEXED	10/22/1999	20010814	NA
MIXED DENSITY RES W/GOLF CRS/COMM'L/RESORT/ETC				
TR25045	APPROVED	03/19/1990	19920310	03/10/2000
DIVIDE APPROX 9.5 ACRES INTO 9 PARCELS				
TR26415	APPROVED	02/21/1991	19930727	07/27/1999
SUBDIVIDE 60.24 AC INTO 58 LOTS				

CASE NAME	STATUS	APPLIED DATE	APPROVAL DATE	EXPIRED DATE
CASE DESCRIPTION				
TR27337	APPROVED	02/21/1992	19930824	08/24/2004
DIVIDE 26 ACRES INTO 25 LOTS				
TR28734	APPROVED	03/18/1998	19990608	06/08/2002
SUBDIVIDE 10 GR ACRES INTO 10 LOTS				
TR32528	APPROVED	07/28/2004	20050706	07/06/2008
DIVIDE 24.71 ACRES INTO 24 RES LOTS (1 AC MIN)				
TR33913	APPROVED	08/25/2006	20080903	09/03/2015
DIVIDE 18AC INTO 18-1ACRE SINGLE FMLY RES LOTS				

APPENDIX 3.1:

TRAFFIC COUNT DATA, APRIL 2014

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Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Calimesa
N/S: I-10 Eastbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CAL10ECVAM
Site Code : 05114110
Start Date : 4/1/2014
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	I-10 Eastbound Off Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Eastbound On Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	31	1	23	55	5	16	0	21	0	0	0	0	0	166	15	181	257
07:15 AM	23	0	20	43	6	21	0	27	0	0	0	0	0	171	15	186	256
07:30 AM	24	0	19	43	4	25	0	29	0	0	0	0	0	127	21	148	220
07:45 AM	31	0	19	50	5	20	0	25	0	0	0	0	0	88	14	102	177
Total	109	1	81	191	20	82	0	102	0	0	0	0	0	552	65	617	910
08:00 AM	28	0	37	65	5	16	0	21	0	0	0	0	0	87	18	105	191
08:15 AM	31	0	32	63	7	13	0	20	0	0	0	0	0	79	26	105	188
08:30 AM	23	0	21	44	5	15	0	20	0	0	0	0	0	78	15	93	157
08:45 AM	28	1	27	56	8	9	0	17	0	0	0	0	0	55	15	70	143
Total	110	1	117	228	25	53	0	78	0	0	0	0	0	299	74	373	679
Grand Total	219	2	198	419	45	135	0	180	0	0	0	0	0	851	139	990	1589
Apprch %	52.3	0.5	47.3		25	75	0		0	0	0		0	86	14		
Total %	13.8	0.1	12.5	26.4	2.8	8.5	0	11.3	0	0	0	0	0	53.6	8.7	62.3	
Passenger Vehicles	207	2	193	402	44	131	0	175	0	0	0	0	0	843	135	978	1555
% Passenger Vehicles	94.5	100	97.5	95.9	97.8	97	0	97.2	0	0	0	0	0	99.1	97.1	98.8	97.9
Large 2 Axle Vehicles	9	0	1	10	0	3	0	3	0	0	0	0	0	7	2	9	22
% Large 2 Axle Vehicles	4.1	0	0.5	2.4	0	2.2	0	1.7	0	0	0	0	0	0.8	1.4	0.9	1.4
3 Axle Vehicles	1	0	1	2	0	1	0	1	0	0	0	0	0	1	1	2	5
% 3 Axle Vehicles	0.5	0	0.5	0.5	0	0.7	0	0.6	0	0	0	0	0	0.1	0.7	0.2	0.3
4+ Axle Trucks	2	0	3	5	1	0	0	1	0	0	0	0	0	0	1	1	7
% 4+ Axle Trucks	0.9	0	1.5	1.2	2.2	0	0	0.6	0	0	0	0	0	0	0.7	0.1	0.4

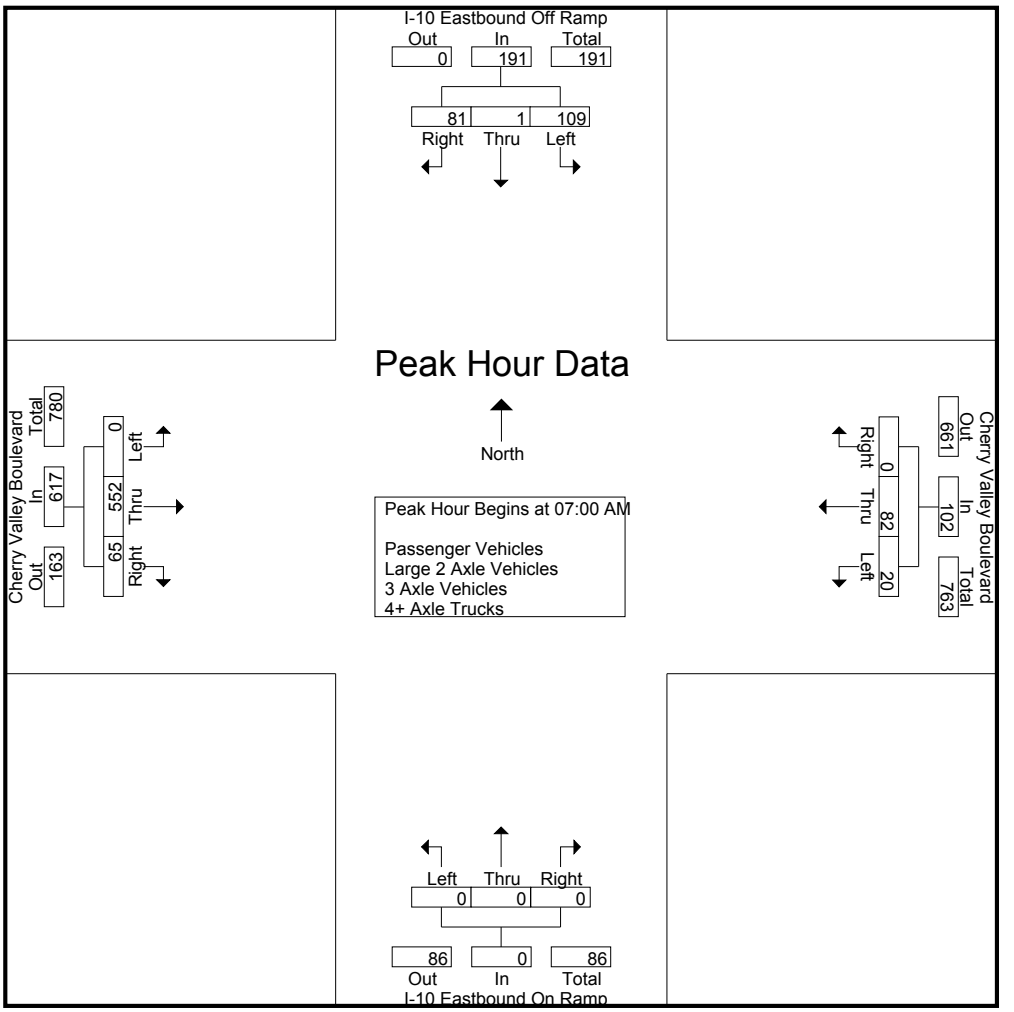
	I-10 Eastbound Off Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Eastbound On Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	**31**	**1**	**23**	**55**	5	16	0	21	0	0	0	0	0	166	15	181	**257**
07:15 AM	23	0	20	43	**6**	21	0	27	0	0	0	0	0	**171**	15	**186**	256
07:30 AM	24	0	19	43	4	**25**	0	**29**	0	0	0	0	0	127	**21**	148	220
07:45 AM	31	0	19	50	5	20	0	25	0	0	0	0	0	88	14	102	177
Total Volume	109	1	81	191	20	82	0	102	0	0	0	0	0	552	65	617	910
% App. Total	57.1	0.5	42.4		19.6	80.4	0		0	0	0		0	89.5	10.5		
PHF	.879	.250	.880	.868	.833	.820	.000	.879	.000	.000	.000	.000	.000	.807	.774	.829	.885

CVAR_11338

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Calimesa
N/S: I-10 Eastbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CAL10ECVAM
Site Code : 05114110
Start Date : 4/1/2014
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	28	0	**37**	**65**	5	16	0	21	0	0	0	0	0	166	15	181
+15 mins.	**31**	0	32	63	**6**	21	0	27	0	0	0	0	0	**171**	15	**186**
+30 mins.	23	0	21	44	4	**25**	0	**29**	0	0	0	0	0	127	**21**	148
+45 mins.	28	**1**	27	56	5	20	0	25	0	0	0	0	0	88	14	102
Total Volume	110	1	117	228	20	82	0	102	0	0	0	0	0	552	65	617
% App. Total	48.2	0.4	51.3		19.6	80.4	0		0	0	0		0	89.5	10.5	
PHF	.887	.250	.791	.877	.833	.820	.000	.879	.000	.000	.000	.000	.000	.807	.774	.829

Counts Unlimited, Inc.
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City of Calimesa
N/S: I-10 Eastbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CAL10ECVAM
Site Code : 05114110
Start Date : 4/1/2014
Page No : 1

Groups Printed- Passenger Vehicles

	I-10 Eastbound Off Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Eastbound On Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	30	1	22	53	5	16	0	21	0	0	0	0	0	166	14	180	254
07:15 AM	23	0	19	42	6	20	0	26	0	0	0	0	0	170	15	185	253
07:30 AM	22	0	19	41	4	25	0	29	0	0	0	0	0	125	20	145	215
07:45 AM	30	0	19	49	5	20	0	25	0	0	0	0	0	86	14	100	174
Total	105	1	79	185	20	81	0	101	0	0	0	0	0	547	63	610	896
08:00 AM	28	0	37	65	4	14	0	18	0	0	0	0	0	86	17	103	186
08:15 AM	29	0	31	60	7	13	0	20	0	0	0	0	0	77	26	103	183
08:30 AM	20	0	20	40	5	15	0	20	0	0	0	0	0	78	15	93	153
08:45 AM	25	1	26	52	8	8	0	16	0	0	0	0	0	55	14	69	137
Total	102	1	114	217	24	50	0	74	0	0	0	0	0	296	72	368	659
Grand Total	207	2	193	402	44	131	0	175	0	0	0	0	0	843	135	978	1555
Apprch %	51.5	0.5	48		25.1	74.9	0		0	0	0		0	86.2	13.8		
Total %	13.3	0.1	12.4	25.9	2.8	8.4	0	11.3	0	0	0	0	0	54.2	8.7	62.9	

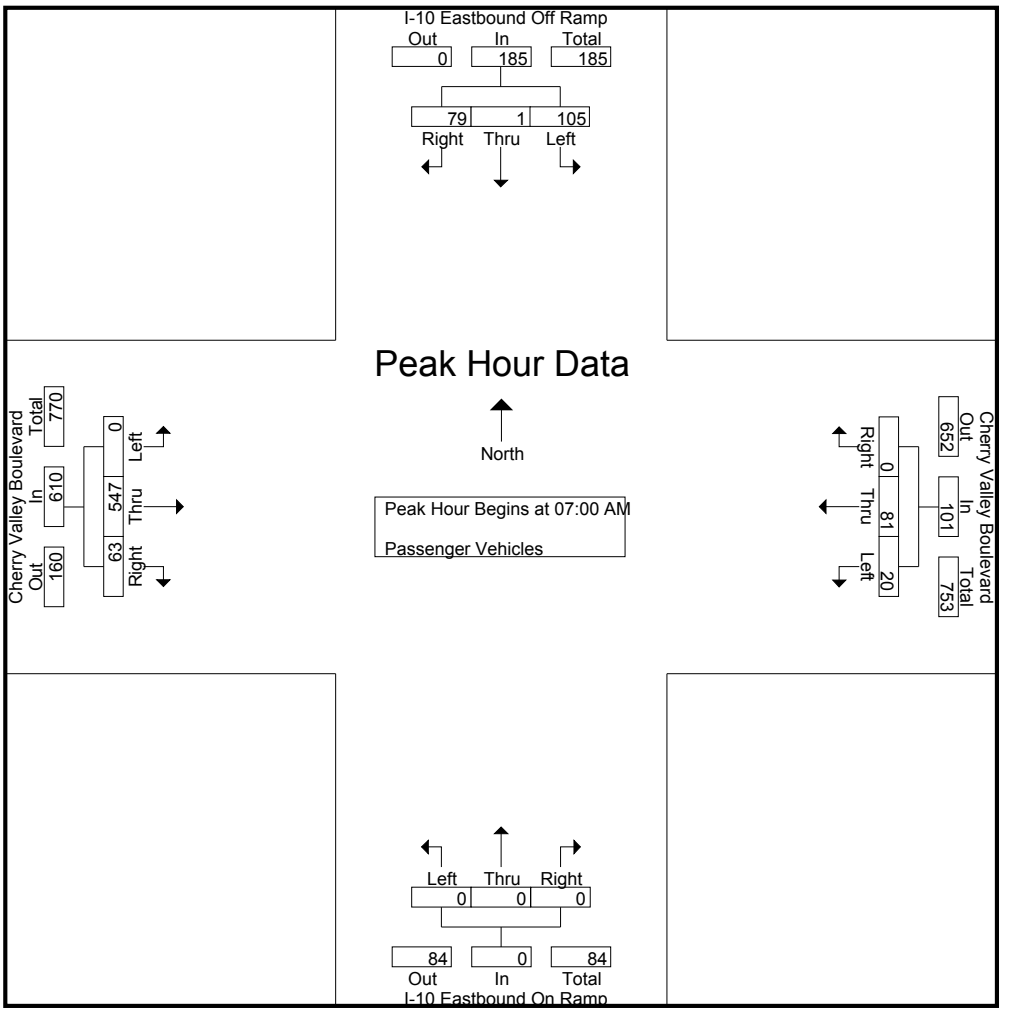
	I-10 Eastbound Off Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Eastbound On Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	**30**	**1**	**22**	**53**	5	16	0	21	0	0	0	0	0	166	14	180	**254**
07:15 AM	23	0	19	42	**6**	20	0	26	0	0	0	0	0	**170**	15	**185**	253
07:30 AM	22	0	19	41	4	**25**	0	**29**	0	0	0	0	0	125	**20**	145	215
07:45 AM	30	0	19	49	5	20	0	25	0	0	0	0	0	86	14	100	174
Total Volume	105	1	79	185	20	81	0	101	0	0	0	0	0	547	63	610	896
% App. Total	56.8	0.5	42.7		19.8	80.2	0		0	0	0		0	89.7	10.3		
PHF	.875	.250	.898	.873	.833	.810	.000	.871	.000	.000	.000	.000	.000	.804	.788	.824	.882

CVAR_11340

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Calimesa
N/S: I-10 Eastbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CAL10ECVAM
Site Code : 05114110
Start Date : 4/1/2014
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	28	0	**37**	**65**	5	16	0	21	0	0	0	0	0	166	14	180
+15 mins.	**29**	0	31	60	**6**	20	0	26	0	0	0	0	0	**170**	15	**185**
+30 mins.	20	0	20	40	4	**25**	0	**29**	0	0	0	0	0	125	**20**	145
+45 mins.	25	**1**	26	52	5	20	0	25	0	0	0	0	0	86	14	100
Total Volume	102	1	114	217	20	81	0	101	0	0	0	0	0	547	63	610
% App. Total	47	0.5	52.5		19.8	80.2	0		0	0	0		0	89.7	10.3	
PHF	.879	.250	.770	.835	.833	.810	.000	.871	.000	.000	.000	.000	.000	.804	.788	.824

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Calimesa
N/S: I-10 Eastbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CAL10ECVAM
Site Code : 05114110
Start Date : 4/1/2014
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	I-10 Eastbound Off Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Eastbound On Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
07:30 AM	1	0	0	1	0	0	0	0	0	0	0	0	0	2	1	3	4
07:45 AM	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
Total	2	0	0	2	0	1	0	1	0	0	0	0	0	4	1	5	8
08:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	1	2	3
08:15 AM	2	0	0	2	0	0	0	0	0	0	0	0	0	2	0	2	4
08:30 AM	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
08:45 AM	3	0	1	4	0	1	0	1	0	0	0	0	0	0	0	0	5
Total	7	0	1	8	0	2	0	2	0	0	0	0	0	3	1	4	14
Grand Total	9	0	1	10	0	3	0	3	0	0	0	0	0	7	2	9	22
Apprch %	90	0	10		0	100	0		0	0	0		0	77.8	22.2		
Total %	40.9	0	4.5	45.5	0	13.6	0	13.6	0	0	0	0	0	31.8	9.1	40.9	

	I-10 Eastbound Off Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Eastbound On Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	1	0	1	2
07:30 AM	**1**	0	0	**1**	0	0	0	0	0	0	0	0	0	**2**	**1**	**3**	**4**
07:45 AM	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
Total Volume	2	0	0	2	0	1	0	1	0	0	0	0	0	4	1	5	8
% App. Total	100	0	0		0	100	0		0	0	0		0	80	20		
PHF	.500	.000	.000	.500	.000	.250	.000	.250	.000	.000	.000	.000	.000	.500	.250	.417	.500

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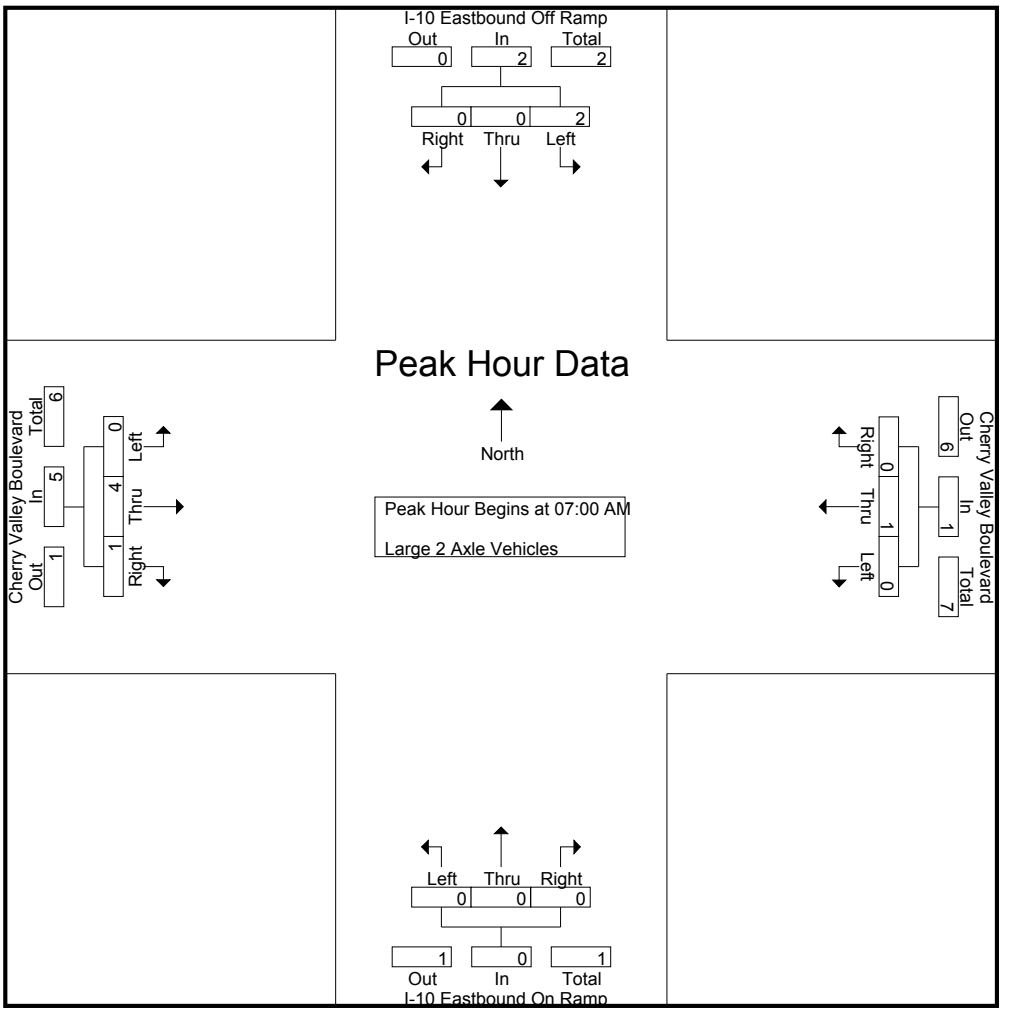
City of Calimesa
N/S: I-10 Eastbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CAL10ECVAM
Site Code : 05114110
Start Date : 4/1/2014
Page No : 2



Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	1	0	1
+30 mins.	**1**	0	0	**1**	0	0	0	0	0	0	0	0	0	**2**	**1**	**3**
+45 mins.	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1
Total Volume	2	0	0	2	0	1	0	1	0	0	0	0	0	4	1	5
% App. Total	100	0	0		0	100	0		0	0	0		0	80	20	
PHF	.500	.000	.000	.500	.000	.250	.000	.250	.000	.000	.000	.000	.000	.500	.250	.417

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City of Calimesa
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E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CAL10ECVAM
Site Code : 05114110
Start Date : 4/1/2014
Page No : 1

Groups Printed- 3 Axle Vehicles

	I-10 Eastbound Off Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Eastbound On Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
07:15 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:30 AM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	1	0	1	2	0	0	0	0	0	0	0	0	0	1	1	2	4
08:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Grand Total	1	0	1	2	0	1	0	1	0	0	0	0	0	1	1	2	5
Apprch %	50	0	50		0	100	0		0	0	0		0	50	50		
Total %	20	0	20	40	0	20	0	20	0	0	0	0	0	20	20	40	

	I-10 Eastbound Off Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Eastbound On Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**1**	**1**
07:15 AM	0	0	**1**	**1**	0	0	0	0	0	0	0	0	0	0	0	0	1
07:30 AM	**1**	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	1	1
Total Volume	1	0	1	2	0	0	0	0	0	0	0	0	0	1	1	2	4
% App. Total	50	0	50		0	0	0		0	0	0		0	50	50		
PHF	.250	.000	.250	.500	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.500	1.00

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City of Calimesa
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E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CAL10ECVAM
Site Code : 05114110
Start Date : 4/1/2014
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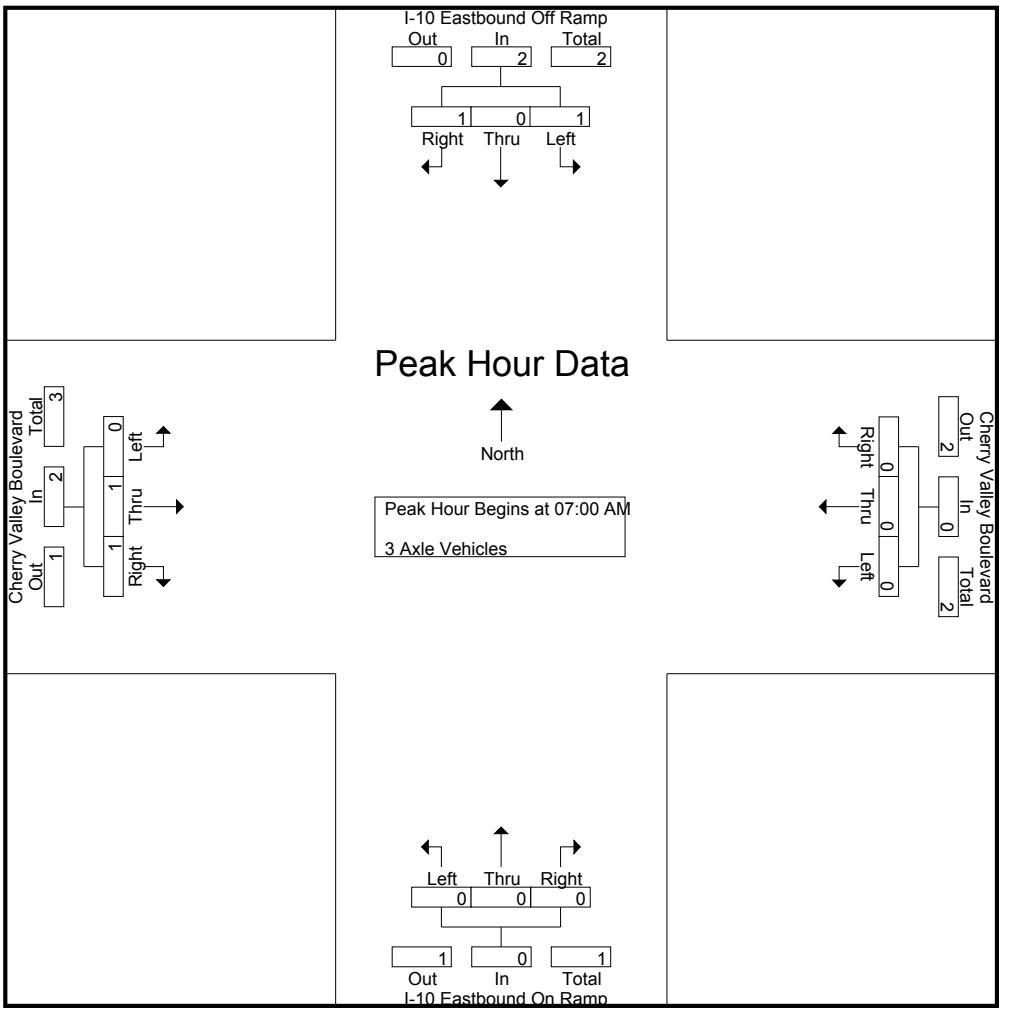

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**1**
+15 mins.	0	0	**1**	**1**	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	**1**	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	1
Total Volume	1	0	1	2	0	0	0	0	0	0	0	0	0	1	1	2
% App. Total	50	0	50		0	0	0		0	0	0		0	50	50	
PHF	.250	.000	.250	.500	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.500

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N/S: I-10 Eastbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CAL10ECVAM
Site Code : 05114110
Start Date : 4/1/2014
Page No : 1

Groups Printed- 4+ Axle Trucks

	I-10 Eastbound Off Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Eastbound On Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	2
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	2
08:00 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:30 AM	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	2
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total	1	0	2	3	1	0	0	1	0	0	0	0	0	0	1	1	5
Grand Total	2	0	3	5	1	0	0	1	0	0	0	0	0	0	1	1	7
Apprch %	40	0	60		100	0	0		0	0	0		0	0	100		
Total %	28.6	0	42.9	71.4	14.3	0	0	14.3	0	0	0	0	0	0	14.3	14.3	

	I-10 Eastbound Off Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Eastbound On Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	**1**	0	**1**	**2**	0	0	0	0	0	0	0	0	0	0	0	0	**2**
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	2
% App. Total	50	0	50		0	0	0		0	0	0		0	0	0		
PHF	.250	.000	.250	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250

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City of Calimesa
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E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CAL10ECVAM
Site Code : 05114110
Start Date : 4/1/2014
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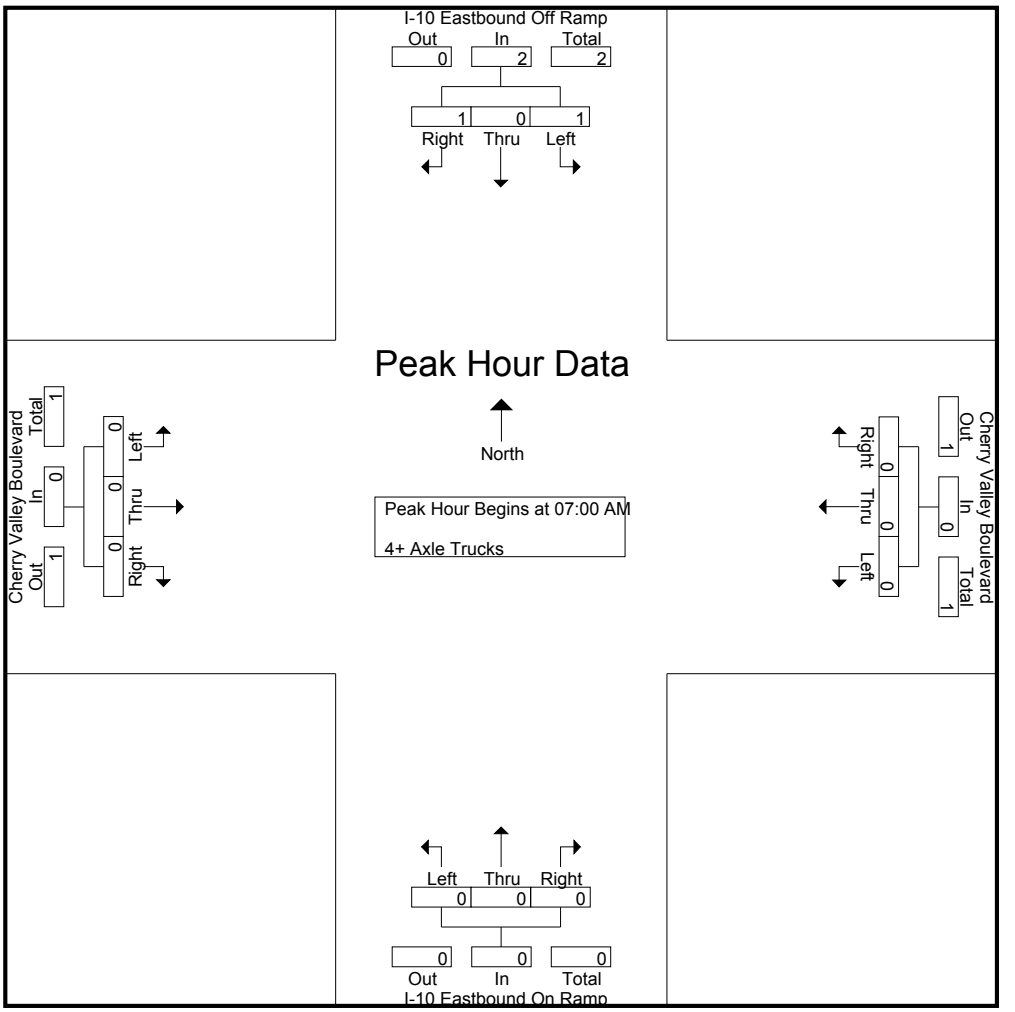

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	**1**	0	**1**	**2**	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	50	0	50		0	0	0		0	0	0		0	0	0	
PHF	.250	.000	.250	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Calimesa
N/S: I-10 Eastbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CAL10ECVPM
Site Code : 05114110
Start Date : 4/1/2014
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	I-10 Eastbound Off Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Eastbound On Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	70	0	79	149	6	21	0	27	0	0	0	0	0	40	14	54	230
04:15 PM	79	0	77	156	0	36	0	36	0	0	0	0	0	59	21	80	272
04:30 PM	80	0	96	176	10	22	0	32	0	0	0	0	0	42	14	56	264
04:45 PM	93	0	88	181	3	26	0	29	0	0	0	0	0	61	8	69	279
Total	322	0	340	662	19	105	0	124	0	0	0	0	0	202	57	259	1045
05:00 PM	81	1	94	176	4	34	0	38	0	0	0	0	0	45	11	56	270
05:15 PM	65	0	123	188	2	27	0	29	0	0	0	0	0	69	18	87	304
05:30 PM	98	0	119	217	2	30	0	32	0	0	0	0	0	50	12	62	311
05:45 PM	70	1	109	180	4	23	0	27	0	0	0	0	0	54	14	68	275
Total	314	2	445	761	12	114	0	126	0	0	0	0	0	218	55	273	1160
Grand Total	636	2	785	1423	31	219	0	250	0	0	0	0	0	420	112	532	2205
Apprch %	44.7	0.1	55.2		12.4	87.6	0		0	0	0		0	78.9	21.1		
Total %	28.8	0.1	35.6	64.5	1.4	9.9	0	11.3	0	0	0	0	0	19	5.1	24.1	
Passenger Vehicles	623	2	780	1405	30	214	0	244	0	0	0	0	0	414	111	525	2174
% Passenger Vehicles	98	100	99.4	98.7	96.8	97.7	0	97.6	0	0	0	0	0	98.6	99.1	98.7	98.6
Large 2 Axle Vehicles	12	0	4	16	1	5	0	6	0	0	0	0	0	5	1	6	28
% Large 2 Axle Vehicles	1.9	0	0.5	1.1	3.2	2.3	0	2.4	0	0	0	0	0	1.2	0.9	1.1	1.3
3 Axle Vehicles	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	2
% 3 Axle Vehicles	0	0	0.1	0.1	0	0	0	0	0	0	0	0	0	0.2	0	0.2	0.1
4+ Axle Trucks	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
% 4+ Axle Trucks	0.2	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0

	I-10 Eastbound Off Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Eastbound On Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	93	0	88	181	3	26	0	29	0	0	0	0	0	61	8	69	279
05:00 PM	81	**1**	94	176	**4**	**34**	0	**38**	0	0	0	0	0	45	11	56	270
05:15 PM	65	0	**123**	188	2	27	0	29	0	0	0	0	0	**69**	**18**	**87**	304
05:30 PM	**98**	0	119	**217**	2	30	0	32	0	0	0	0	0	50	12	62	**311**
Total Volume	337	1	424	762	11	117	0	128	0	0	0	0	0	225	49	274	1164
% App. Total	44.2	0.1	55.6		8.6	91.4	0		0	0	0		0	82.1	17.9		
PHF	.860	.250	.862	.878	.688	.860	.000	.842	.000	.000	.000	.000	.000	.815	.681	.787	.936

CVAR_11348

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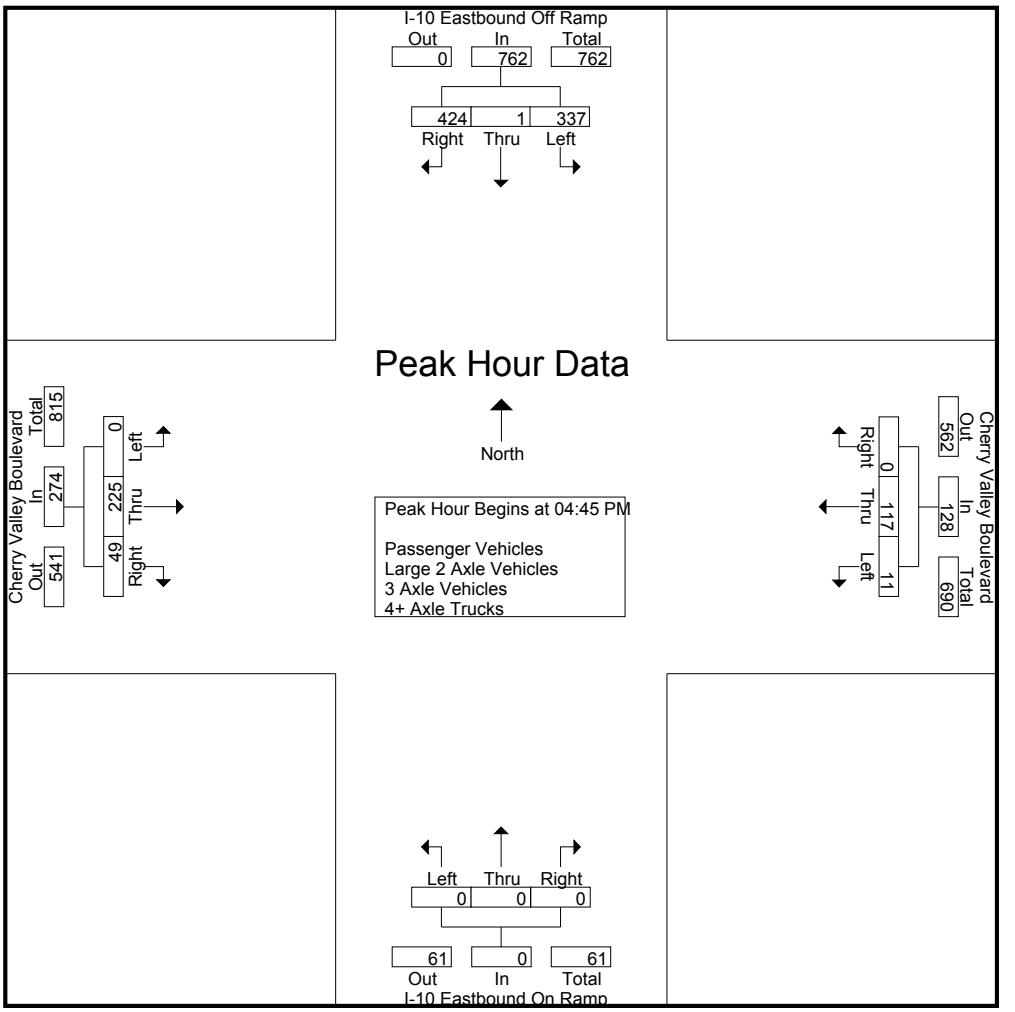
City of Calimesa
N/S: I-10 Eastbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CAL10ECVPM
Site Code : 05114110
Start Date : 4/1/2014
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:15 PM				04:00 PM				04:45 PM			
+0 mins.	93	0	88	181	0	**36**	0	36	0	0	0	0	0	61	8	69
+15 mins.	81	**1**	94	176	**10**	22	0	32	0	0	0	0	0	45	11	56
+30 mins.	65	0	**123**	188	3	26	0	29	0	0	0	0	0	**69**	**18**	**87**
+45 mins.	**98**	0	119	**217**	4	34	0	**38**	0	0	0	0	0	50	12	62
Total Volume	337	1	424	762	17	118	0	135	0	0	0	0	0	225	49	274
% App. Total	44.2	0.1	55.6		12.6	87.4	0		0	0	0		0	82.1	17.9	
PHF	.860	.250	.862	.878	.425	.819	.000	.888	.000	.000	.000	.000	.000	.815	.681	.787

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City of Calimesa
N/S: I-10 Eastbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CAL10ECVPM
Site Code : 05114110
Start Date : 4/1/2014
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Groups Printed- Passenger Vehicles

	I-10 Eastbound Off Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Eastbound On Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	70	0	79	149	6	21	0	27	0	0	0	0	0	40	13	53	229
04:15 PM	77	0	76	153	0	36	0	36	0	0	0	0	0	59	21	80	269
04:30 PM	79	0	95	174	9	21	0	30	0	0	0	0	0	40	14	54	258
04:45 PM	91	0	88	179	3	26	0	29	0	0	0	0	0	61	8	69	277
Total	317	0	338	655	18	104	0	122	0	0	0	0	0	200	56	256	1033
05:00 PM	79	1	93	173	4	32	0	36	0	0	0	0	0	45	11	56	265
05:15 PM	62	0	121	183	2	26	0	28	0	0	0	0	0	67	18	85	296
05:30 PM	98	0	119	217	2	30	0	32	0	0	0	0	0	48	12	60	309
05:45 PM	67	1	109	177	4	22	0	26	0	0	0	0	0	54	14	68	271
Total	306	2	442	750	12	110	0	122	0	0	0	0	0	214	55	269	1141
Grand Total	623	2	780	1405	30	214	0	244	0	0	0	0	0	414	111	525	2174
Apprch %	44.3	0.1	55.5		12.3	87.7	0		0	0	0		0	78.9	21.1		
Total %	28.7	0.1	35.9	64.6	1.4	9.8	0	11.2	0	0	0	0	0	19	5.1	24.1	

	I-10 Eastbound Off Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Eastbound On Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	91	0	88	179	3	26	0	29	0	0	0	0	0	61	8	69	277
05:00 PM	79	**1**	93	173	**4**	**32**	0	**36**	0	0	0	0	0	45	11	56	265
05:15 PM	62	0	**121**	183	2	26	0	28	0	0	0	0	0	**67**	**18**	**85**	296
05:30 PM	**98**	0	119	**217**	2	30	0	32	0	0	0	0	0	48	12	60	**309**
Total Volume	330	1	421	752	11	114	0	125	0	0	0	0	0	221	49	270	1147
% App. Total	43.9	0.1	56		8.8	91.2	0		0	0	0		0	81.9	18.1		
PHF	.842	.250	.870	.866	.688	.891	.000	.868	.000	.000	.000	.000	.000	.825	.681	.794	.928

CVAR_11350

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City of Calimesa
N/S: I-10 Eastbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CAL10ECVPM
Site Code : 05114110
Start Date : 4/1/2014
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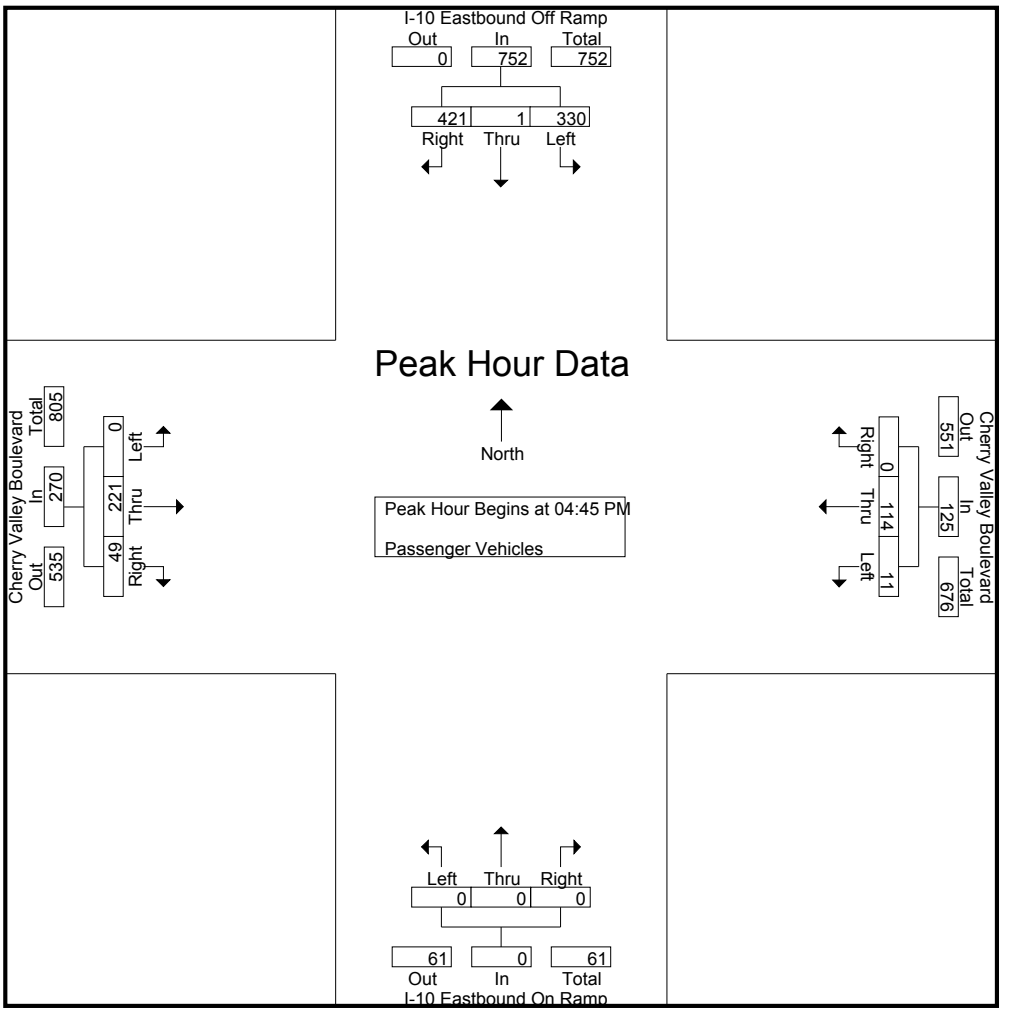

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:15 PM				04:00 PM				04:45 PM			
+0 mins.	91	0	88	179	0	**36**	0	**36**	0	0	0	0	0	61	8	69
+15 mins.	79	**1**	93	173	**9**	21	0	30	0	0	0	0	0	45	11	56
+30 mins.	62	0	**121**	183	3	26	0	29	0	0	0	0	0	**67**	**18**	**85**
+45 mins.	**98**	0	119	**217**	4	32	0	36	0	0	0	0	0	48	12	60
Total Volume	330	1	421	752	16	115	0	131	0	0	0	0	0	221	49	270
% App. Total	43.9	0.1	56		12.2	87.8	0		0	0	0		0	81.9	18.1	
PHF	.842	.250	.870	.866	.444	.799	.000	.910	.000	.000	.000	.000	.000	.825	.681	.794

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City of Calimesa
N/S: I-10 Eastbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CAL10ECVPM
Site Code : 05114110
Start Date : 4/1/2014
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Groups Printed- Large 2 Axle Vehicles

	I-10 Eastbound Off Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Eastbound On Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
04:15 PM	2	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	3
04:30 PM	1	0	1	2	1	1	0	2	0	0	0	0	0	1	0	1	5
04:45 PM	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	5	0	2	7	1	1	0	2	0	0	0	0	0	1	1	2	11
05:00 PM	2	0	1	3	0	2	0	2	0	0	0	0	0	0	0	0	5
05:15 PM	3	0	1	4	0	1	0	1	0	0	0	0	0	2	0	2	7
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
05:45 PM	2	0	0	2	0	1	0	1	0	0	0	0	0	0	0	0	3
Total	7	0	2	9	0	4	0	4	0	0	0	0	0	4	0	4	17
Grand Total	12	0	4	16	1	5	0	6	0	0	0	0	0	5	1	6	28
Apprch %	75	0	25		16.7	83.3	0		0	0	0		0	83.3	16.7		
Total %	42.9	0	14.3	57.1	3.6	17.9	0	21.4	0	0	0	0	0	17.9	3.6	21.4	

	I-10 Eastbound Off Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Eastbound On Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
05:00 PM	2	0	**1**	3	0	**2**	0	**2**	0	0	0	0	0	0	0	0	5
05:15 PM	**3**	0	1	**4**	0	1	0	1	0	0	0	0	0	**2**	0	**2**	**7**
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Total Volume	7	0	2	9	0	3	0	3	0	0	0	0	0	4	0	4	16
% App. Total	77.8	0	22.2		0	100	0		0	0	0		0	100	0		
PHF	.583	.000	.500	.563	.000	.375	.000	.375	.000	.000	.000	.000	.000	.500	.000	.500	.571

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City of Calimesa
N/S: I-10 Eastbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CAL10ECVPM
Site Code : 05114110
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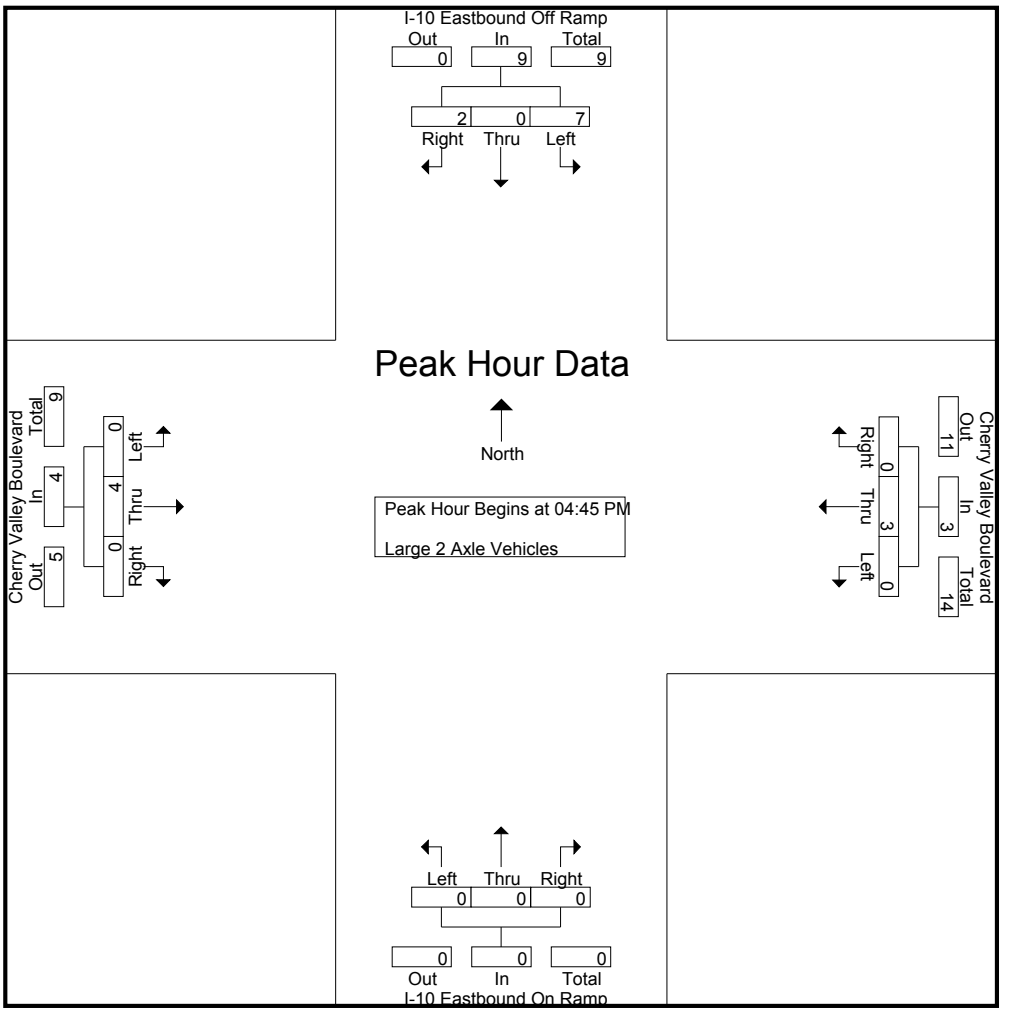

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	2	0	**1**	3	0	**2**	0	**2**	0	0	0	0	0	0	0	0
+30 mins.	**3**	0	1	**4**	0	1	0	1	0	0	0	0	0	**2**	0	**2**
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
Total Volume	7	0	2	9	0	3	0	3	0	0	0	0	0	4	0	4
% App. Total	77.8	0	22.2		0	100	0		0	0	0		0	100	0	
PHF	.583	.000	.500	.563	.000	.375	.000	.375	.000	.000	.000	.000	.000	.500	.000	.500

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City of Calimesa
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Weather: Clear

File Name : CAL10ECVPM
Site Code : 05114110
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Groups Printed- 3 Axle Vehicles

	I-10 Eastbound Off Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Eastbound On Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	2
Apprch %	0	0	100		0	0	0		0	0	0		0	100	0		
Total %	0	0	50	50	0	0	0	0	0	0	0	0	0	50	0	50	

	I-10 Eastbound Off Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Eastbound On Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	**1**	**1**	0	0	0	0	0	0	0	0	0	0	0	0	**1**
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
% App. Total	0	0	100		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.250	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250

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City of Calimesa
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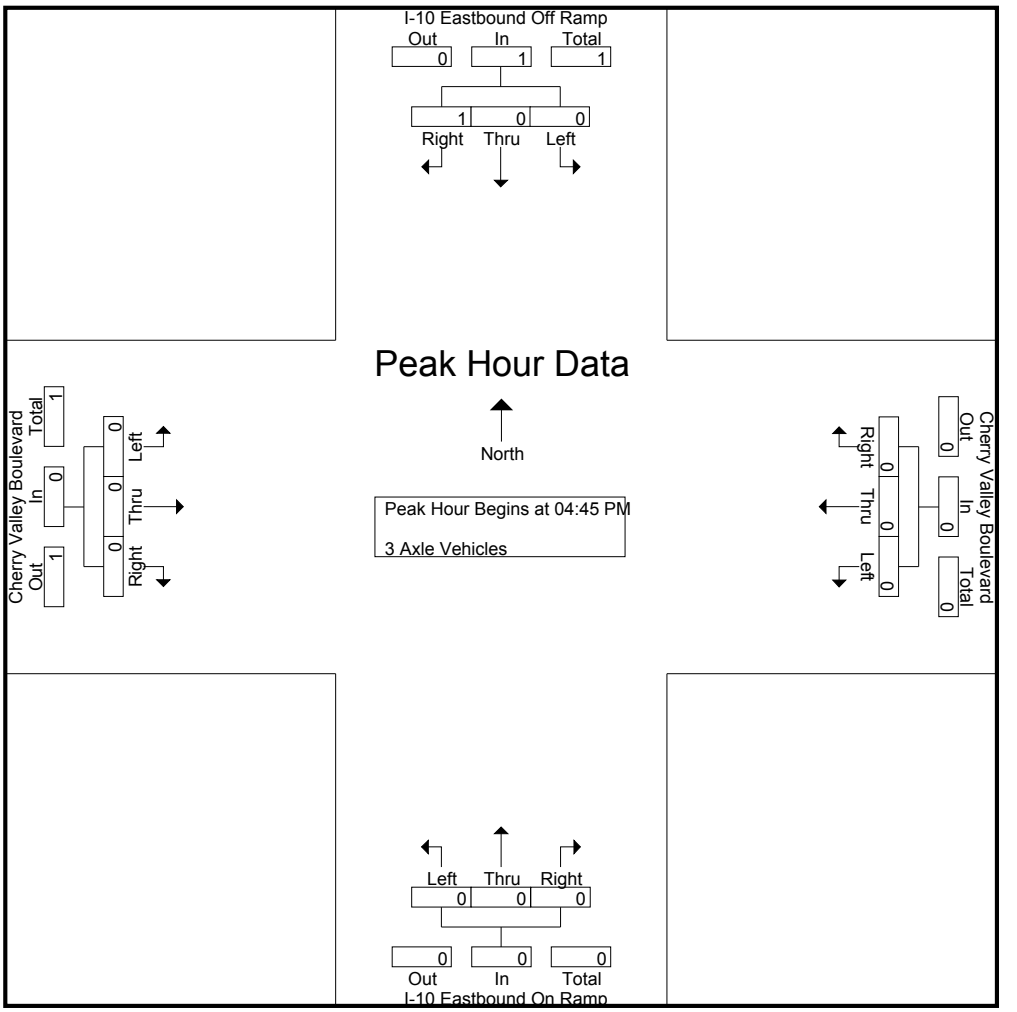

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	**1**	**1**	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	100		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.250	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Calimesa
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Weather: Clear

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Groups Printed- 4+ Axle Trucks

	I-10 Eastbound Off Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Eastbound On Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Apprch %	100	0	0		0	0	0		0	0	0		0	0	0		
Total %	100	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	

	I-10 Eastbound Off Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Eastbound On Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Calimesa
N/S: I-10 Eastbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CAL10ECVPM
Site Code : 05114110
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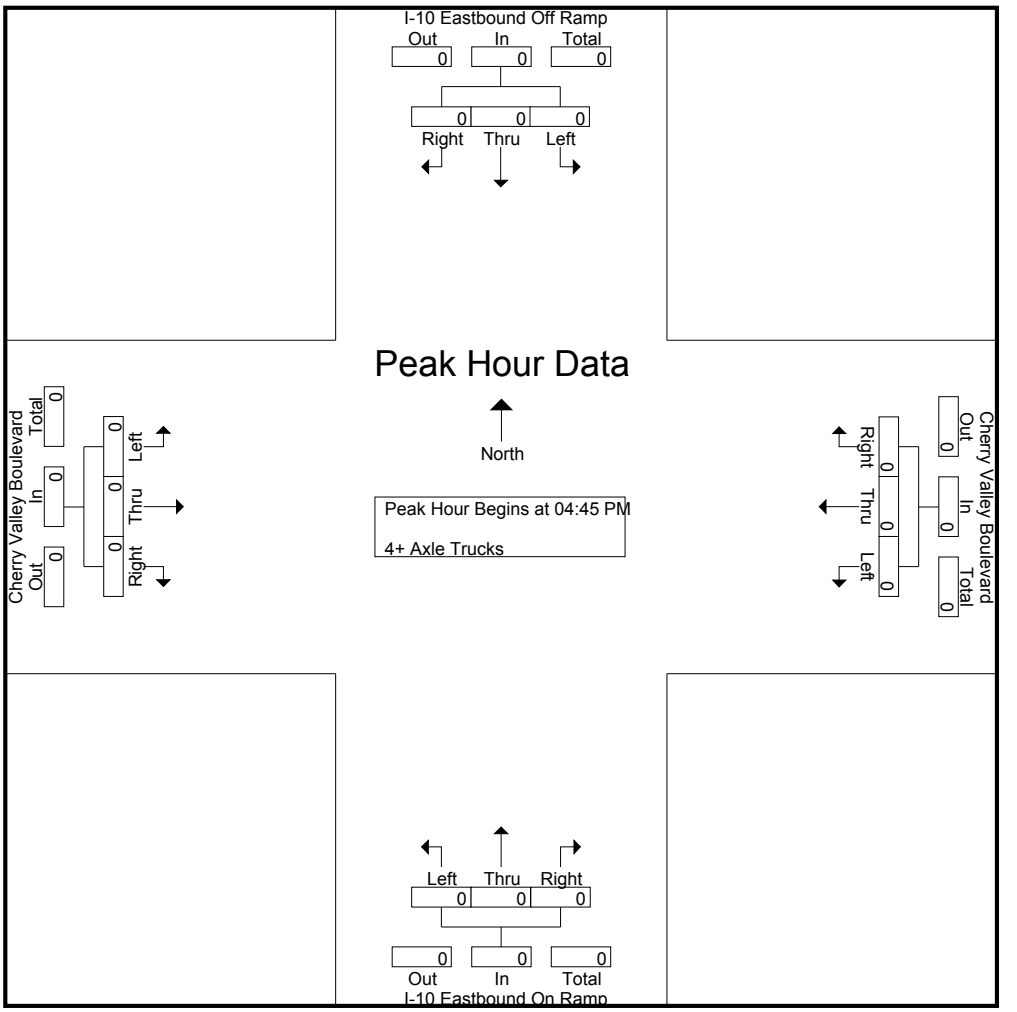

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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County of Riverside
N/S: Beaumont Avenue
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRVBECVAM
Site Code : 05114110
Start Date : 4/1/2014
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Beaumont Avenue Southbound				Cherry Valley Boulevard Westbound				Beaumont Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	51	20	71	1	85	1	87	84	21	1	106	6	24	57	87	351
07:15 AM	2	42	28	72	3	116	1	120	99	25	1	125	12	38	80	130	447
07:30 AM	1	37	16	54	1	22	2	25	39	23	0	62	12	34	72	118	259
07:45 AM	1	49	5	55	10	12	4	26	29	29	2	60	5	3	23	31	172
Total	4	179	69	252	15	235	8	258	251	98	4	353	35	99	232	366	1229
08:00 AM	1	49	9	59	3	17	4	24	34	35	3	72	4	10	12	26	181
08:15 AM	1	42	11	54	2	17	3	22	19	51	3	73	3	7	18	28	177
08:30 AM	4	60	3	67	4	12	4	20	23	25	2	50	5	3	13	21	158
08:45 AM	1	28	5	34	2	9	3	14	19	37	2	58	6	5	11	22	128
Total	7	179	28	214	11	55	14	80	95	148	10	253	18	25	54	97	644
Grand Total	11	358	97	466	26	290	22	338	346	246	14	606	53	124	286	463	1873
Apprch %	2.4	76.8	20.8		7.7	85.8	6.5		57.1	40.6	2.3		11.4	26.8	61.8		
Total %	0.6	19.1	5.2	24.9	1.4	15.5	1.2	18	18.5	13.1	0.7	32.4	2.8	6.6	15.3	24.7	
Passenger Vehicles	10	352	96	458	26	289	21	336	344	239	13	596	51	119	270	440	1830
% Passenger Vehicles	90.9	98.3	99	98.3	100	99.7	95.5	99.4	99.4	97.2	92.9	98.3	96.2	96	94.4	95	97.7
Large 2 Axle Vehicles	1	5	0	6	0	0	1	1	2	7	1	10	1	1	16	18	35
% Large 2 Axle Vehicles	9.1	1.4	0	1.3	0	0	4.5	0.3	0.6	2.8	7.1	1.7	1.9	0.8	5.6	3.9	1.9
3 Axle Vehicles	0	1	0	1	0	1	0	1	0	0	0	0	0	4	0	4	6
% 3 Axle Vehicles	0	0.3	0	0.2	0	0.3	0	0.3	0	0	0	0	0	3.2	0	0.9	0.3
4+ Axle Trucks	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	1	2
% 4+ Axle Trucks	0	0	1	0.2	0	0	0	0	0	0	0	0	1.9	0	0	0.2	0.1

	Beaumont Avenue Southbound				Cherry Valley Boulevard Westbound				Beaumont Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	**51**	20	71	1	85	1	87	84	21	1	106	6	24	57	87	351
07:15 AM	**2**	42	**28**	**72**	3	**116**	1	**120**	**99**	25	1	**125**	**12**	**38**	**80**	**130**	**447**
07:30 AM	1	37	16	54	1	22	2	25	39	23	0	62	12	34	72	118	259
07:45 AM	1	49	5	55	**10**	12	**4**	26	29	**29**	**2**	60	5	3	23	31	172
Total Volume	4	179	69	252	15	235	8	258	251	98	4	353	35	99	232	366	1229
% App. Total	1.6	71	27.4		5.8	91.1	3.1		71.1	27.8	1.1		9.6	27	63.4		
PHF	.500	.877	.616	.875	.375	.506	.500	.538	.634	.845	.500	.706	.729	.651	.725	.704	.687

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County of Riverside
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File Name : CRVBECVAM
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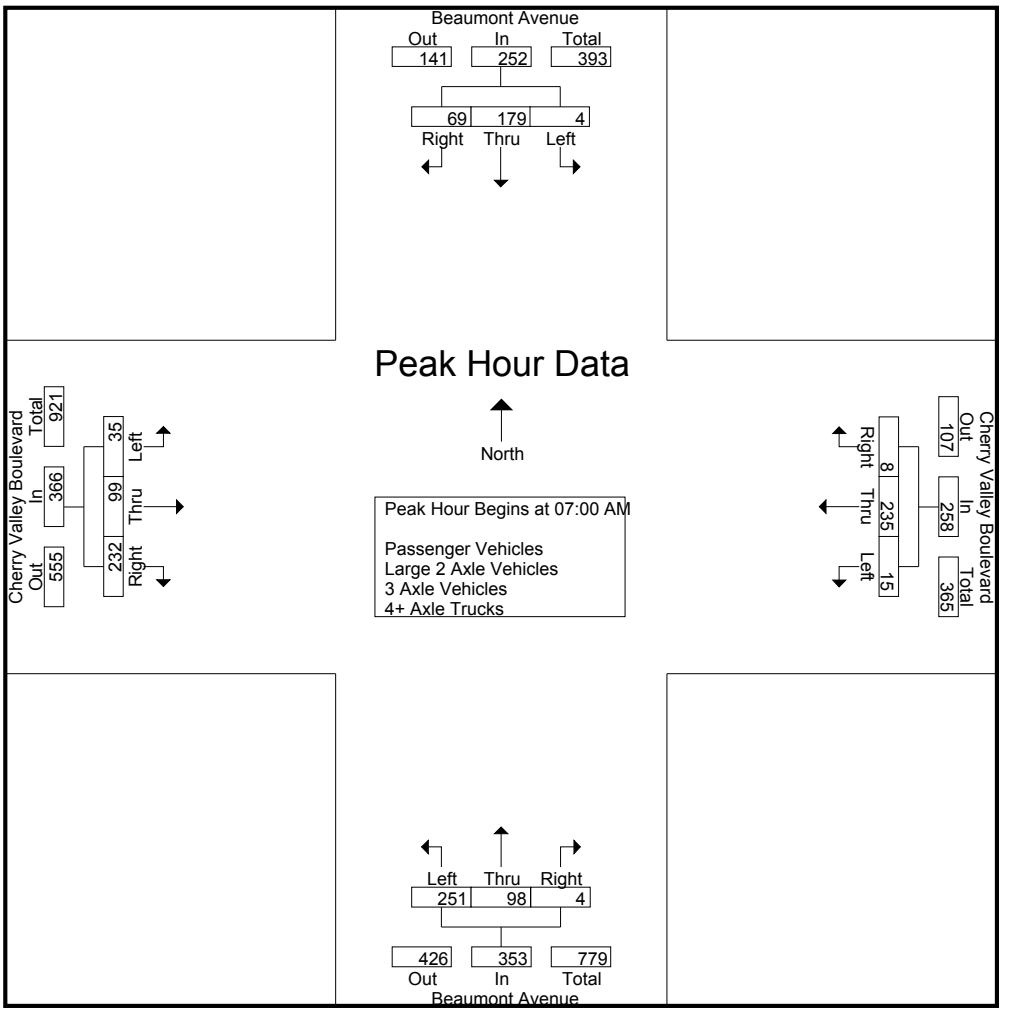

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	**51**	20	71	1	85	1	87	84	21	1	106	6	24	57	87
+15 mins.	**2**	42	**28**	**72**	3	**116**	1	**120**	**99**	25	1	**125**	**12**	**38**	**80**	**130**
+30 mins.	1	37	16	54	1	22	2	25	39	23	0	62	12	34	72	118
+45 mins.	1	49	5	55	**10**	12	**4**	26	29	**29**	**2**	60	5	3	23	31
Total Volume	4	179	69	252	15	235	8	258	251	98	4	353	35	99	232	366
% App. Total	1.6	71	27.4		5.8	91.1	3.1		71.1	27.8	1.1		9.6	27	63.4	
PHF	.500	.877	.616	.875	.375	.506	.500	.538	.634	.845	.500	.706	.729	.651	.725	.704

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County of Riverside
N/S: Beaumont Avenue
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Groups Printed- Passenger Vehicles

	Beaumont Avenue Southbound				Cherry Valley Boulevard Westbound				Beaumont Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	50	20	70	1	84	1	86	84	17	1	102	6	23	54	83	341
07:15 AM	2	41	28	71	3	116	1	120	99	25	1	125	12	38	77	127	443
07:30 AM	0	36	16	52	1	22	2	25	39	23	0	62	12	30	70	112	251
07:45 AM	1	49	5	55	10	12	4	26	28	28	2	58	5	3	20	28	167
Total	3	176	69	248	15	234	8	257	250	93	4	347	35	94	221	350	1202
08:00 AM	1	47	8	56	3	17	4	24	34	34	3	71	4	10	11	25	176
08:15 AM	1	42	11	54	2	17	2	21	19	51	2	72	2	7	16	25	172
08:30 AM	4	60	3	67	4	12	4	20	22	24	2	48	5	3	13	21	156
08:45 AM	1	27	5	33	2	9	3	14	19	37	2	58	5	5	9	19	124
Total	7	176	27	210	11	55	13	79	94	146	9	249	16	25	49	90	628
Grand Total	10	352	96	458	26	289	21	336	344	239	13	596	51	119	270	440	1830
Apprch %	2.2	76.9	21		7.7	86	6.2		57.7	40.1	2.2		11.6	27	61.4		
Total %	0.5	19.2	5.2	25	1.4	15.8	1.1	18.4	18.8	13.1	0.7	32.6	2.8	6.5	14.8	24	

	Beaumont Avenue Southbound				Cherry Valley Boulevard Westbound				Beaumont Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	**50**	20	70	1	84	1	86	84	17	1	102	6	23	54	83	341
07:15 AM	**2**	41	**28**	**71**	3	**116**	1	**120**	**99**	25	1	**125**	**12**	**38**	**77**	**127**	**443**
07:30 AM	0	36	16	52	1	22	2	25	39	23	0	62	12	30	70	112	251
07:45 AM	1	49	5	55	**10**	12	**4**	26	28	**28**	**2**	58	5	3	20	28	167
Total Volume	3	176	69	248	15	234	8	257	250	93	4	347	35	94	221	350	1202
% App. Total	1.2	71	27.8		5.8	91.1	3.1		72	26.8	1.2		10	26.9	63.1		
PHF	.375	.880	.616	.873	.375	.504	.500	.535	.631	.830	.500	.694	.729	.618	.718	.689	.678

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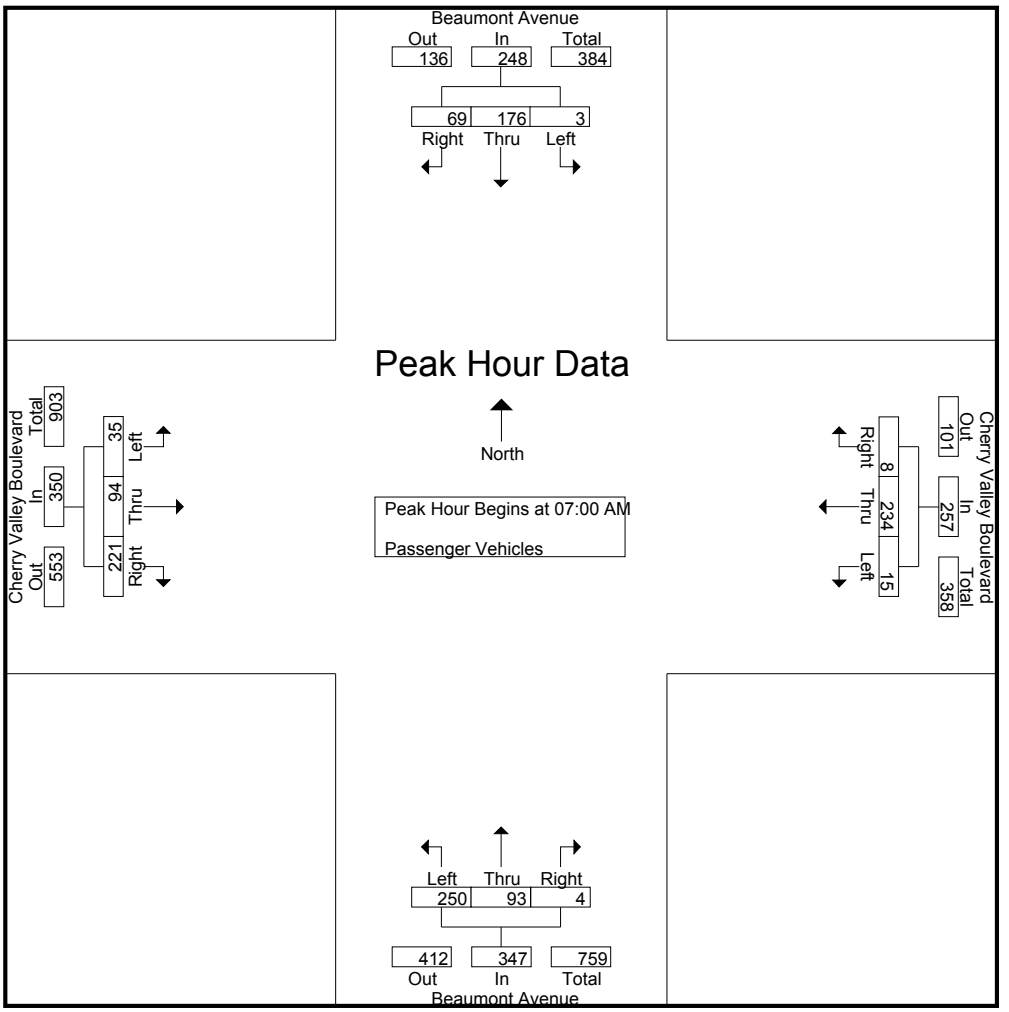

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	**50**	20	70	1	84	1	86	84	17	1	102	6	23	54	83
+15 mins.	**2**	41	**28**	**71**	3	**116**	1	**120**	**99**	25	1	**125**	**12**	**38**	**77**	**127**
+30 mins.	0	36	16	52	1	22	2	25	39	23	0	62	12	30	70	112
+45 mins.	1	49	5	55	**10**	12	**4**	26	28	**28**	**2**	58	5	3	20	28
Total Volume	3	176	69	248	15	234	8	257	250	93	4	347	35	94	221	350
% App. Total	1.2	71	27.8		5.8	91.1	3.1		72	26.8	1.2		10	26.9	63.1	
PHF	.375	.880	.616	.873	.375	.504	.500	.535	.631	.830	.500	.694	.729	.618	.718	.689

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Groups Printed- Large 2 Axle Vehicles

	Beaumont Avenue Southbound				Cherry Valley Boulevard Westbound				Beaumont Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	1	0	1	0	0	0	0	0	4	0	4	0	0	3	3	8
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3
07:30 AM	1	1	0	2	0	0	0	0	0	0	0	0	0	1	2	3	5
07:45 AM	0	0	0	0	0	0	0	0	1	1	0	2	0	0	3	3	5
Total	1	2	0	3	0	0	0	0	1	5	0	6	0	1	11	12	21
08:00 AM	0	2	0	2	0	0	0	0	0	1	0	1	0	0	1	1	4
08:15 AM	0	0	0	0	0	0	1	1	0	0	1	1	1	0	2	3	5
08:30 AM	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	2
08:45 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2	2	3
Total	0	3	0	3	0	0	1	1	1	2	1	4	1	0	5	6	14
Grand Total	1	5	0	6	0	0	1	1	2	7	1	10	1	1	16	18	35
Apprch %	16.7	83.3	0		0	0	100		20	70	10		5.6	5.6	88.9		
Total %	2.9	14.3	0	17.1	0	0	2.9	2.9	5.7	20	2.9	28.6	2.9	2.9	45.7	51.4	

	Beaumont Avenue Southbound				Cherry Valley Boulevard Westbound				Beaumont Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	**1**	0	1	0	0	0	0	0	**4**	0	**4**	0	0	**3**	**3**	**8**
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3
07:30 AM	**1**	1	0	**2**	0	0	0	0	0	0	0	0	0	**1**	2	3	5
07:45 AM	0	0	0	0	0	0	0	0	**1**	1	0	2	0	0	3	3	5
Total Volume	1	2	0	3	0	0	0	0	1	5	0	6	0	1	11	12	21
% App. Total	33.3	66.7	0		0	0	0		16.7	83.3	0		0	8.3	91.7		
PHF	.250	.500	.000	.375	.000	.000	.000	.000	.250	.313	.000	.375	.000	.250	.917	1.00	.656

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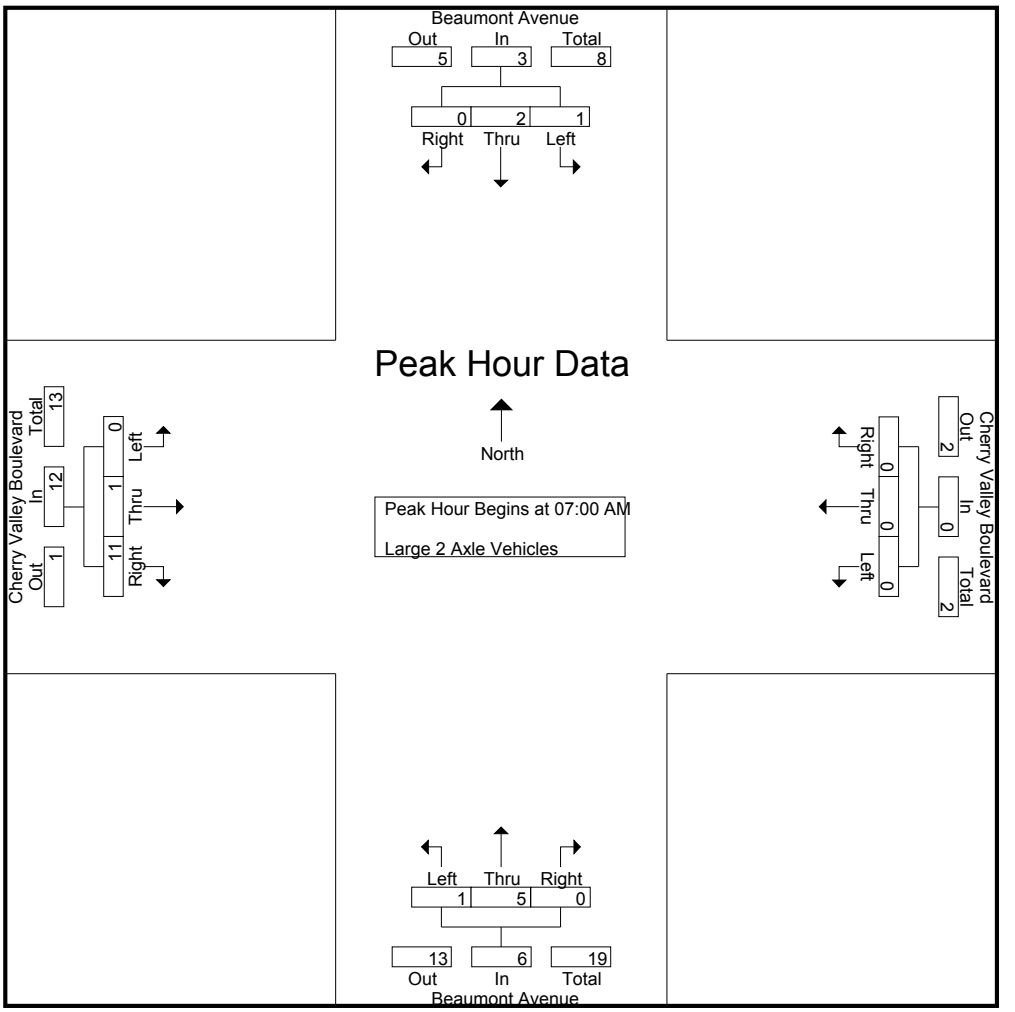

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	**1**	0	1	0	0	0	0	0	**4**	0	**4**	0	0	**3**	**3**
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
+30 mins.	**1**	1	0	**2**	0	0	0	0	0	0	0	0	0	**1**	2	3
+45 mins.	0	0	0	0	0	0	0	0	**1**	1	0	2	0	0	3	3
Total Volume	1	2	0	3	0	0	0	0	1	5	0	6	0	1	11	12
% App. Total	33.3	66.7	0		0	0	0		16.7	83.3	0		0	8.3	91.7	
PHF	.250	.500	.000	.375	.000	.000	.000	.000	.250	.313	.000	.375	.000	.250	.917	1.000

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Groups Printed- 3 Axle Vehicles

	Beaumont Avenue Southbound				Cherry Valley Boulevard Westbound				Beaumont Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
07:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	0	1	0	1	0	0	0	0	0	4	0	4	6
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1	0	1	0	1	0	1	0	0	0	0	0	4	0	4	6
Apprch %	0	100	0		0	100	0		0	0	0		0	100	0		
Total %	0	16.7	0	16.7	0	16.7	0	16.7	0	0	0	0	0	66.7	0	66.7	

	Beaumont Avenue Southbound				Cherry Valley Boulevard Westbound				Beaumont Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	1	0	1	2
07:15 AM	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**	0	**3**	**3**
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	0	1	0	1	0	0	0	0	0	4	0	4	6
% App. Total	0	100	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.250	.000	.250	.000	.250	.000	.250	.000	.000	.000	.000	.000	.333	.000	.333	.500

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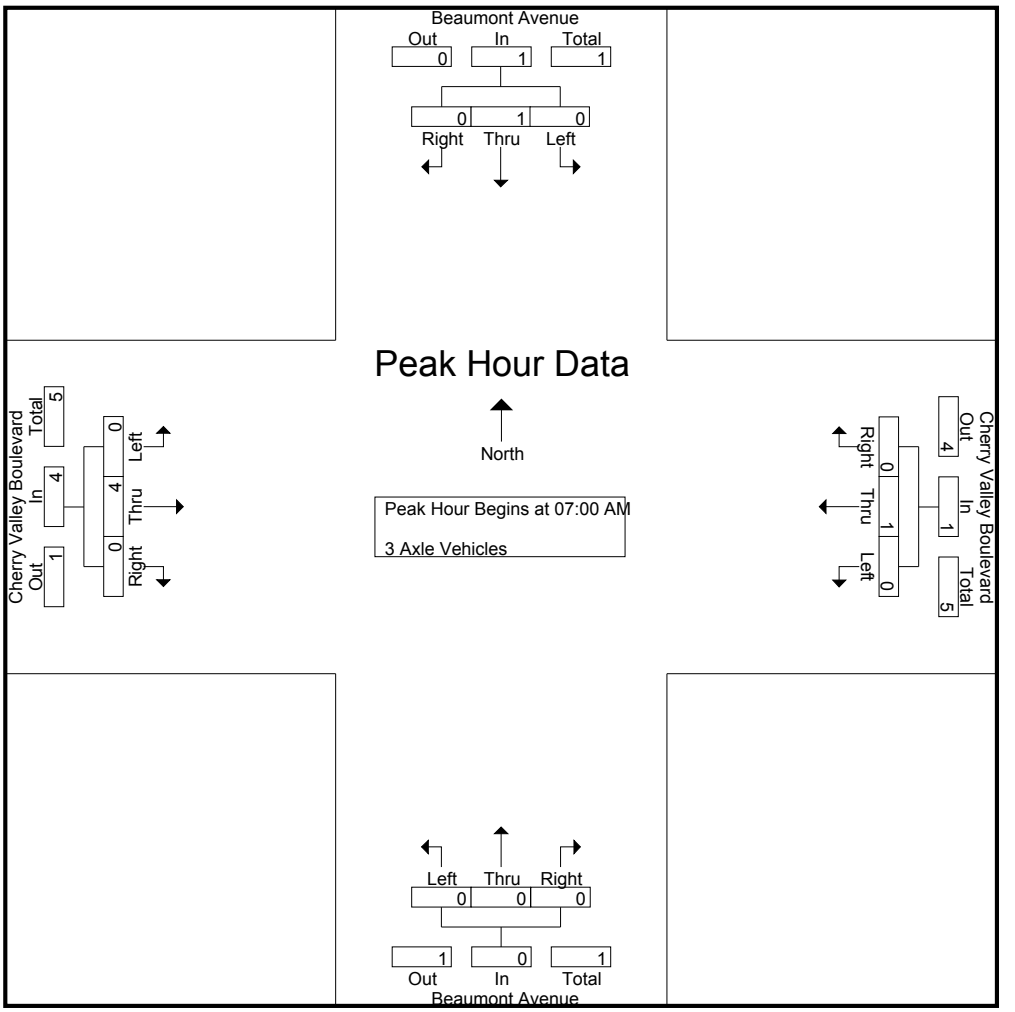

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	1	0	1
+15 mins.	0	**1**	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**	0	**3**
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	0	1	0	1	0	0	0	0	0	4	0	4
% App. Total	0	100	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.250	.000	.250	.000	.250	.000	.250	.000	.000	.000	.000	.000	.333	.000	.333

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Groups Printed- 4+ Axle Trucks

	Beaumont Avenue Southbound				Cherry Valley Boulevard Westbound				Beaumont Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	1	2
Grand Total	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	1	2
Apprch %	0	0	100		0	0	0		0	0	0		100	0	0		
Total %	0	0	50	50	0	0	0	0	0	0	0	0	50	0	0	50	

	Beaumont Avenue Southbound				Cherry Valley Boulevard Westbound				Beaumont Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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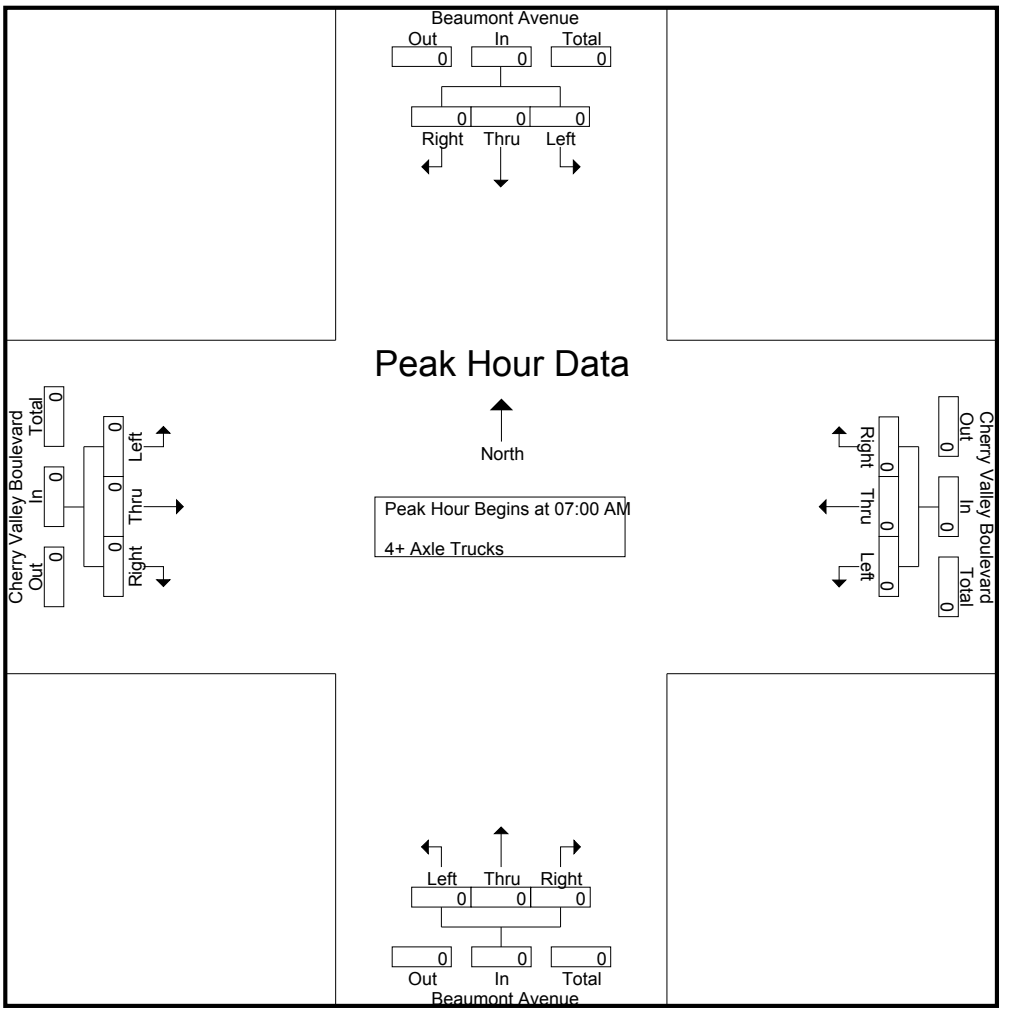

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Beaumont Avenue Southbound				Cherry Valley Boulevard Westbound				Beaumont Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	7	54	10	71	3	6	2	11	31	61	7	99	10	21	26	57	238
04:15 PM	6	40	10	56	7	8	7	22	24	63	0	87	18	17	32	67	232
04:30 PM	5	52	11	68	3	8	1	12	29	52	2	83	10	16	34	60	223
04:45 PM	2	50	12	64	5	7	2	14	30	62	6	98	16	16	24	56	232
Total	20	196	43	259	18	29	12	59	114	238	15	367	54	70	116	240	925
05:00 PM	3	43	12	58	2	12	3	17	33	66	5	104	20	31	36	87	266
05:15 PM	7	56	8	71	0	12	4	16	36	66	1	103	11	27	41	79	269
05:30 PM	7	48	10	65	3	8	3	14	34	72	6	112	16	28	45	89	280
05:45 PM	3	53	7	63	2	15	4	21	37	69	5	111	14	24	62	100	295
Total	20	200	37	257	7	47	14	68	140	273	17	430	61	110	184	355	1110
Grand Total	40	396	80	516	25	76	26	127	254	511	32	797	115	180	300	595	2035
Apprch %	7.8	76.7	15.5		19.7	59.8	20.5		31.9	64.1	4		19.3	30.3	50.4		
Total %	2	19.5	3.9	25.4	1.2	3.7	1.3	6.2	12.5	25.1	1.6	39.2	5.7	8.8	14.7	29.2	
Passenger Vehicles	39	389	76	504	23	75	25	123	248	501	30	779	115	173	292	580	1986
% Passenger Vehicles	97.5	98.2	95	97.7	92	98.7	96.2	96.9	97.6	98	93.8	97.7	100	96.1	97.3	97.5	97.6
Large 2 Axle Vehicles	0	7	3	10	2	1	1	4	5	10	1	16	0	5	8	13	43
% Large 2 Axle Vehicles	0	1.8	3.8	1.9	8	1.3	3.8	3.1	2	2	3.1	2	0	2.8	2.7	2.2	2.1
3 Axle Vehicles	1	0	0	1	0	0	0	0	0	0	0	0	0	2	0	2	3
% 3 Axle Vehicles	2.5	0	0	0.2	0	0	0	0	0	0	0	0	0	1.1	0	0.3	0.1
4+ Axle Trucks	0	0	1	1	0	0	0	0	1	0	1	2	0	0	0	0	3
% 4+ Axle Trucks	0	0	1.2	0.2	0	0	0	0	0.4	0	3.1	0.3	0	0	0	0	0.1

	Beaumont Avenue Southbound				Cherry Valley Boulevard Westbound				Beaumont Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	3	43	**12**	58	2	12	3	17	33	66	5	104	**20**	**31**	36	87	266
05:15 PM	**7**	**56**	8	**71**	0	12	**4**	16	36	66	1	103	11	27	41	79	269
05:30 PM	7	48	10	65	**3**	8	3	14	34	**72**	**6**	**112**	16	28	45	89	280
05:45 PM	3	53	7	63	2	**15**	4	**21**	**37**	69	5	111	14	24	**62**	**100**	**295**
Total Volume	20	200	37	257	7	47	14	68	140	273	17	430	61	110	184	355	1110
% App. Total	7.8	77.8	14.4		10.3	69.1	20.6		32.6	63.5	4		17.2	31	51.8		
PHF	.714	.893	.771	.905	.583	.783	.875	.810	.946	.948	.708	.960	.763	.887	.742	.888	.941

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County of Riverside
N/S: Beaumont Avenue
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRVBECVPM
Site Code : 05114110
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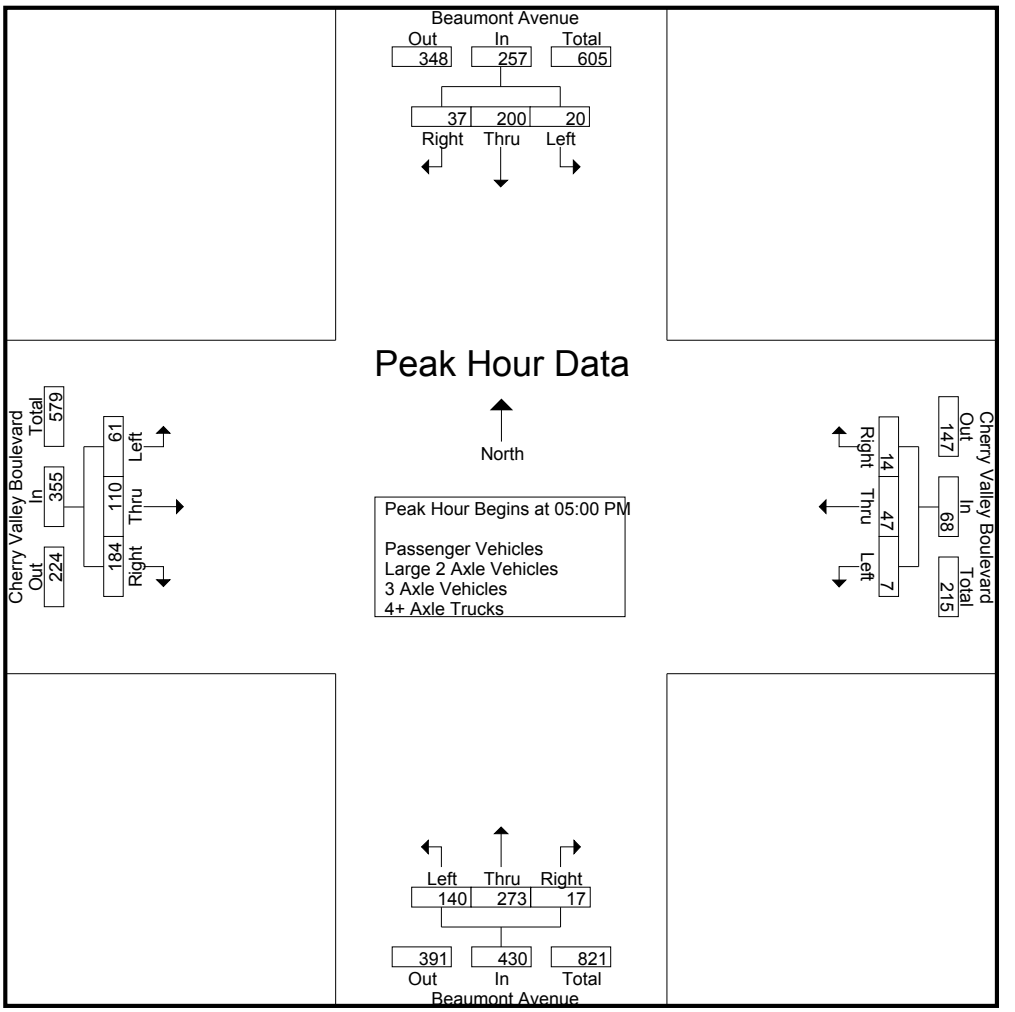

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	5	52	11	68	2	12	3	17	33	66	5	104	**20**	**31**	36	87
+15 mins.	2	50	**12**	64	0	12	**4**	16	36	66	1	103	11	27	41	79
+30 mins.	3	43	12	58	**3**	8	3	14	34	**72**	**6**	**112**	16	28	45	89
+45 mins.	**7**	**56**	8	**71**	2	**15**	4	**21**	**37**	69	5	111	14	24	**62**	**100**
Total Volume	17	201	43	261	7	47	14	68	140	273	17	430	61	110	184	355
% App. Total	6.5	77	16.5		10.3	69.1	20.6		32.6	63.5	4		17.2	31	51.8	
PHF	.607	.897	.896	.919	.583	.783	.875	.810	.946	.948	.708	.960	.763	.887	.742	.888

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File Name : CRVBECVPM
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Groups Printed- Passenger Vehicles

	Beaumont Avenue Southbound				Cherry Valley Boulevard Westbound				Beaumont Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	6	54	10	70	3	6	2	11	31	59	7	97	10	19	25	54	232
04:15 PM	6	39	8	53	6	7	7	20	23	59	0	82	18	15	29	62	217
04:30 PM	5	51	10	66	3	8	1	12	26	52	2	80	10	15	34	59	217
04:45 PM	2	50	11	63	4	7	1	12	29	62	6	97	16	16	24	56	228
Total	19	194	39	252	16	28	11	55	109	232	15	356	54	65	112	231	894
05:00 PM	3	40	12	55	2	12	3	17	33	65	5	103	20	30	35	85	260
05:15 PM	7	55	8	70	0	12	4	16	36	65	1	102	11	26	39	76	264
05:30 PM	7	48	10	65	3	8	3	14	33	71	4	108	16	28	45	89	276
05:45 PM	3	52	7	62	2	15	4	21	37	68	5	110	14	24	61	99	292
Total	20	195	37	252	7	47	14	68	139	269	15	423	61	108	180	349	1092
Grand Total	39	389	76	504	23	75	25	123	248	501	30	779	115	173	292	580	1986
Apprch %	7.7	77.2	15.1		18.7	61	20.3		31.8	64.3	3.9		19.8	29.8	50.3		
Total %	2	19.6	3.8	25.4	1.2	3.8	1.3	6.2	12.5	25.2	1.5	39.2	5.8	8.7	14.7	29.2	

	Beaumont Avenue Southbound				Cherry Valley Boulevard Westbound				Beaumont Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	3	40	**12**	55	2	12	3	17	33	65	**5**	103	**20**	**30**	35	85	260
05:15 PM	**7**	**55**	8	**70**	0	12	**4**	16	36	65	1	102	11	26	39	76	264
05:30 PM	7	48	10	65	**3**	8	3	14	33	**71**	4	108	16	28	45	89	276
05:45 PM	3	52	7	62	2	**15**	4	**21**	**37**	68	5	**110**	14	24	**61**	**99**	**292**
Total Volume	20	195	37	252	7	47	14	68	139	269	15	423	61	108	180	349	1092
% App. Total	7.9	77.4	14.7		10.3	69.1	20.6		32.9	63.6	3.5		17.5	30.9	51.6		
PHF	.714	.886	.771	.900	.583	.783	.875	.810	.939	.947	.750	.961	.763	.900	.738	.881	.935

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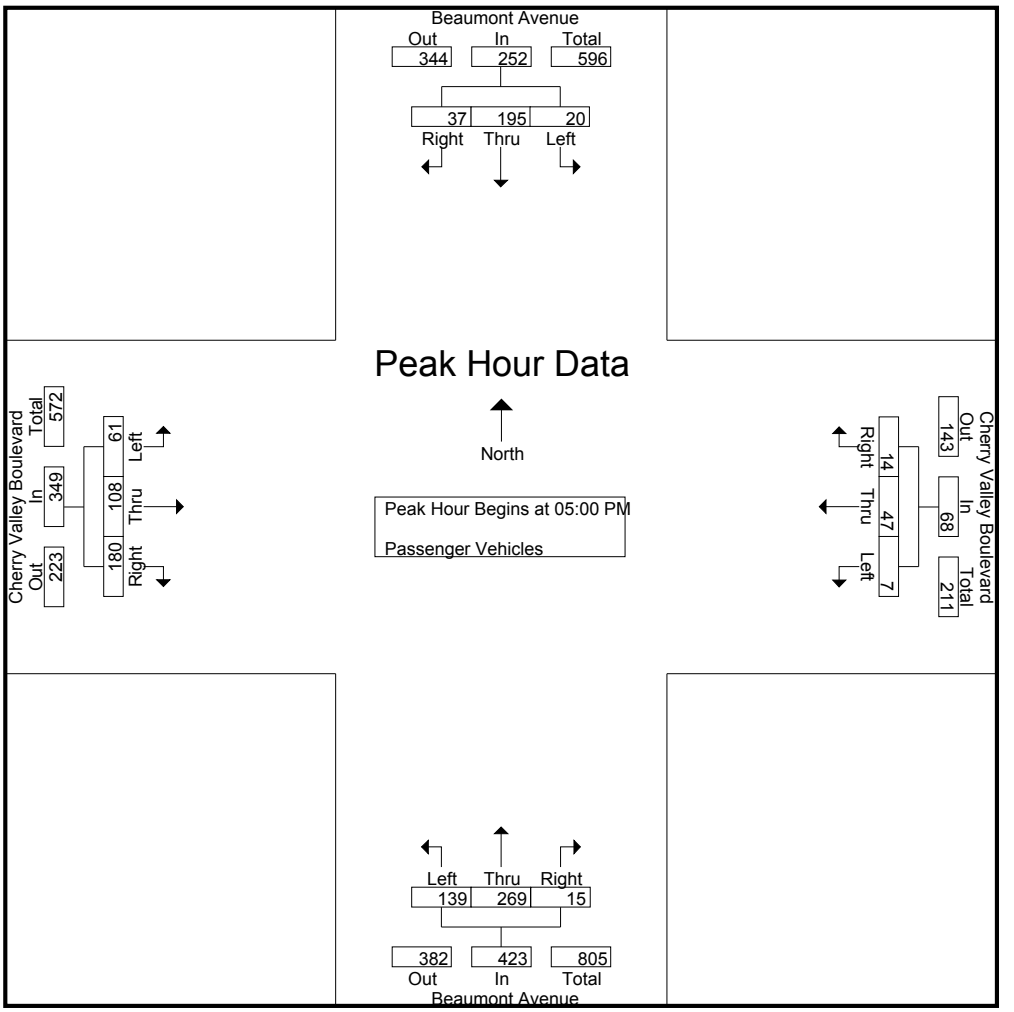

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	5	51	10	66	2	12	3	17	33	65	**5**	103	**20**	**30**	35	85
+15 mins.	2	50	11	63	0	12	**4**	16	36	65	1	102	11	26	39	76
+30 mins.	3	40	**12**	55	**3**	8	3	14	33	**71**	4	108	16	28	45	89
+45 mins.	**7**	**55**	8	**70**	2	**15**	4	**21**	**37**	68	5	**110**	14	24	**61**	**99**
Total Volume	17	196	41	254	7	47	14	68	139	269	15	423	61	108	180	349
% App. Total	6.7	77.2	16.1		10.3	69.1	20.6		32.9	63.6	3.5		17.5	30.9	51.6	
PHF	.607	.891	.854	.907	.583	.783	.875	.810	.939	.947	.750	.961	.763	.900	.738	.881

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Groups Printed- Large 2 Axle Vehicles

	Beaumont Avenue Southbound				Cherry Valley Boulevard Westbound				Beaumont Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	1	1	2	4
04:15 PM	0	1	2	3	1	1	0	2	1	4	0	5	0	1	3	4	14
04:30 PM	0	1	0	1	0	0	0	0	3	0	0	3	0	1	0	1	5
04:45 PM	0	0	1	1	1	0	1	2	0	0	0	0	0	0	0	0	3
Total	0	2	3	5	2	1	1	4	4	6	0	10	0	3	4	7	26
05:00 PM	0	3	0	3	0	0	0	0	0	1	0	1	0	1	1	2	6
05:15 PM	0	1	0	1	0	0	0	0	0	1	0	1	0	1	2	3	5
05:30 PM	0	0	0	0	0	0	0	0	1	1	1	3	0	0	0	0	3
05:45 PM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	1	1	3
Total	0	5	0	5	0	0	0	0	1	4	1	6	0	2	4	6	17
Grand Total	0	7	3	10	2	1	1	4	5	10	1	16	0	5	8	13	43
Apprch %	0	70	30		50	25	25		31.2	62.5	6.2		0	38.5	61.5		
Total %	0	16.3	7	23.3	4.7	2.3	2.3	9.3	11.6	23.3	2.3	37.2	0	11.6	18.6	30.2	

	Beaumont Avenue Southbound				Cherry Valley Boulevard Westbound				Beaumont Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	**3**	0	**3**	0	0	0	0	0	**1**	0	1	0	**1**	1	2	**6**
05:15 PM	0	1	0	1	0	0	0	0	0	1	0	1	0	1	**2**	**3**	5
05:30 PM	0	0	0	0	0	0	0	0	**1**	1	**1**	**3**	0	0	0	0	3
05:45 PM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	1	1	3
Total Volume	0	5	0	5	0	0	0	0	1	4	1	6	0	2	4	6	17
% App. Total	0	100	0		0	0	0		16.7	66.7	16.7		0	33.3	66.7		
PHF	.000	.417	.000	.417	.000	.000	.000	.000	.250	1.00	.250	.500	.000	.500	.500	.500	.708

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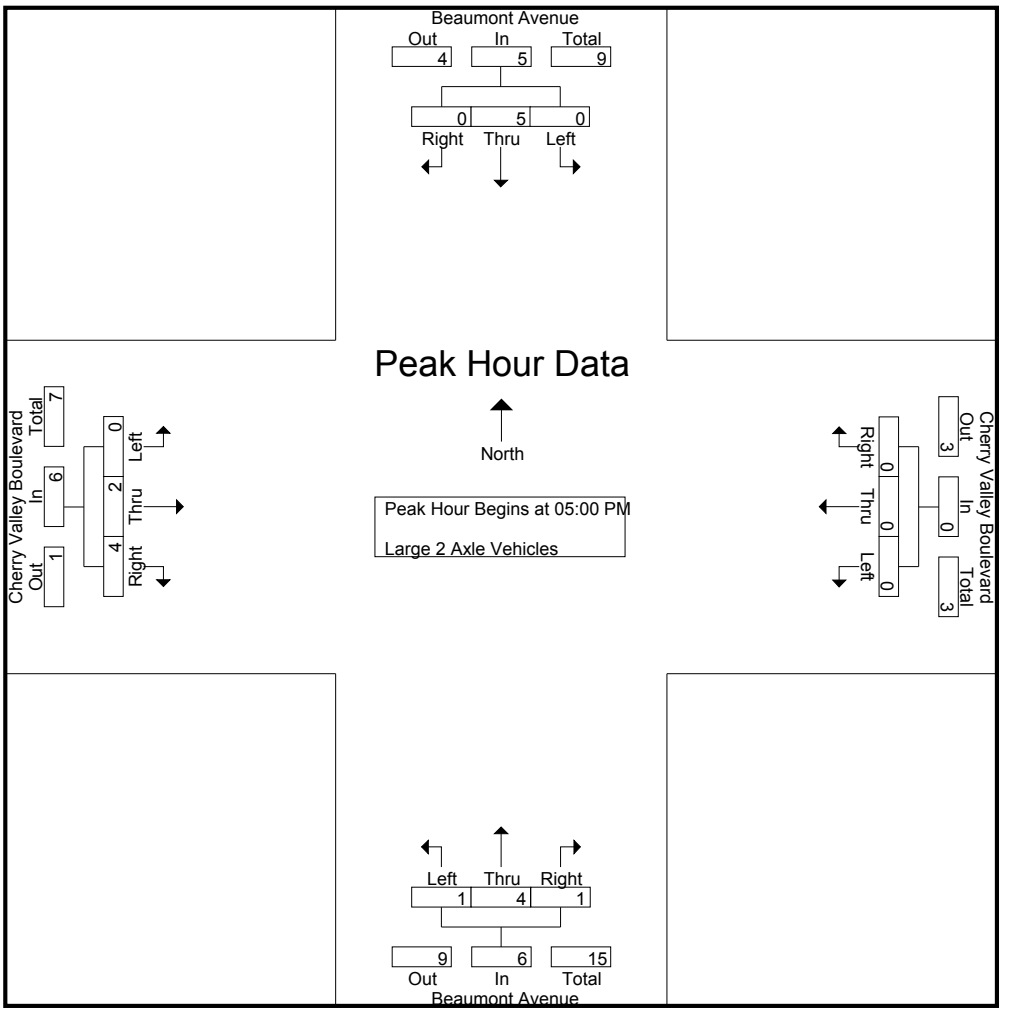

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	**3**	0	**3**	0	0	0	0	0	**1**	0	1	0	**1**	1	2
+15 mins.	0	1	0	1	0	0	0	0	0	1	0	1	0	1	**2**	**3**
+30 mins.	0	0	0	0	0	0	0	0	**1**	1	**1**	**3**	0	0	0	0
+45 mins.	0	1	0	1	0	0	0	0	0	1	0	1	0	0	1	1
Total Volume	0	5	0	5	0	0	0	0	1	4	1	6	0	2	4	6
% App. Total	0	100	0		0	0	0		16.7	66.7	16.7		0	33.3	66.7	
PHF	.000	.417	.000	.417	.000	.000	.000	.000	.250	1.000	.250	.500	.000	.500	.500	.500

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Groups Printed- 3 Axle Vehicles

	Beaumont Avenue Southbound				Cherry Valley Boulevard Westbound				Beaumont Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	1	0	0	0	0	0	0	0	0	0	2	0	2	3
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1	0	0	1	0	0	0	0	0	0	0	0	0	2	0	2	3
Apprch %	100	0	0		0	0	0		0	0	0		0	100	0		
Total %	33.3	0	0	33.3	0	0	0	0	0	0	0	0	0	66.7	0	66.7	

	Beaumont Avenue Southbound				Cherry Valley Boulevard Westbound				Beaumont Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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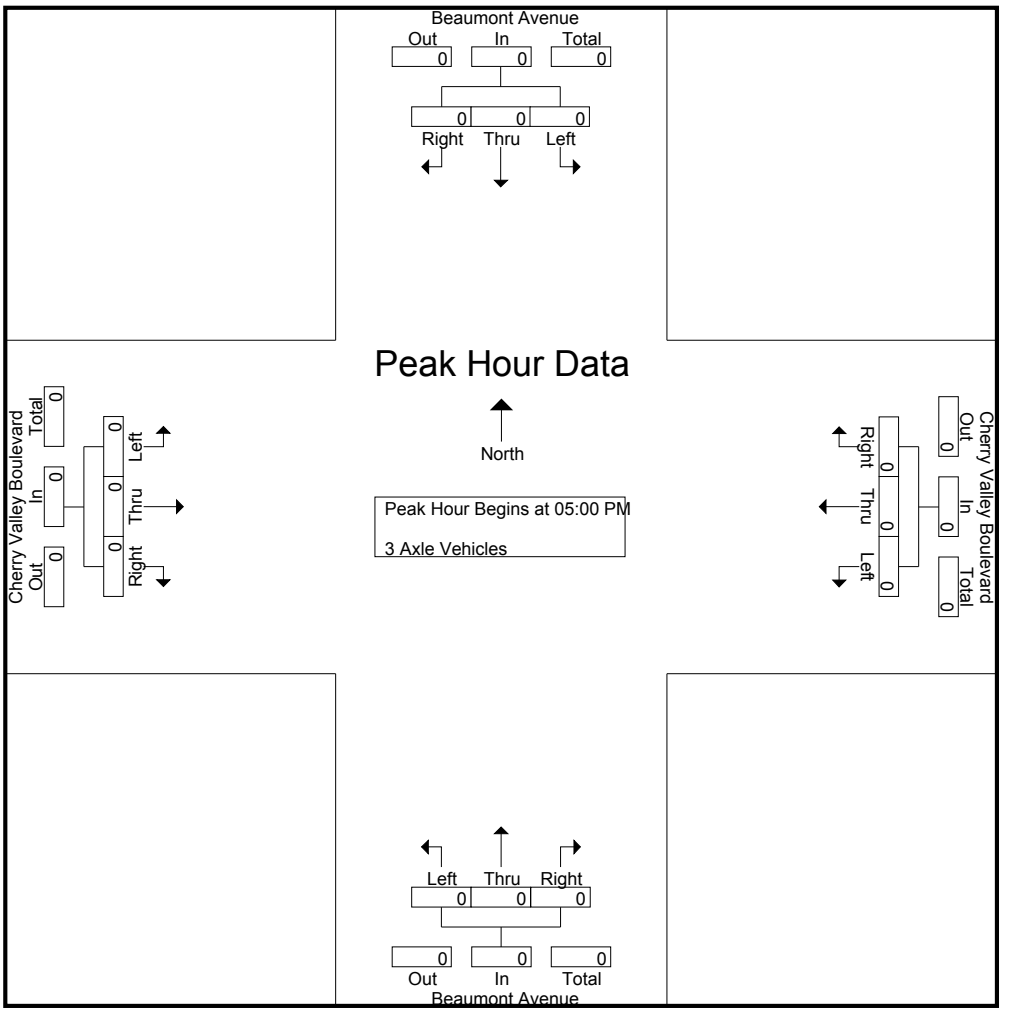

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- 4+ Axle Trucks

	Beaumont Avenue Southbound				Cherry Valley Boulevard Westbound				Beaumont Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
Total	0	0	1	1	0	0	0	0	1	0	0	1	0	0	0	0	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
Grand Total	0	0	1	1	0	0	0	0	1	0	1	2	0	0	0	0	3
Apprch %	0	0	100		0	0	0		50	0	50		0	0	0		
Total %	0	0	33.3	33.3	0	0	0	0	33.3	0	33.3	66.7	0	0	0	0	

	Beaumont Avenue Southbound				Cherry Valley Boulevard Westbound				Beaumont Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	0	0	0	**1**
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
% App. Total	0	0	0		0	0	0		0	0	100		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.000	.000	.000	.000	.250

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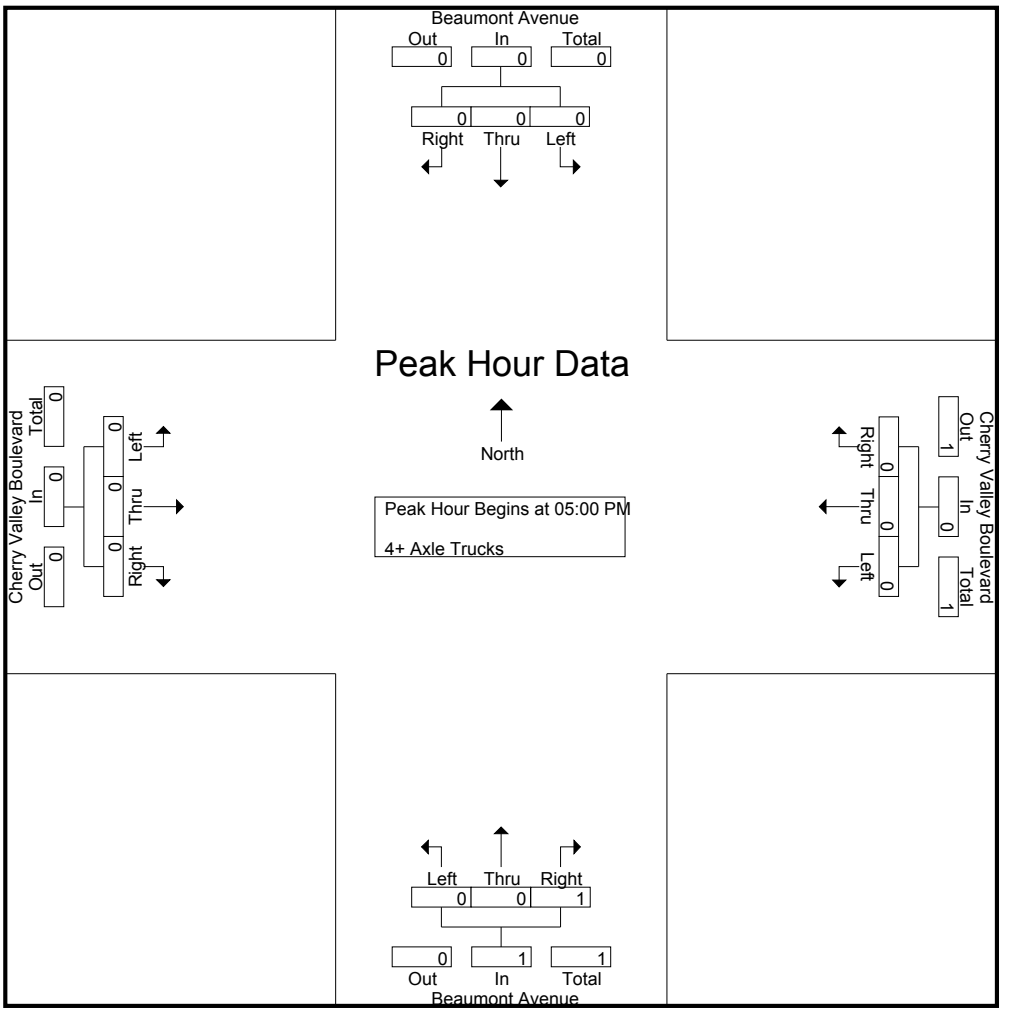

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	100		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.000	.000	.000	.000

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County of Riverside
N/S: Calimesa Boulevard
E/W: Cherry Valley Boulevard
Weather: Clear

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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Calimesa Boulevard Southbound			Cherry Valley Boulevard Westbound			Cherry Valley Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	5	5	10	111	3	114	4	51	55	179
07:15 AM	5	1	6	133	3	136	3	47	50	192
07:30 AM	3	5	8	111	2	113	5	30	35	156
07:45 AM	5	5	10	79	1	80	3	45	48	138
Total	18	16	34	434	9	443	15	173	188	665
08:00 AM	6	2	8	82	3	85	4	31	35	128
08:15 AM	4	3	7	76	5	81	1	37	38	126
08:30 AM	7	2	9	88	5	93	4	28	32	134
08:45 AM	3	4	7	76	5	81	2	26	28	116
Total	20	11	31	322	18	340	11	122	133	504
Grand Total	38	27	65	756	27	783	26	295	321	1169
Apprch %	58.5	41.5		96.6	3.4		8.1	91.9		
Total %	3.3	2.3	5.6	64.7	2.3	67	2.2	25.2	27.5	
Passenger Vehicles	38	26	64	745	25	770	24	283	307	1141
% Passenger Vehicles	100	96.3	98.5	98.5	92.6	98.3	92.3	95.9	95.6	97.6
Large 2 Axle Vehicles	0	0	0	8	1	9	1	11	12	21
% Large 2 Axle Vehicles	0	0	0	1.1	3.7	1.1	3.8	3.7	3.7	1.8
3 Axle Vehicles	0	0	0	1	1	2	0	0	0	2
% 3 Axle Vehicles	0	0	0	0.1	3.7	0.3	0	0	0	0.2
4+ Axle Trucks	0	1	1	2	0	2	1	1	2	5
% 4+ Axle Trucks	0	3.7	1.5	0.3	0	0.3	3.8	0.3	0.6	0.4

	Calimesa Boulevard Southbound			Cherry Valley Boulevard Westbound			Cherry Valley Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	**5**	**5**	**10**	111	**3**	114	4	**51**	**55**	179
07:15 AM	5	1	6	**133**	3	**136**	3	47	50	**192**
07:30 AM	3	5	8	111	2	113	**5**	30	35	156
07:45 AM	5	5	10	79	1	80	3	45	48	138
Total Volume	18	16	34	434	9	443	15	173	188	665
% App. Total	52.9	47.1		98	2		8	92		
PHF	.900	.800	.850	.816	.750	.814	.750	.848	.855	.866

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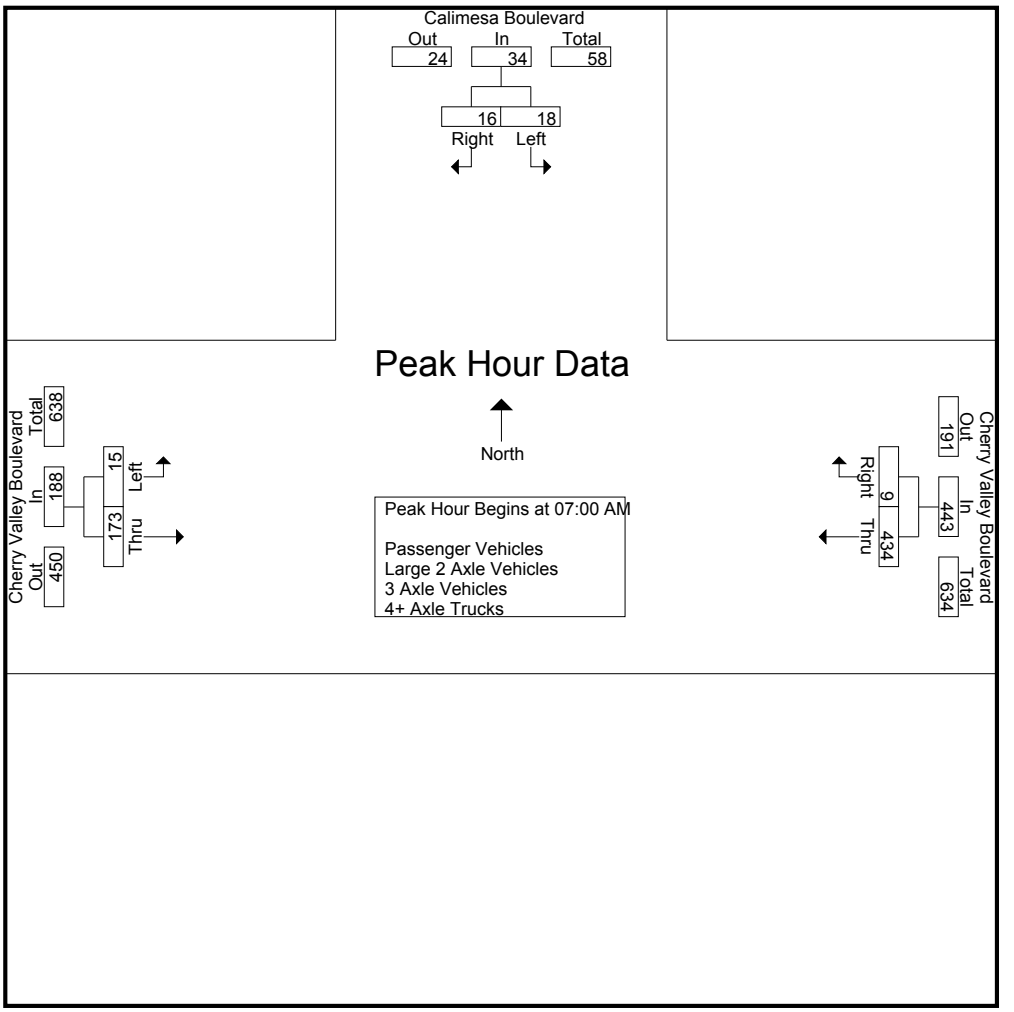

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	**5**	**5**	**10**	111	**3**	114	4	**51**	**55**
+15 mins.	5	1	6	**133**	3	**136**	3	47	50
+30 mins.	3	5	8	111	2	113	**5**	30	35
+45 mins.	5	5	10	79	1	80	3	45	48
Total Volume	18	16	34	434	9	443	15	173	188
% App. Total	52.9	47.1		98	2		8	92	
PHF	.900	.800	.850	.816	.750	.814	.750	.848	.855

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Groups Printed- Passenger Vehicles

	Calimesa Boulevard Southbound			Cherry Valley Boulevard Westbound			Cherry Valley Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	5	4	9	111	3	114	3	51	54	177
07:15 AM	5	1	6	132	3	135	3	47	50	191
07:30 AM	3	5	8	110	1	111	5	27	32	151
07:45 AM	5	5	10	77	1	78	3	44	47	135
Total	18	15	33	430	8	438	14	169	183	654
08:00 AM	6	2	8	77	3	80	3	31	34	122
08:15 AM	4	3	7	75	4	79	1	34	35	121
08:30 AM	7	2	9	88	5	93	4	26	30	132
08:45 AM	3	4	7	75	5	80	2	23	25	112
Total	20	11	31	315	17	332	10	114	124	487
Grand Total	38	26	64	745	25	770	24	283	307	1141
Apprch %	59.4	40.6		96.8	3.2		7.8	92.2		
Total %	3.3	2.3	5.6	65.3	2.2	67.5	2.1	24.8	26.9	

	Calimesa Boulevard Southbound			Cherry Valley Boulevard Westbound			Cherry Valley Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	**5**	4	9	111	**3**	114	3	**51**	**54**	177
07:15 AM	5	1	6	**132**	3	**135**	3	47	50	**191**
07:30 AM	3	**5**	8	110	1	111	**5**	27	32	151
07:45 AM	5	5	**10**	77	1	78	3	44	47	135
Total Volume	18	15	33	430	8	438	14	169	183	654
% App. Total	54.5	45.5		98.2	1.8		7.7	92.3		
PHF	.900	.750	.825	.814	.667	.811	.700	.828	.847	.856

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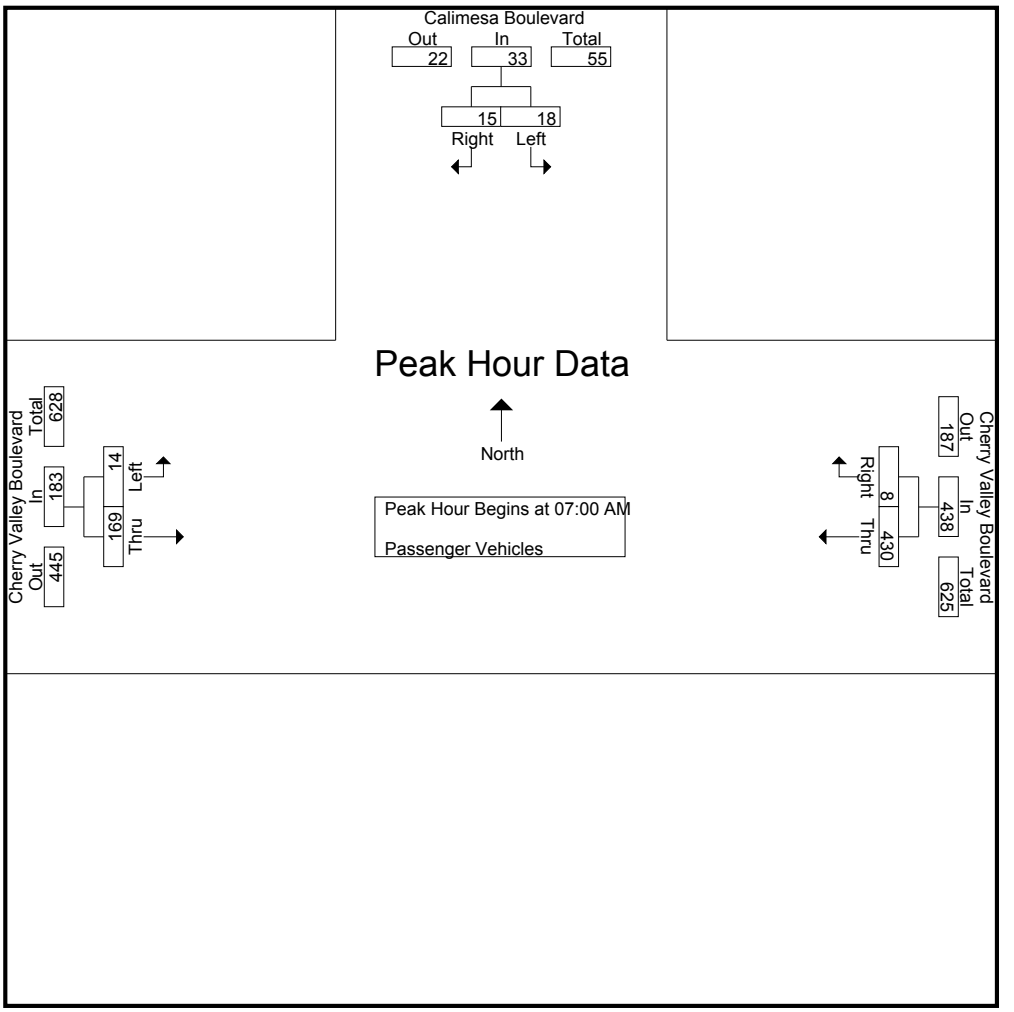

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			07:00 AM			07:00 AM		
+0 mins.	5	**5**	**10**	111	**3**	114	3	**51**	**54**
+15 mins.	6	2	8	**132**	3	**135**	3	47	50
+30 mins.	4	3	7	110	1	111	**5**	27	32
+45 mins.	**7**	2	9	77	1	78	3	44	47
Total Volume	22	12	34	430	8	438	14	169	183
% App. Total	64.7	35.3		98.2	1.8		7.7	92.3	
PHF	.786	.600	.850	.814	.667	.811	.700	.828	.847

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Groups Printed- Large 2 Axle Vehicles

	Calimesa Boulevard Southbound			Cherry Valley Boulevard Westbound			Cherry Valley Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	1	0	1	0	0	0	1
07:30 AM	0	0	0	1	0	1	0	3	3	4
07:45 AM	0	0	0	2	0	2	0	1	1	3
Total	0	0	0	4	0	4	0	4	4	8
08:00 AM	0	0	0	4	0	4	1	0	1	5
08:15 AM	0	0	0	0	1	1	0	3	3	4
08:30 AM	0	0	0	0	0	0	0	1	1	1
08:45 AM	0	0	0	0	0	0	0	3	3	3
Total	0	0	0	4	1	5	1	7	8	13
Grand Total	0	0	0	8	1	9	1	11	12	21
Apprch %	0	0		88.9	11.1		8.3	91.7		
Total %	0	0	0	38.1	4.8	42.9	4.8	52.4	57.1	

	Calimesa Boulevard Southbound			Cherry Valley Boulevard Westbound			Cherry Valley Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	1	0	1	0	0	0	1
07:30 AM	0	0	0	1	0	1	0	**3**	**3**	**4**
07:45 AM	0	0	0	**2**	0	**2**	0	1	1	3
Total Volume	0	0	0	4	0	4	0	4	4	8
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.500	.000	.500	.000	.333	.333	.500

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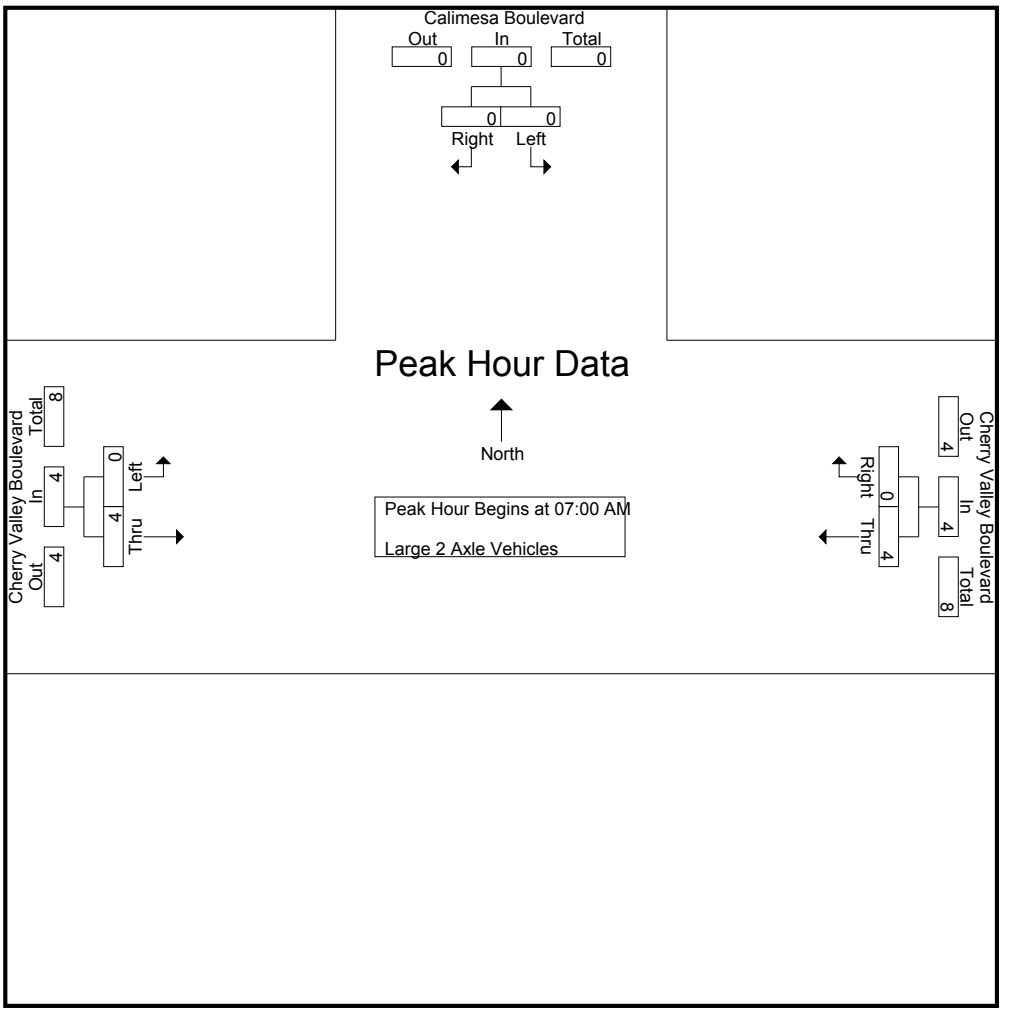

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	1	0	1	0	0	0
+30 mins.	0	0	0	1	0	1	0	**3**	**3**
+45 mins.	0	0	0	**2**	0	**2**	0	1	1
Total Volume	0	0	0	4	0	4	0	4	4
% App. Total	0	0		100	0		0	100	
PHF	.000	.000	.000	.500	.000	.500	.000	.333	.333

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Groups Printed- 3 Axle Vehicles

	Calimesa Boulevard Southbound			Cherry Valley Boulevard Westbound			Cherry Valley Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	1	1	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	1	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	1	0	1	0	0	0	1
Total	0	0	0	1	0	1	0	0	0	1
Grand Total	0	0	0	1	1	2	0	0	0	2
Apprch %	0	0		50	50		0	0		
Total %	0	0	0	50	50	100	0	0	0	

	Calimesa Boulevard Southbound			Cherry Valley Boulevard Westbound			Cherry Valley Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	**1**	**1**	0	0	0	**1**
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	1	1	0	0	0	1
% App. Total	0	0		0	100		0	0		
PHF	.000	.000	.000	.000	.250	.250	.000	.000	.000	.250

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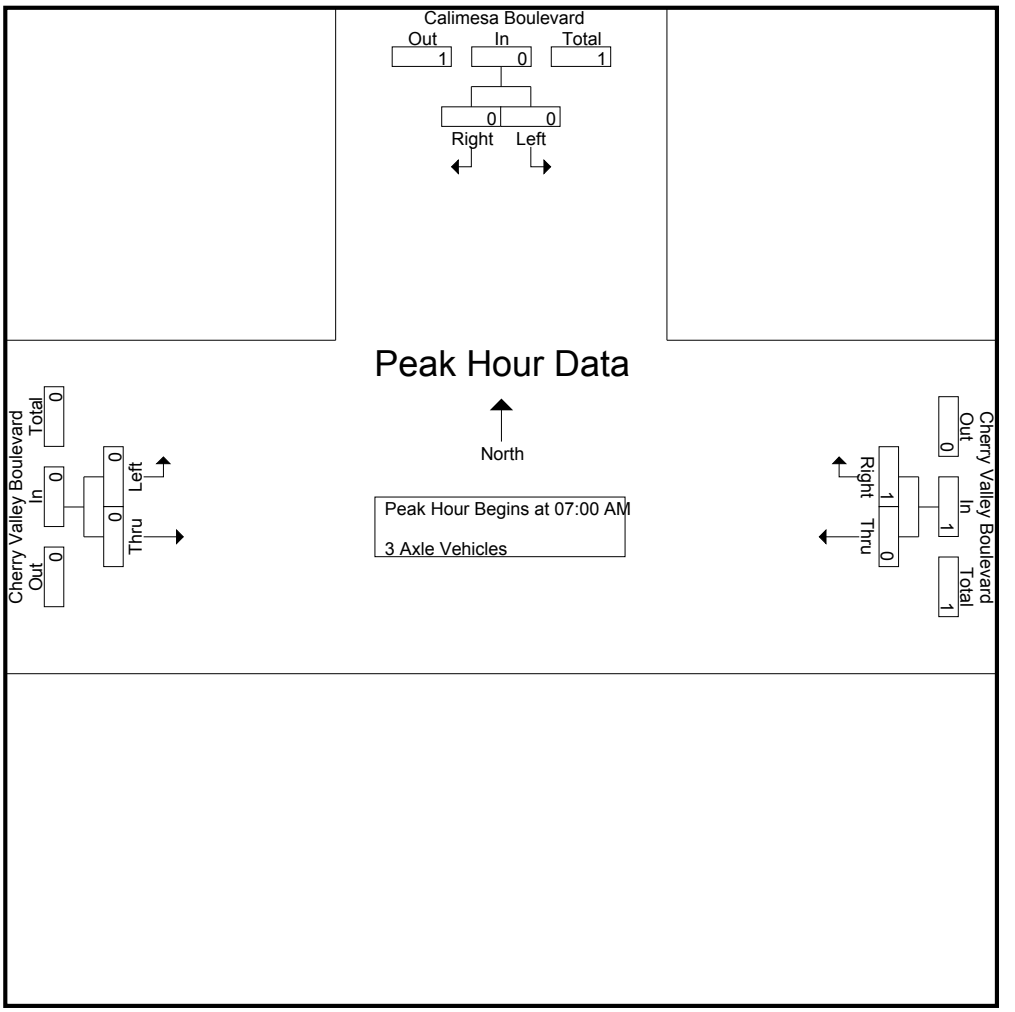

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	**1**	**1**	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	1	1	0	0	0
% App. Total	0	0		0	100		0	0	
PHF	.000	.000	.000	.000	.250	.250	.000	.000	.000

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Groups Printed- 4+ Axle Trucks

	Calimesa Boulevard Southbound			Cherry Valley Boulevard Westbound			Cherry Valley Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	0	1	1	0	0	0	1	0	1	2
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	1	1	0	0	0	1	0	1	2
08:00 AM	0	0	0	1	0	1	0	0	0	1
08:15 AM	0	0	0	1	0	1	0	0	0	1
08:30 AM	0	0	0	0	0	0	0	1	1	1
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	0	2	0	1	1	3
Grand Total	0	1	1	2	0	2	1	1	2	5
Apprch %	0	100		100	0		50	50		
Total %	0	20	20	40	0	40	20	20	40	

	Calimesa Boulevard Southbound			Cherry Valley Boulevard Westbound			Cherry Valley Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	**1**	**1**	0	0	0	**1**	0	**1**	**2**
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	1	0	0	0	1	0	1	2
% App. Total	0	100		0	0		100	0		
PHF	.000	.250	.250	.000	.000	.000	.250	.000	.250	.250

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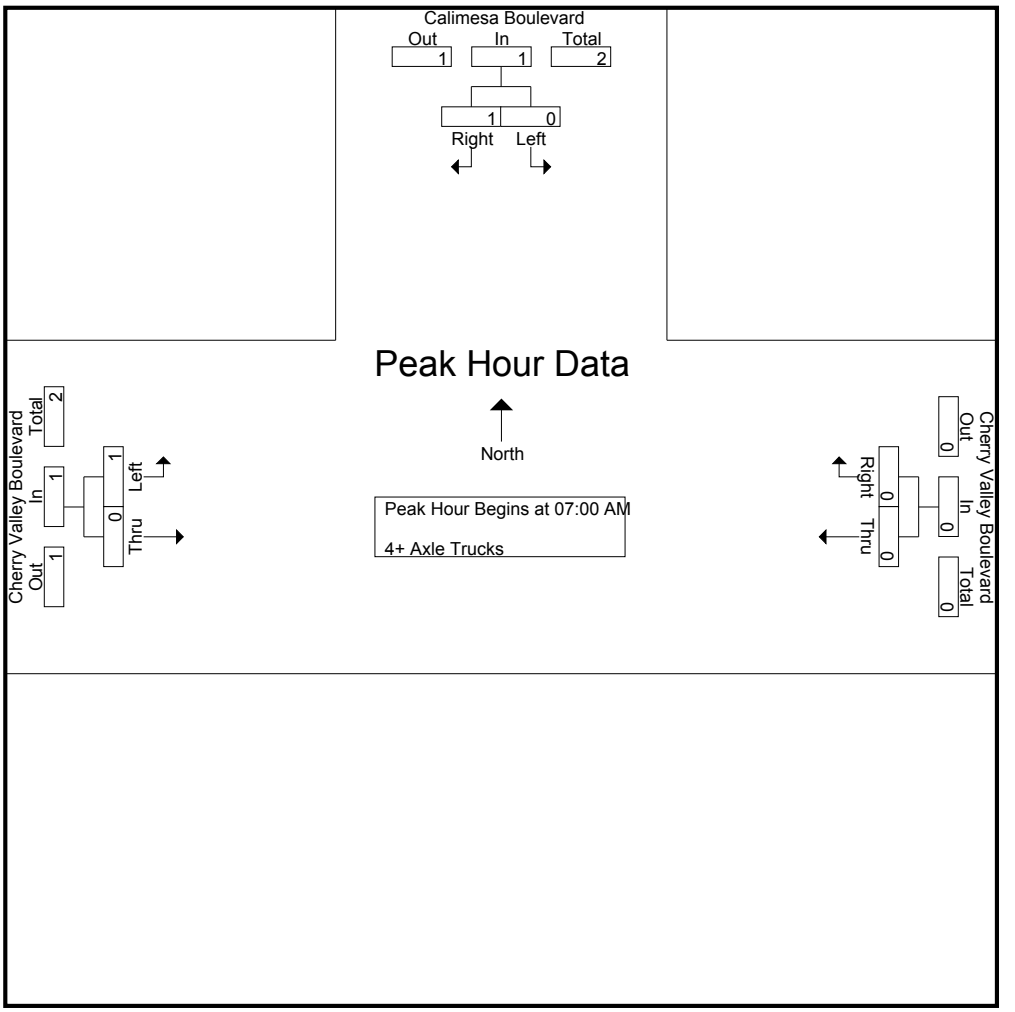

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	**1**	**1**	0	0	0	**1**	0	**1**
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	1	1	0	0	0	1	0	1
% App. Total	0	100		0	0		100	0	
PHF	.000	.250	.250	.000	.000	.000	.250	.000	.250

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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Calimesa Boulevard Southbound			Cherry Valley Boulevard Westbound			Cherry Valley Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	5	4	9	52	0	52	4	79	83	144
04:15 PM	7	2	9	44	4	48	3	85	88	145
04:30 PM	10	3	13	45	5	50	7	83	90	153
04:45 PM	8	5	13	39	3	42	4	99	103	158
Total	30	14	44	180	12	192	18	346	364	600
05:00 PM	7	4	11	39	3	42	1	88	89	142
05:15 PM	5	7	12	59	4	63	12	71	83	158
05:30 PM	6	3	9	60	4	64	4	104	108	181
05:45 PM	8	1	9	62	2	64	6	75	81	154
Total	26	15	41	220	13	233	23	338	361	635
Grand Total	56	29	85	400	25	425	41	684	725	1235
Apprch %	65.9	34.1		94.1	5.9		5.7	94.3		
Total %	4.5	2.3	6.9	32.4	2	34.4	3.3	55.4	58.7	
Passenger Vehicles	56	28	84	390	25	415	41	675	716	1215
% Passenger Vehicles	100	96.6	98.8	97.5	100	97.6	100	98.7	98.8	98.4
Large 2 Axle Vehicles	0	1	1	7	0	7	0	7	7	15
% Large 2 Axle Vehicles	0	3.4	1.2	1.8	0	1.6	0	1	1	1.2
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	0	0	0	3	0	3	0	2	2	5
% 4+ Axle Trucks	0	0	0	0.8	0	0.7	0	0.3	0.3	0.4

	Calimesa Boulevard Southbound			Cherry Valley Boulevard Westbound			Cherry Valley Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	**8**	5	**13**	39	3	42	4	99	103	158
05:00 PM	7	4	11	39	3	42	1	88	89	142
05:15 PM	5	**7**	12	59	**4**	63	**12**	71	83	158
05:30 PM	6	3	9	**60**	4	**64**	4	**104**	**108**	**181**
Total Volume	26	19	45	197	14	211	21	362	383	639
% App. Total	57.8	42.2		93.4	6.6		5.5	94.5		
PHF	.813	.679	.865	.821	.875	.824	.438	.870	.887	.883

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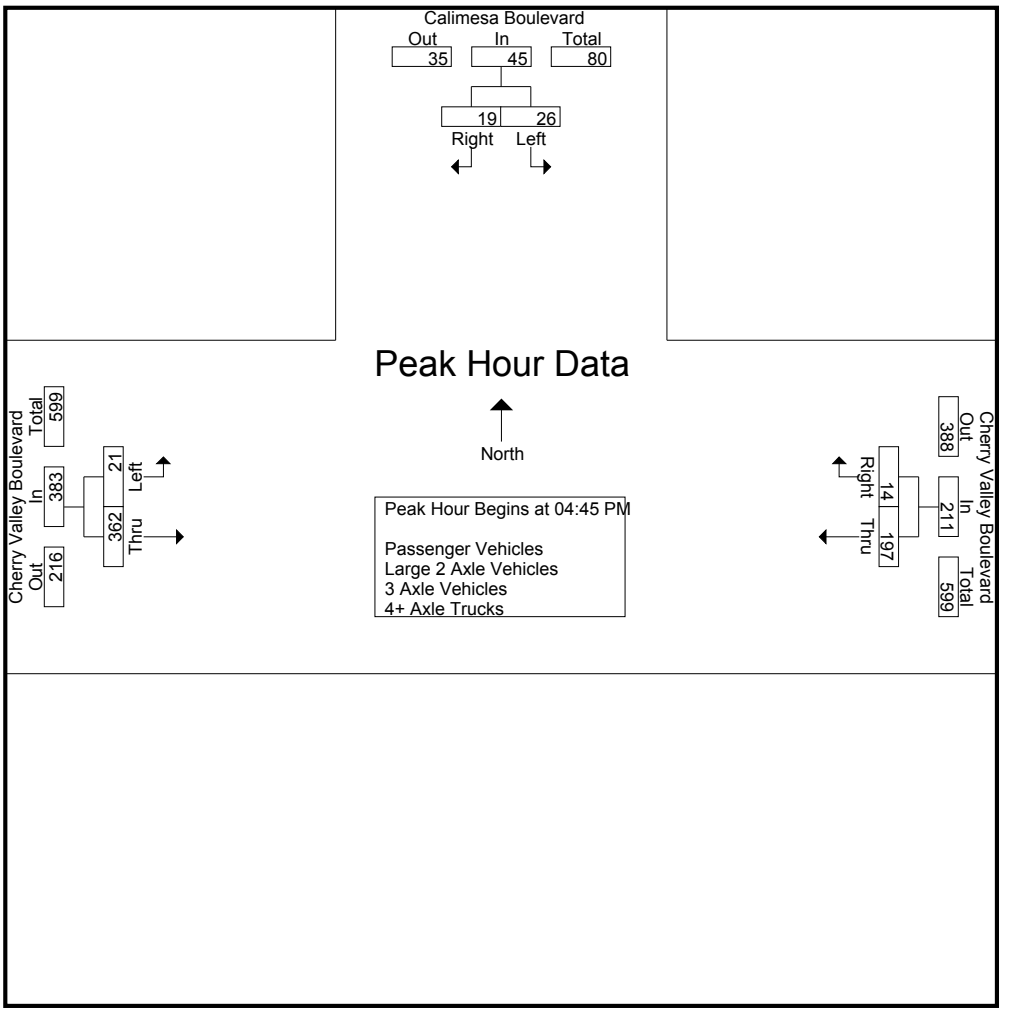

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			05:00 PM			04:45 PM		
+0 mins.	**10**	3	**13**	39	3	42	4	99	103
+15 mins.	8	5	13	59	**4**	63	1	88	89
+30 mins.	7	4	11	60	4	**64**	**12**	71	83
+45 mins.	5	**7**	12	**62**	2	64	4	**104**	**108**
Total Volume	30	19	49	220	13	233	21	362	383
% App. Total	61.2	38.8		94.4	5.6		5.5	94.5	
PHF	.750	.679	.942	.887	.813	.910	.438	.870	.887

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(951) 268-6268

County of Riverside
N/S: Calimesa Boulevard
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRVCACVPM
Site Code : 05114110
Start Date : 4/1/2014
Page No : 1

Groups Printed- Passenger Vehicles

	Calimesa Boulevard Southbound			Cherry Valley Boulevard Westbound			Cherry Valley Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	5	4	9	51	0	51	4	79	83	143
04:15 PM	7	2	9	42	4	46	3	83	86	141
04:30 PM	10	3	13	43	5	48	7	83	90	151
04:45 PM	8	5	13	38	3	41	4	99	103	157
Total	30	14	44	174	12	186	18	344	362	592
05:00 PM	7	4	11	38	3	41	1	86	87	139
05:15 PM	5	6	11	59	4	63	12	70	82	156
05:30 PM	6	3	9	59	4	63	4	102	106	178
05:45 PM	8	1	9	60	2	62	6	73	79	150
Total	26	14	40	216	13	229	23	331	354	623
Grand Total	56	28	84	390	25	415	41	675	716	1215
Apprch %	66.7	33.3		94	6		5.7	94.3		
Total %	4.6	2.3	6.9	32.1	2.1	34.2	3.4	55.6	58.9	

	Calimesa Boulevard Southbound			Cherry Valley Boulevard Westbound			Cherry Valley Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	**8**	5	**13**	38	3	41	4	99	103	157
05:00 PM	7	4	11	38	3	41	1	86	87	139
05:15 PM	5	**6**	11	**59**	**4**	**63**	**12**	70	82	156
05:30 PM	6	3	9	59	4	63	4	**102**	**106**	**178**
Total Volume	26	18	44	194	14	208	21	357	378	630
% App. Total	59.1	40.9		93.3	6.7		5.6	94.4		
PHF	.813	.750	.846	.822	.875	.825	.438	.875	.892	.885

CVAR_11390

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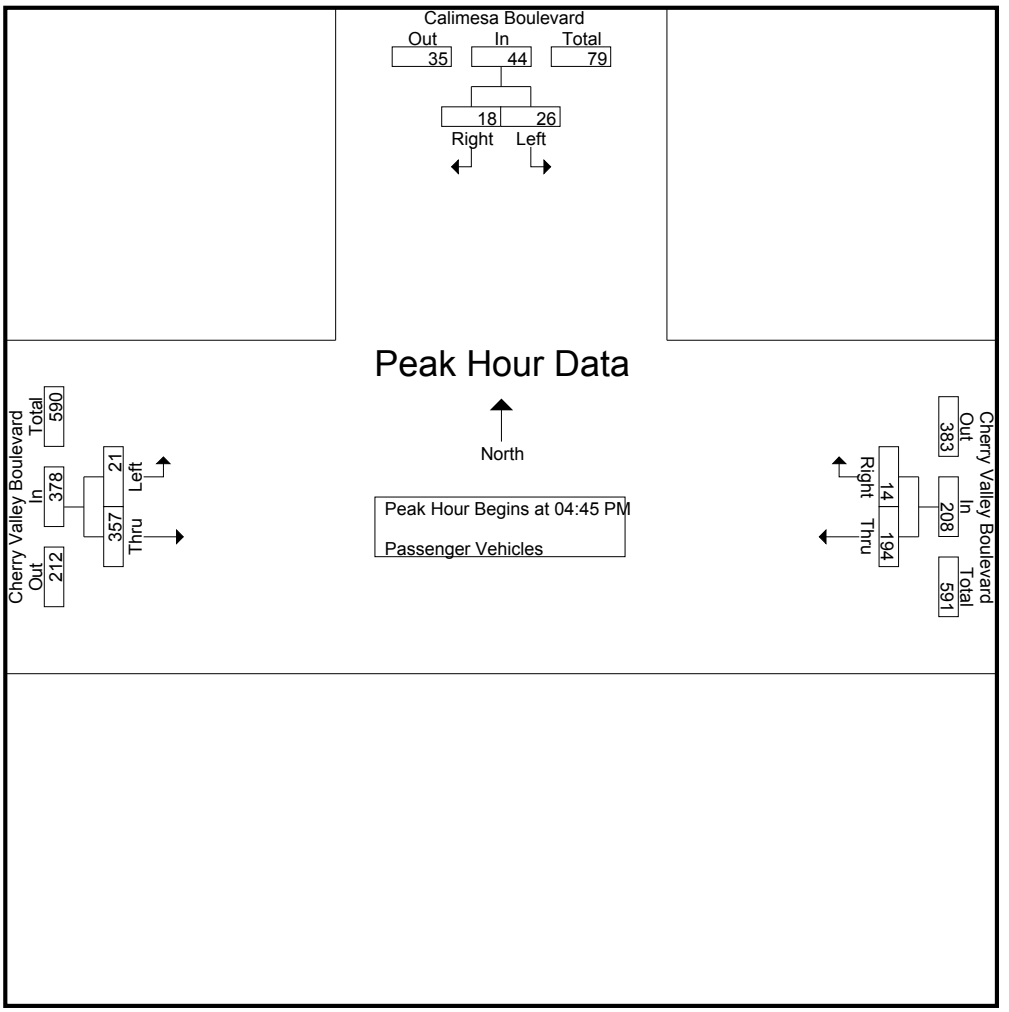

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			05:00 PM			04:45 PM		
+0 mins.	**10**	3	**13**	38	3	41	4	99	103
+15 mins.	8	5	13	59	**4**	**63**	1	86	87
+30 mins.	7	4	11	59	4	63	**12**	70	82
+45 mins.	5	**6**	11	**60**	2	62	4	**102**	**106**
Total Volume	30	18	48	216	13	229	21	357	378
% App. Total	62.5	37.5		94.3	5.7		5.6	94.4	
PHF	.750	.750	.923	.900	.813	.909	.438	.875	.892

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File Name : CRVCACVPM
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Groups Printed- Large 2 Axle Vehicles

	Calimesa Boulevard Southbound			Cherry Valley Boulevard Westbound			Cherry Valley Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	0	0	0	1	0	1	0	0	0	1
04:15 PM	0	0	0	1	0	1	0	2	2	3
04:30 PM	0	0	0	1	0	1	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	3	0	3	0	2	2	5
05:00 PM	0	0	0	1	0	1	0	2	2	3
05:15 PM	0	1	1	0	0	0	0	1	1	2
05:30 PM	0	0	0	1	0	1	0	1	1	2
05:45 PM	0	0	0	2	0	2	0	1	1	3
Total	0	1	1	4	0	4	0	5	5	10
Grand Total	0	1	1	7	0	7	0	7	7	15
Apprch %	0	100		100	0		0	100		
Total %	0	6.7	6.7	46.7	0	46.7	0	46.7	46.7	

	Calimesa Boulevard Southbound			Cherry Valley Boulevard Westbound			Cherry Valley Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	**1**	0	**1**	0	**2**	**2**	**3**
05:15 PM	0	**1**	**1**	0	0	0	0	1	1	2
05:30 PM	0	0	0	1	0	1	0	1	1	2
Total Volume	0	1	1	2	0	2	0	4	4	7
% App. Total	0	100		100	0		0	100		
PHF	.000	.250	.250	.500	.000	.500	.000	.500	.500	.583

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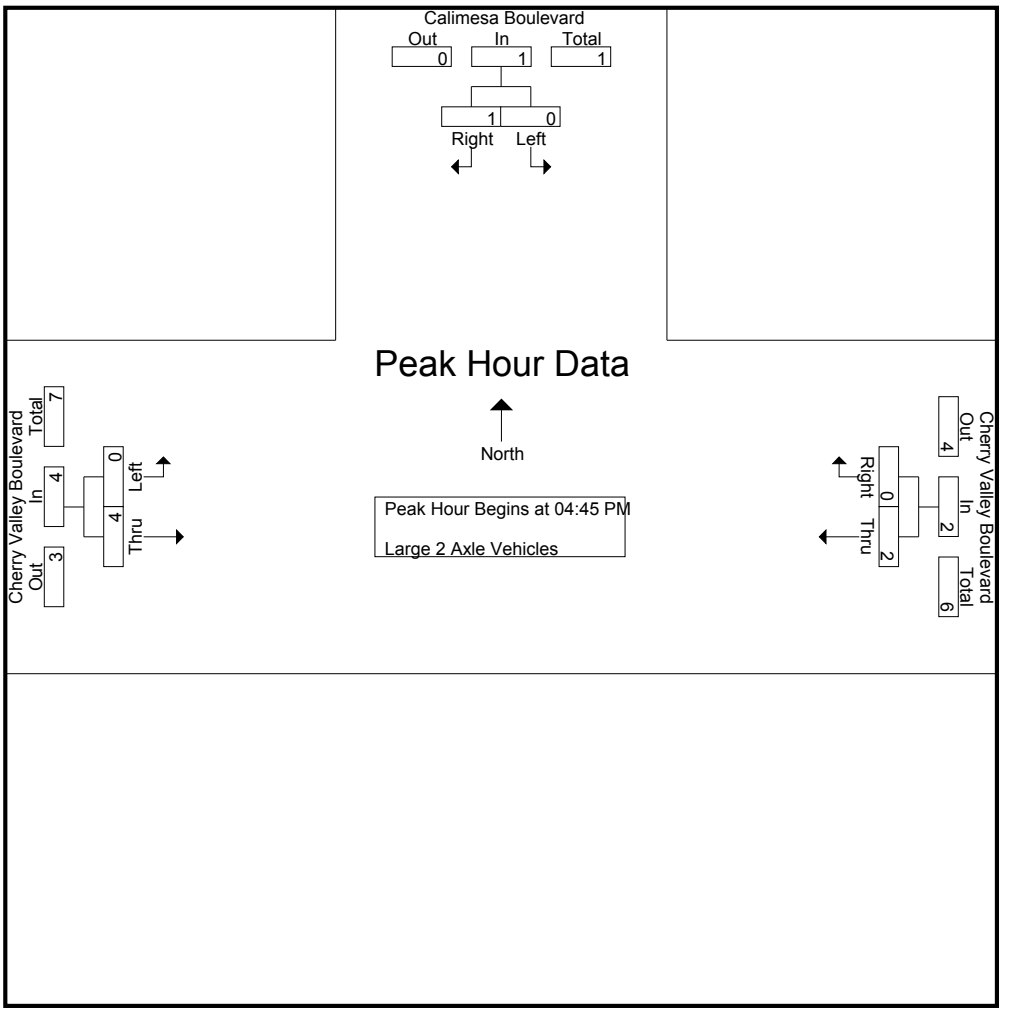

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:45 PM			04:45 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	**1**	0	**1**	0	**2**	**2**
+30 mins.	0	**1**	**1**	0	0	0	0	1	1
+45 mins.	0	0	0	1	0	1	0	1	1
Total Volume	0	1	1	2	0	2	0	4	4
% App. Total	0	100		100	0		0	100	
PHF	.000	.250	.250	.500	.000	.500	.000	.500	.500

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Groups Printed- 3 Axle Vehicles

	Calimesa Boulevard Southbound			Cherry Valley Boulevard Westbound			Cherry Valley Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0		
Total %										

	Calimesa Boulevard Southbound			Cherry Valley Boulevard Westbound			Cherry Valley Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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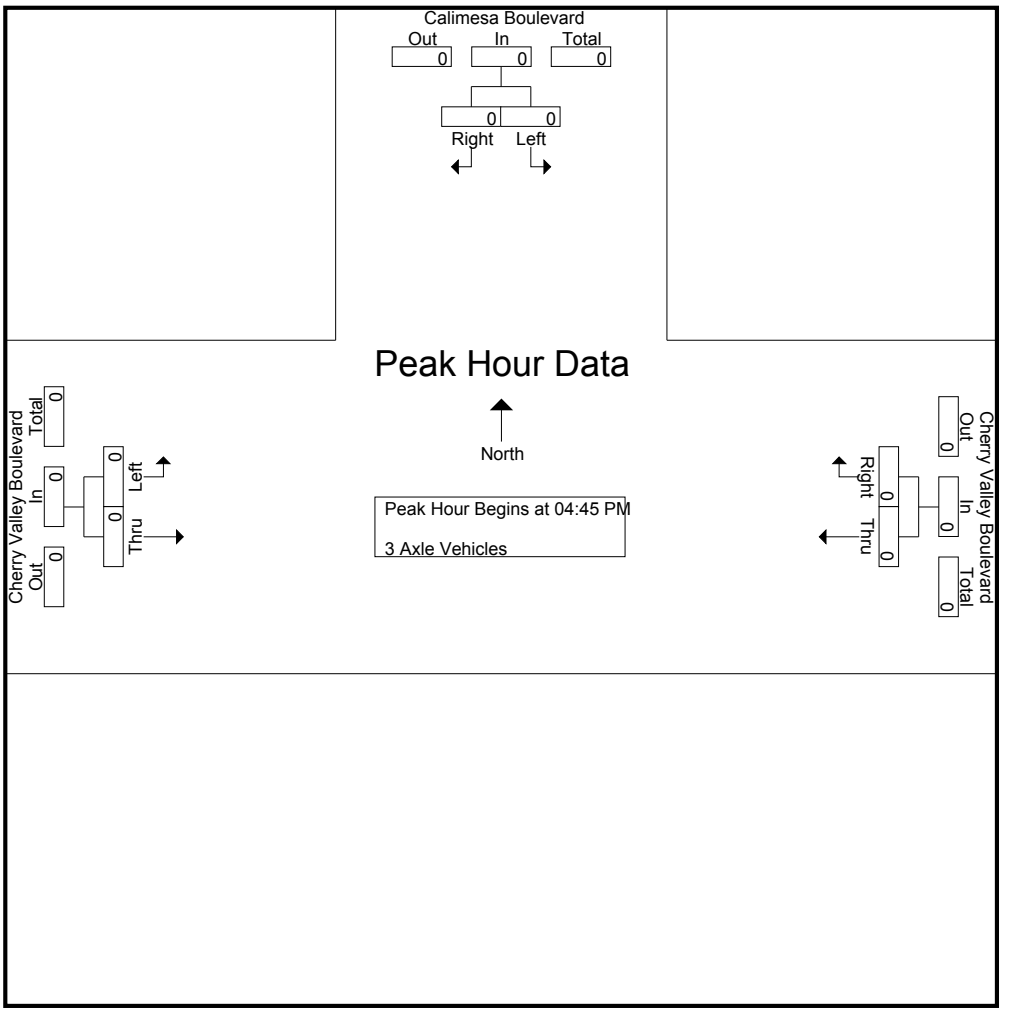

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:45 PM			04:45 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

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File Name : CRVCACVPM
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Groups Printed- 4+ Axle Trucks

	Calimesa Boulevard Southbound			Cherry Valley Boulevard Westbound			Cherry Valley Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	1	0	1	0	0	0	1
04:30 PM	0	0	0	1	0	1	0	0	0	1
04:45 PM	0	0	0	1	0	1	0	0	0	1
Total	0	0	0	3	0	3	0	0	0	3
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	1	1	1
05:45 PM	0	0	0	0	0	0	0	1	1	1
Total	0	0	0	0	0	0	0	2	2	2
Grand Total	0	0	0	3	0	3	0	2	2	5
Apprch %	0	0		100	0		0	100		
Total %	0	0	0	60	0	60	0	40	40	

	Calimesa Boulevard Southbound			Cherry Valley Boulevard Westbound			Cherry Valley Boulevard Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	0	0	0	**1**	0	**1**	0	0	0	**1**
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	**1**	**1**	1
Total Volume	0	0	0	1	0	1	0	1	1	2
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.250	.000	.250	.000	.250	.250	.500

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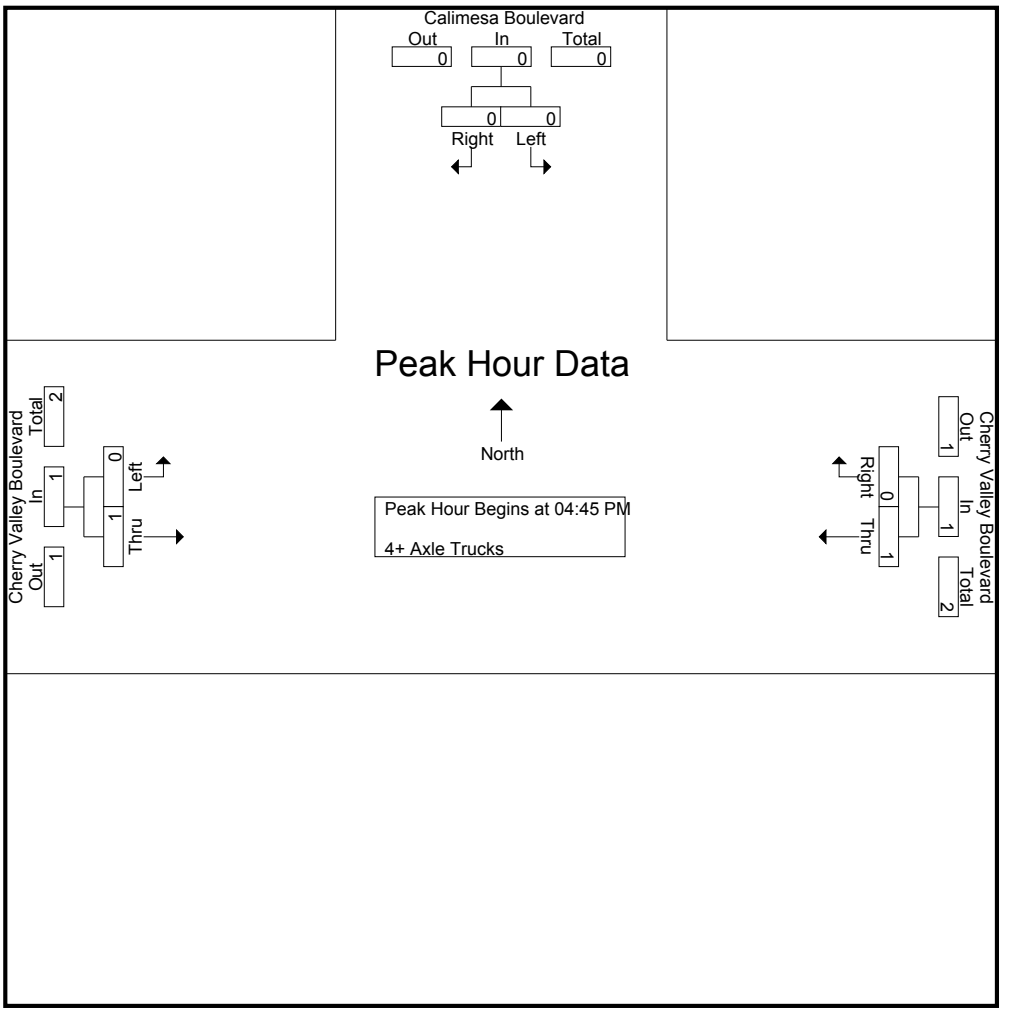

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:45 PM			04:45 PM		
+0 mins.	0	0	0	**1**	0	**1**	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	**1**	**1**
Total Volume	0	0	0	1	0	1	0	1	1
% App. Total	0	0		100	0		0	100	
PHF	.000	.000	.000	.250	.000	.250	.000	.250	.250

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County of Riverside
N/S: I-10 Westbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRV10WCVAM
Site Code : 05114110
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	I-10 Westbound On Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Westbound Off Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	18	104	122	5	0	1	6	139	56	0	195	323
07:15 AM	0	0	0	0	0	20	92	112	2	0	2	4	144	51	0	195	311
07:30 AM	0	0	0	0	0	21	93	114	8	0	1	9	121	38	0	159	282
07:45 AM	0	0	0	0	0	17	56	73	7	0	4	11	72	41	0	113	197
Total	0	0	0	0	0	76	345	421	22	0	8	30	476	186	0	662	1113
08:00 AM	0	0	0	0	0	10	69	79	10	1	1	12	74	34	0	108	199
08:15 AM	0	0	0	0	0	12	65	77	6	0	1	7	71	35	0	106	190
08:30 AM	0	0	0	0	0	5	80	85	14	0	5	19	71	28	0	99	203
08:45 AM	0	0	0	0	0	12	68	80	8	1	1	10	56	27	0	83	173
Total	0	0	0	0	0	39	282	321	38	2	8	48	272	124	0	396	765
Grand Total	0	0	0	0	0	115	627	742	60	2	16	78	748	310	0	1058	1878
Apprch %	0	0	0		0	15.5	84.5		76.9	2.6	20.5		70.7	29.3	0		
Total %	0	0	0	0	0	6.1	33.4	39.5	3.2	0.1	0.9	4.2	39.8	16.5	0	56.3	
Passenger Vehicles	0	0	0	0	0	111	618	729	58	1	16	75	744	293	0	1037	1841
% Passenger Vehicles	0	0	0	0	0	96.5	98.6	98.2	96.7	50	100	96.2	99.5	94.5	0	98	98
Large 2 Axle Vehicles	0	0	0	0	0	2	7	9	2	0	0	2	3	14	0	17	28
% Large 2 Axle Vehicles	0	0	0	0	0	1.7	1.1	1.2	3.3	0	0	2.6	0.4	4.5	0	1.6	1.5
3 Axle Vehicles	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
% 3 Axle Vehicles	0	0	0	0	0	0.9	0	0.1	0	0	0	0	0	0.3	0	0.1	0.1
4+ Axle Trucks	0	0	0	0	0	1	2	3	0	1	0	1	1	2	0	3	7
% 4+ Axle Trucks	0	0	0	0	0	0.9	0.3	0.4	0	50	0	1.3	0.1	0.6	0	0.3	0.4

	I-10 Westbound On Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Westbound Off Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	18	**104**	**122**	5	0	1	6	139	**56**	0	**195**	**323**
07:15 AM	0	0	0	0	0	20	92	112	2	0	2	4	**144**	51	0	195	311
07:30 AM	0	0	0	0	0	**21**	93	114	**8**	0	1	9	121	38	0	159	282
07:45 AM	0	0	0	0	0	17	56	73	7	0	**4**	**11**	72	41	0	113	197
Total Volume	0	0	0	0	0	76	345	421	22	0	8	30	476	186	0	662	1113
% App. Total	0	0	0		0	18.1	81.9		73.3	0	26.7		71.9	28.1	0		
PHF	.000	.000	.000	.000	.000	.905	.829	.863	.688	.000	.500	.682	.826	.830	.000	.849	.861

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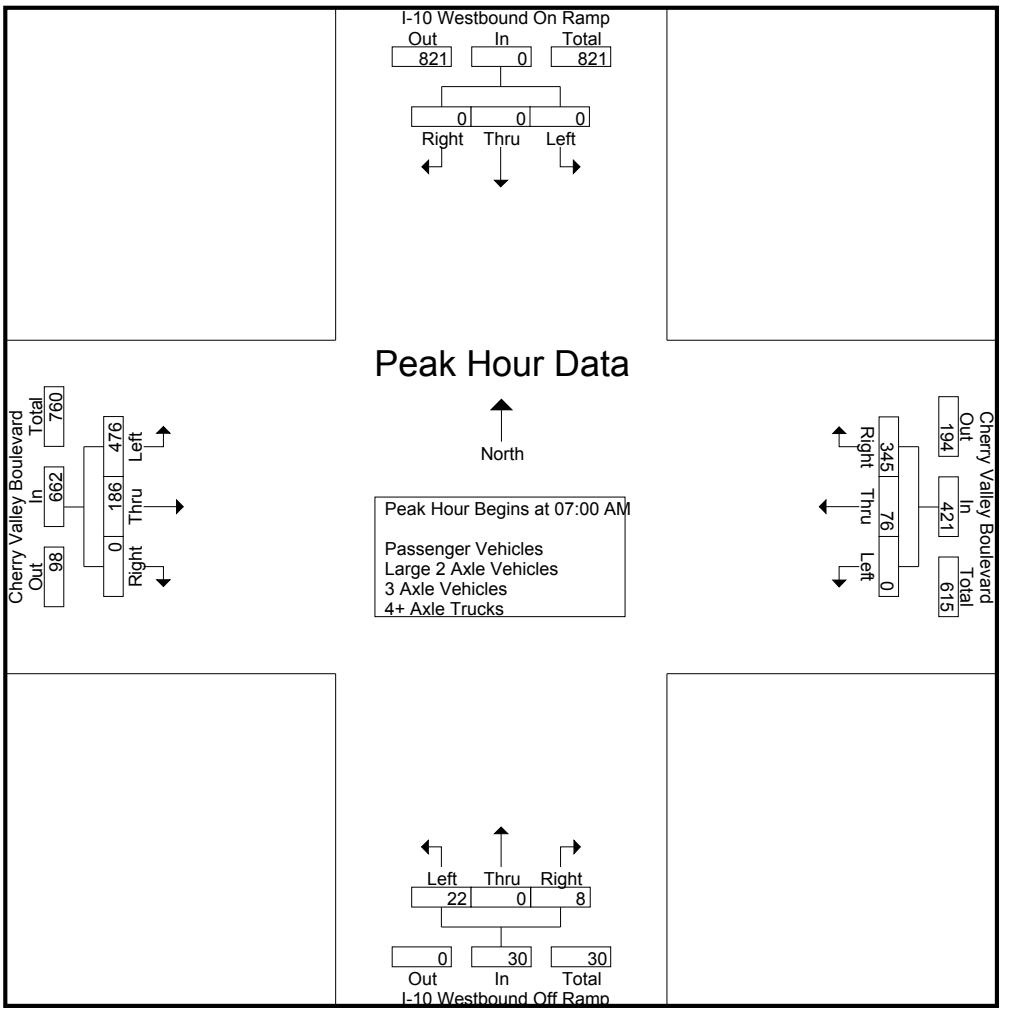

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:45 AM				07:00 AM			
+0 mins.	0	0	0	0	0	18	**104**	**122**	7	0	4	11	139	**56**	0	**195**
+15 mins.	0	0	0	0	0	20	92	112	10	**1**	1	12	**144**	51	0	195
+30 mins.	0	0	0	0	0	**21**	93	114	6	0	1	7	121	38	0	159
+45 mins.	0	0	0	0	0	17	56	73	**14**	0	**5**	**19**	72	41	0	113
Total Volume	0	0	0	0	0	76	345	421	37	1	11	49	476	186	0	662
% App. Total	0	0	0		0	18.1	81.9		75.5	2	22.4		71.9	28.1	0	
PHF	.000	.000	.000	.000	.000	.905	.829	.863	.661	.250	.550	.645	.826	.830	.000	.849

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Weather: Clear

File Name : CRV10WCVAM
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Groups Printed- Passenger Vehicles

	I-10 Westbound On Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Westbound Off Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	18	103	121	5	0	1	6	138	55	0	193	320
07:15 AM	0	0	0	0	0	19	92	111	2	0	2	4	144	51	0	195	310
07:30 AM	0	0	0	0	0	21	93	114	8	0	1	9	119	35	0	154	277
07:45 AM	0	0	0	0	0	16	53	69	7	0	4	11	71	39	0	110	190
Total	0	0	0	0	0	74	341	415	22	0	8	30	472	180	0	652	1097
08:00 AM	0	0	0	0	0	8	66	74	9	1	1	11	74	33	0	107	192
08:15 AM	0	0	0	0	0	12	63	75	6	0	1	7	71	31	0	102	184
08:30 AM	0	0	0	0	0	5	80	85	14	0	5	19	71	25	0	96	200
08:45 AM	0	0	0	0	0	12	68	80	7	0	1	8	56	24	0	80	168
Total	0	0	0	0	0	37	277	314	36	1	8	45	272	113	0	385	744
Grand Total	0	0	0	0	0	111	618	729	58	1	16	75	744	293	0	1037	1841
Apprch %	0	0	0		0	15.2	84.8		77.3	1.3	21.3		71.7	28.3	0		
Total %	0	0	0	0	0	6	33.6	39.6	3.2	0.1	0.9	4.1	40.4	15.9	0	56.3	

	I-10 Westbound On Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Westbound Off Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	18	**103**	**121**	5	0	1	6	138	**55**	0	193	**320**
07:15 AM	0	0	0	0	0	19	92	111	2	0	2	4	**144**	51	0	**195**	310
07:30 AM	0	0	0	0	0	**21**	93	114	**8**	0	1	9	119	35	0	154	277
07:45 AM	0	0	0	0	0	16	53	69	7	0	**4**	**11**	71	39	0	110	190
Total Volume	0	0	0	0	0	74	341	415	22	0	8	30	472	180	0	652	1097
% App. Total	0	0	0		0	17.8	82.2		73.3	0	26.7		72.4	27.6	0		
PHF	.000	.000	.000	.000	.000	.881	.828	.857	.688	.000	.500	.682	.819	.818	.000	.836	.857

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County of Riverside
N/S: I-10 Westbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRV10WCVAM
Site Code : 05114110
Start Date : 4/1/2014
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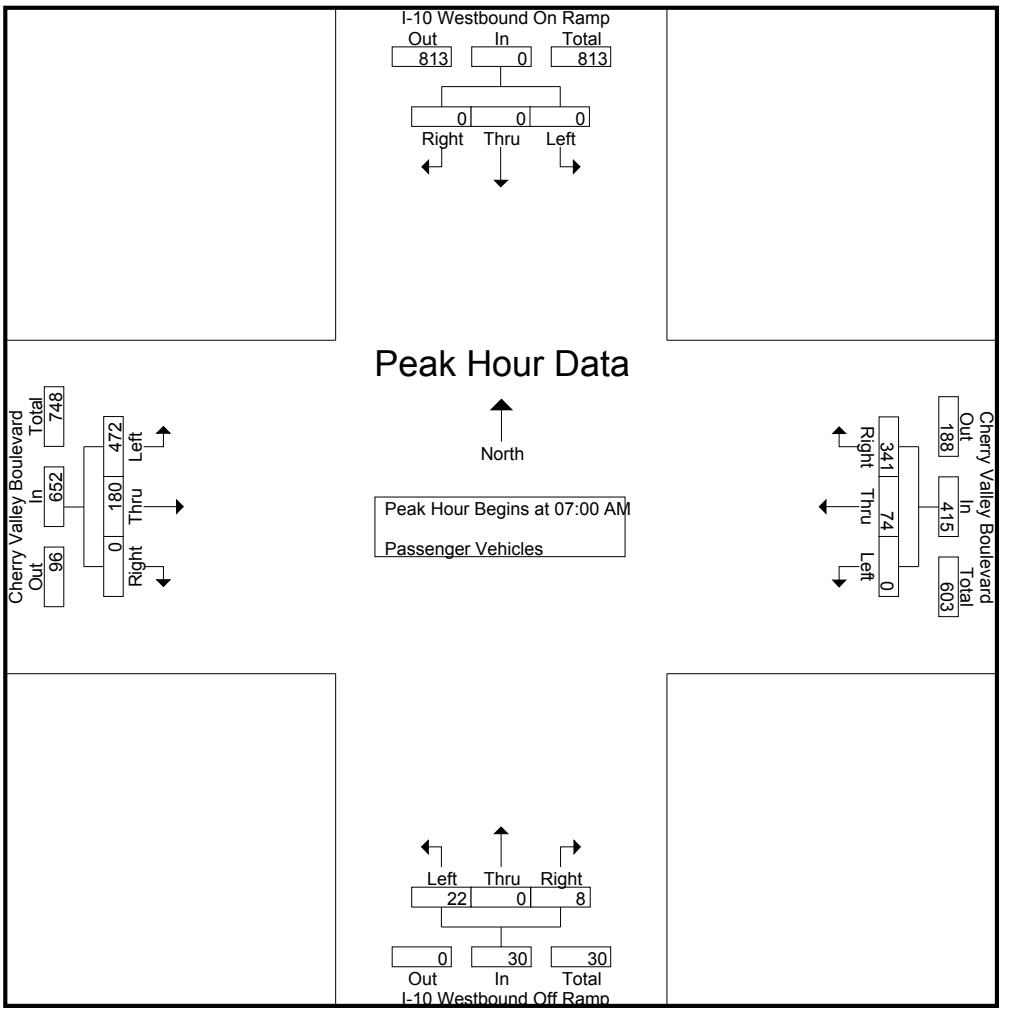

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:45 AM				07:00 AM			
+0 mins.	0	0	0	0	0	18	**103**	**121**	7	0	4	11	138	**55**	0	193
+15 mins.	0	0	0	0	0	19	92	111	9	**1**	1	11	**144**	51	0	**195**
+30 mins.	0	0	0	0	0	**21**	93	114	6	0	1	7	119	35	0	154
+45 mins.	0	0	0	0	0	16	53	69	**14**	0	**5**	**19**	71	39	0	110
Total Volume	0	0	0	0	0	74	341	415	36	1	11	48	472	180	0	652
% App. Total	0	0	0		0	17.8	82.2		75	2.1	22.9		72.4	27.6	0	
PHF	.000	.000	.000	.000	.000	.881	.828	.857	.643	.250	.550	.632	.819	.818	.000	.836

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County of Riverside
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E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRV10WCVAM
Site Code : 05114110
Start Date : 4/1/2014
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Groups Printed- Large 2 Axle Vehicles

	I-10 Westbound On Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Westbound Off Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	4	4
07:45 AM	0	0	0	0	0	0	3	3	0	0	0	0	0	2	0	2	5
Total	0	0	0	0	0	1	3	4	0	0	0	0	3	4	0	7	11
08:00 AM	0	0	0	0	0	1	3	4	1	0	0	1	0	1	0	1	6
08:15 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	4	0	4	5
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
08:45 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	3	0	3	4
Total	0	0	0	0	0	1	4	5	2	0	0	2	0	10	0	10	17
Grand Total	0	0	0	0	0	2	7	9	2	0	0	2	3	14	0	17	28
Apprch %	0	0	0		0	22.2	77.8		100	0	0		17.6	82.4	0		
Total %	0	0	0	0	0	7.1	25	32.1	7.1	0	0	7.1	10.7	50	0	60.7	

	I-10 Westbound On Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Westbound Off Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
07:15 AM	0	0	0	0	0	**1**	0	1	0	0	0	0	0	0	0	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**2**	**2**	0	**4**	4
07:45 AM	0	0	0	0	0	0	**3**	**3**	0	0	0	0	0	2	0	2	**5**
Total Volume	0	0	0	0	0	1	3	4	0	0	0	0	3	4	0	7	11
% App. Total	0	0	0		0	25	75		0	0	0		42.9	57.1	0		
PHF	.000	.000	.000	.000	.000	.250	.250	.333	.000	.000	.000	.000	.375	.500	.000	.438	.550

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County of Riverside
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E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRV10WCVAM
Site Code : 05114110
Start Date : 4/1/2014
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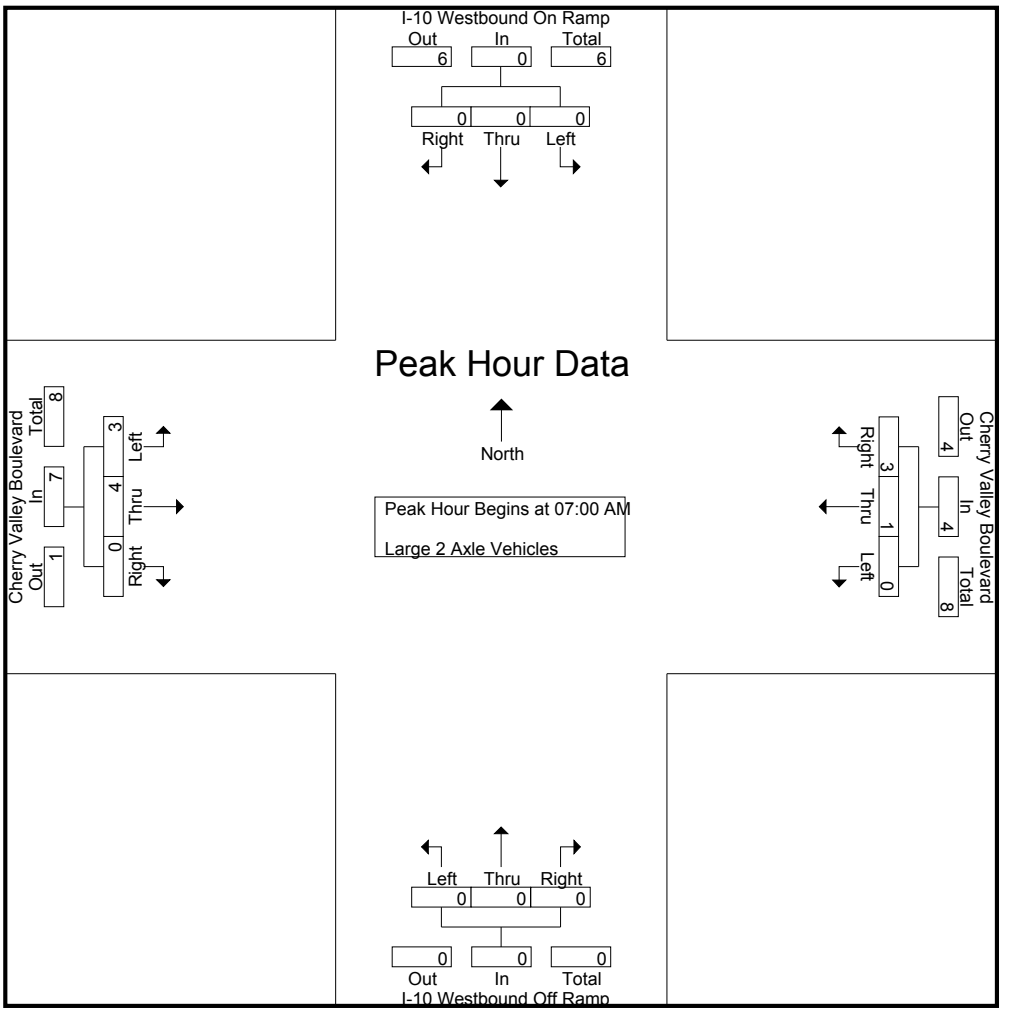

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
+15 mins.	0	0	0	0	0	**1**	0	1	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	**2**	**2**	0	**4**
+45 mins.	0	0	0	0	0	0	**3**	**3**	0	0	0	0	0	2	0	2
Total Volume	0	0	0	0	0	1	3	4	0	0	0	0	3	4	0	7
% App. Total	0	0	0		0	25	75		0	0	0		42.9	57.1	0	
PHF	.000	.000	.000	.000	.000	.250	.250	.333	.000	.000	.000	.000	.375	.500	.000	.438

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E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRV10WCVAM
Site Code : 05114110
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Groups Printed- 3 Axle Vehicles

	I-10 Westbound On Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Westbound Off Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
07:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	50	0	50	0	0	0	0	0	50	0	50	

	I-10 Westbound On Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Westbound Off Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**	**1**
07:45 AM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250	.500

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E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRV10WCVAM
Site Code : 05114110
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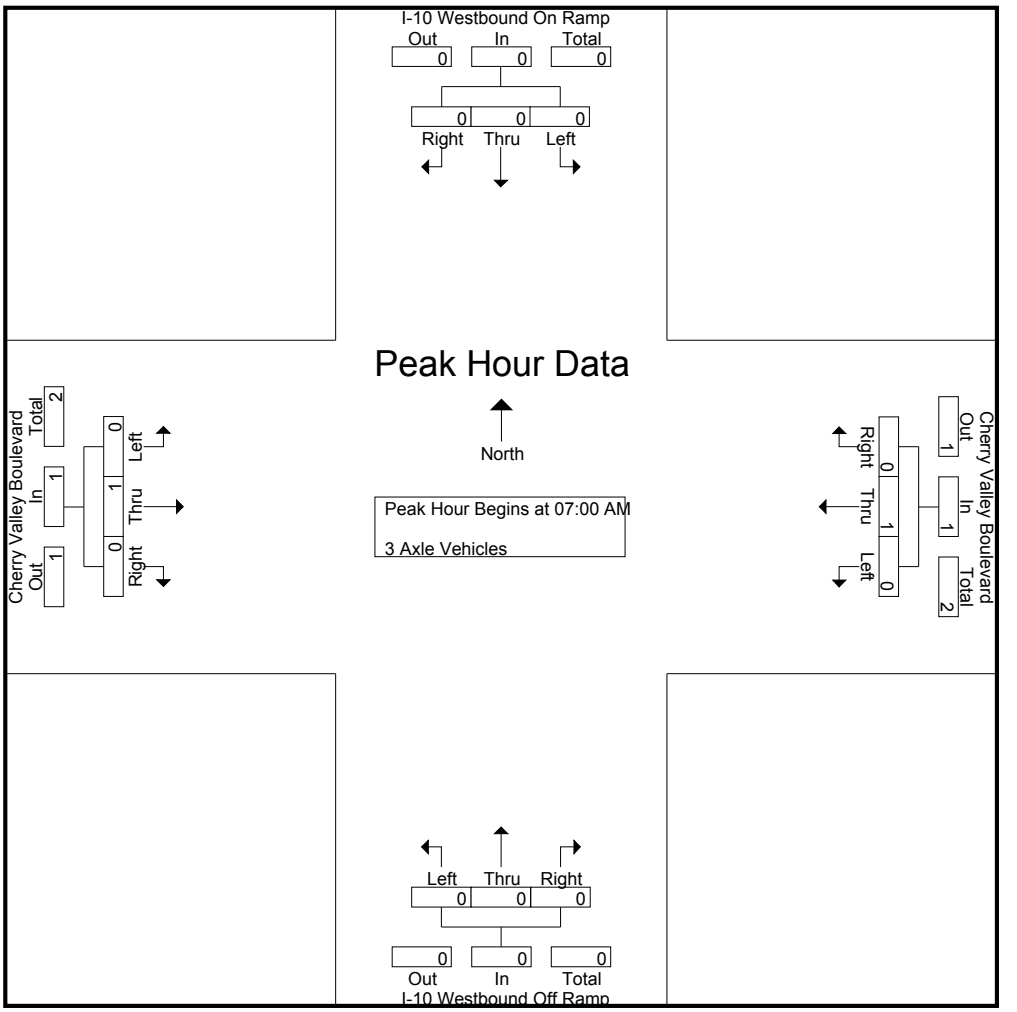

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**
+45 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250

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County of Riverside
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E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRV10WCVAM
Site Code : 05114110
Start Date : 4/1/2014
Page No : 1

Groups Printed- 4+ Axle Trucks

	I-10 Westbound On Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Westbound Off Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	2
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0	2	3
08:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Total	0	0	0	0	0	1	1	2	0	1	0	1	0	1	0	1	4
Grand Total	0	0	0	0	0	1	2	3	0	1	0	1	1	2	0	3	7
Apprch %	0	0	0		0	33.3	66.7		0	100	0		33.3	66.7	0		
Total %	0	0	0	0	0	14.3	28.6	42.9	0	14.3	0	14.3	14.3	28.6	0	42.9	

	I-10 Westbound On Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Westbound Off Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	**1**	**1**	0	0	0	0	0	**1**	0	**1**	**2**
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0	1	1
Total Volume	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0	2	3
% App. Total	0	0	0		0	0	100		0	0	0		50	50	0		
PHF	.000	.000	.000	.000	.000	.000	.250	.250	.000	.000	.000	.000	.250	.250	.000	.500	.375

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County of Riverside
N/S: I-10 Westbound On/Off Ramps
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Weather: Clear

File Name : CRV10WCVAM
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Start Date : 4/1/2014
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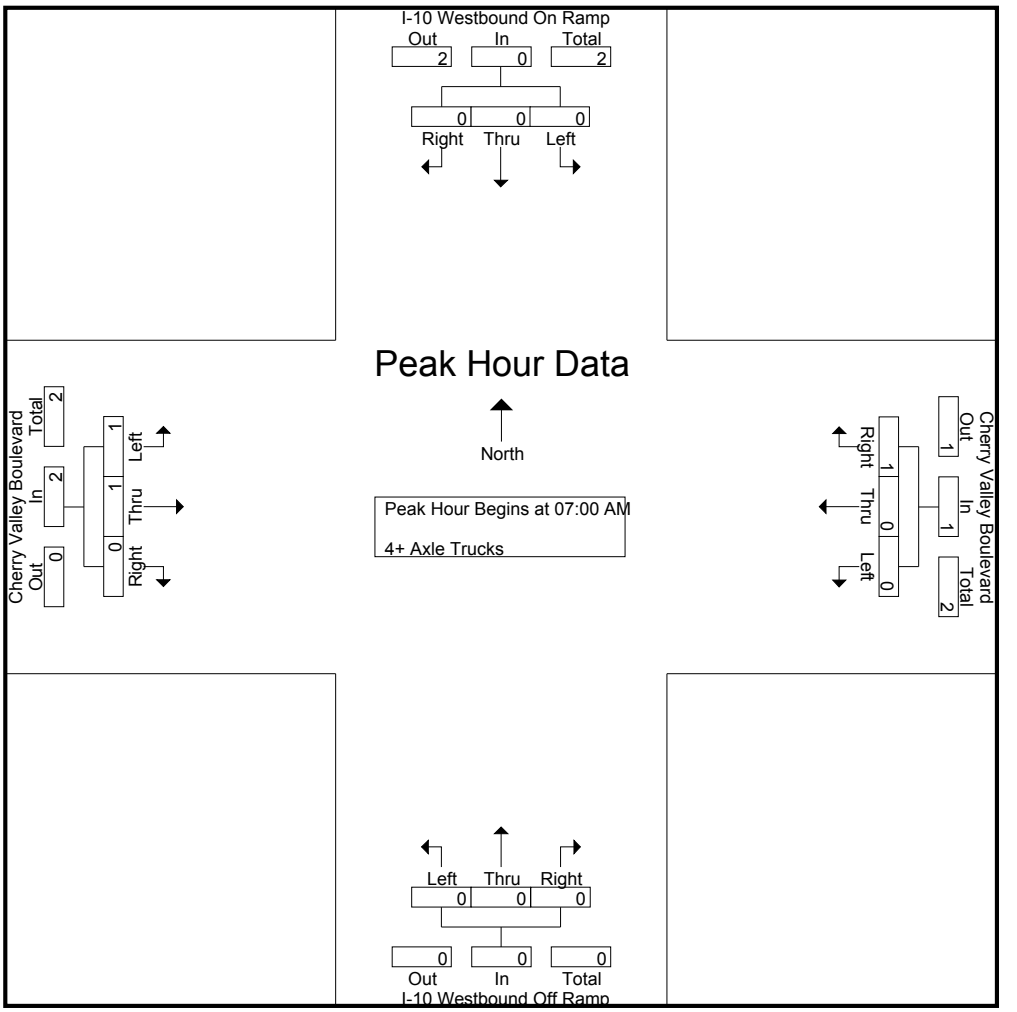

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	**1**	**1**	0	0	0	0	0	**1**	0	**1**
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0	1
Total Volume	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0	2
% App. Total	0	0	0		0	0	100		0	0	0		50	50	0	
PHF	.000	.000	.000	.000	.000	.000	.250	.250	.000	.000	.000	.000	.250	.250	.000	.500

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County of Riverside
N/S: I-10 Westbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRV10WCVPM
Site Code : 05114110
Start Date : 4/1/2014
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	I-10 Westbound On Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Westbound Off Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	13	46	59	14	0	6	20	34	77	0	111	190
04:15 PM	0	0	0	0	0	10	39	49	30	0	5	35	54	83	0	137	221
04:30 PM	0	0	0	0	0	11	36	47	20	0	5	25	35	88	0	123	195
04:45 PM	0	0	0	0	0	14	30	44	15	0	3	18	50	103	0	153	215
Total	0	0	0	0	0	48	151	199	79	0	19	98	173	351	0	524	821
05:00 PM	0	0	0	0	0	10	33	43	27	0	2	29	39	91	0	130	202
05:15 PM	0	0	0	0	0	15	45	60	13	0	9	22	56	75	0	131	213
05:30 PM	0	0	0	0	0	10	48	58	26	0	7	33	45	101	0	146	237
05:45 PM	0	0	0	0	0	12	49	61	17	0	3	20	47	79	0	126	207
Total	0	0	0	0	0	47	175	222	83	0	21	104	187	346	0	533	859
Grand Total	0	0	0	0	0	95	326	421	162	0	40	202	360	697	0	1057	1680
Apprch %	0	0	0		0	22.6	77.4		80.2	0	19.8		34.1	65.9	0		
Total %	0	0	0	0	0	5.7	19.4	25.1	9.6	0	2.4	12	21.4	41.5	0	62.9	
Passenger Vehicles	0	0	0	0	0	91	317	408	159	0	37	196	355	686	0	1041	1645
% Passenger Vehicles	0	0	0	0	0	95.8	97.2	96.9	98.1	0	92.5	97	98.6	98.4	0	98.5	97.9
Large 2 Axle Vehicles	0	0	0	0	0	4	6	10	3	0	2	5	4	10	0	14	29
% Large 2 Axle Vehicles	0	0	0	0	0	4.2	1.8	2.4	1.9	0	5	2.5	1.1	1.4	0	1.3	1.7
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0	0.1	0.1
4+ Axle Trucks	0	0	0	0	0	0	3	3	0	0	1	1	0	1	0	1	5
% 4+ Axle Trucks	0	0	0	0	0	0	0.9	0.7	0	0	2.5	0.5	0	0.1	0	0.1	0.3

	I-10 Westbound On Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Westbound Off Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	14	30	44	15	0	3	18	50	**103**	0	**153**	215
05:00 PM	0	0	0	0	0	10	33	43	**27**	0	2	29	39	91	0	130	202
05:15 PM	0	0	0	0	0	**15**	45	**60**	13	0	**9**	22	**56**	75	0	131	213
05:30 PM	0	0	0	0	0	10	**48**	58	26	0	7	**33**	45	101	0	146	**237**
Total Volume	0	0	0	0	0	49	156	205	81	0	21	102	190	370	0	560	867
% App. Total	0	0	0		0	23.9	76.1		79.4	0	20.6		33.9	66.1	0		
PHF	.000	.000	.000	.000	.000	.817	.813	.854	.750	.000	.583	.773	.848	.898	.000	.915	.915

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County of Riverside
N/S: I-10 Westbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRV10WCVPM
Site Code : 05114110
Start Date : 4/1/2014
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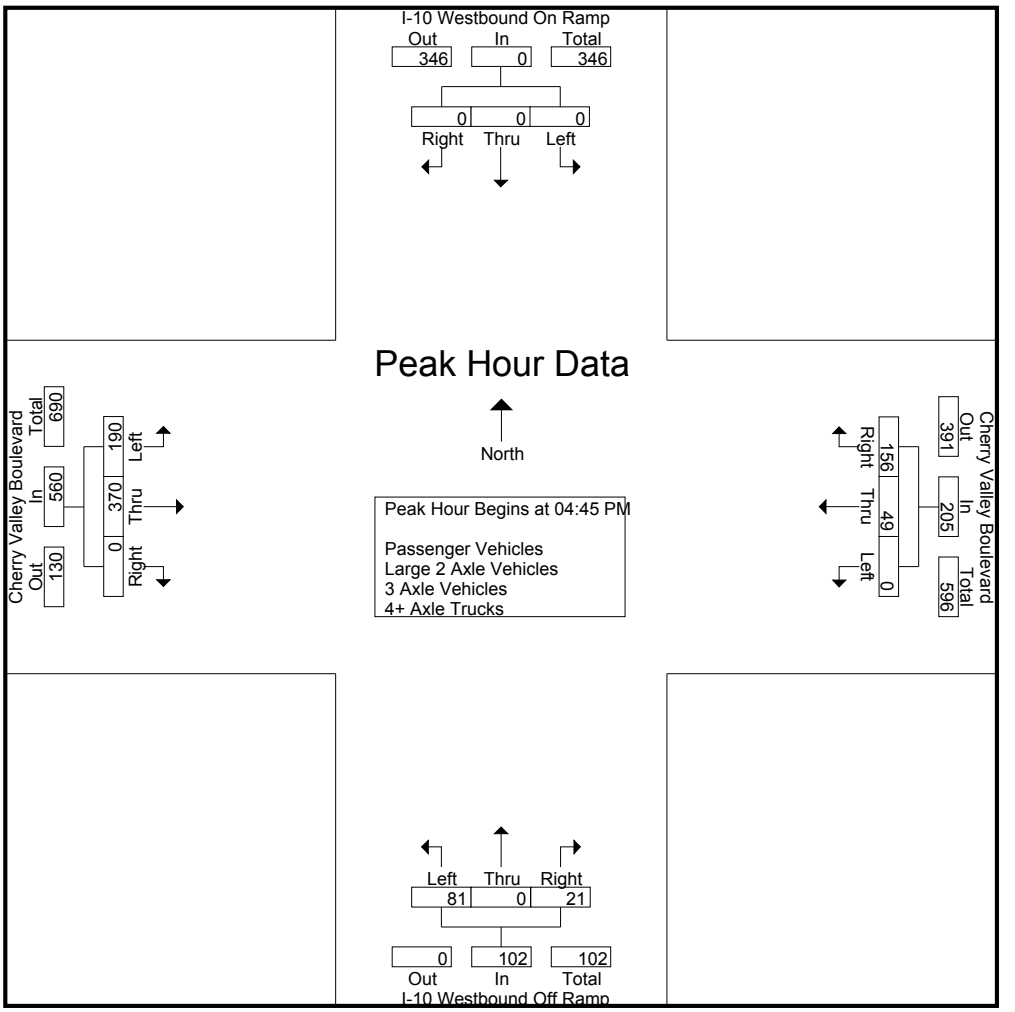

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				04:15 PM				04:45 PM			
+0 mins.	0	0	0	0	0	10	33	43	**30**	0	**5**	**35**	50	**103**	0	**153**
+15 mins.	0	0	0	0	0	**15**	45	60	20	0	5	25	39	91	0	130
+30 mins.	0	0	0	0	0	10	48	58	15	0	3	18	**56**	75	0	131
+45 mins.	0	0	0	0	0	12	**49**	**61**	27	0	2	29	45	101	0	146
Total Volume	0	0	0	0	0	47	175	222	92	0	15	107	190	370	0	560
% App. Total	0	0	0		0	21.2	78.8		86	0	14		33.9	66.1	0	
PHF	.000	.000	.000	.000	.000	.783	.893	.910	.767	.000	.750	.764	.848	.898	.000	.915

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County of Riverside
N/S: I-10 Westbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRV10WCVPM
Site Code : 05114110
Start Date : 4/1/2014
Page No : 1

Groups Printed- Passenger Vehicles

	I-10 Westbound On Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Westbound Off Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	12	45	57	14	0	6	20	34	77	0	111	188
04:15 PM	0	0	0	0	0	10	37	47	30	0	5	35	54	80	0	134	216
04:30 PM	0	0	0	0	0	9	35	44	20	0	5	25	33	88	0	121	190
04:45 PM	0	0	0	0	0	14	29	43	15	0	3	18	50	102	0	152	213
Total	0	0	0	0	0	45	146	191	79	0	19	98	171	347	0	518	807
05:00 PM	0	0	0	0	0	10	32	42	25	0	1	26	39	89	0	128	196
05:15 PM	0	0	0	0	0	14	45	59	13	0	9	22	55	73	0	128	209
05:30 PM	0	0	0	0	0	10	46	56	26	0	5	31	43	101	0	144	231
05:45 PM	0	0	0	0	0	12	48	60	16	0	3	19	47	76	0	123	202
Total	0	0	0	0	0	46	171	217	80	0	18	98	184	339	0	523	838
Grand Total	0	0	0	0	0	91	317	408	159	0	37	196	355	686	0	1041	1645
Apprch %	0	0	0		0	22.3	77.7		81.1	0	18.9		34.1	65.9	0		
Total %	0	0	0	0	0	5.5	19.3	24.8	9.7	0	2.2	11.9	21.6	41.7	0	63.3	

	I-10 Westbound On Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Westbound Off Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	**14**	29	43	15	0	3	18	50	**102**	0	**152**	213
05:00 PM	0	0	0	0	0	10	32	42	25	0	1	26	39	89	0	128	196
05:15 PM	0	0	0	0	0	14	45	**59**	13	0	**9**	22	**55**	73	0	128	209
05:30 PM	0	0	0	0	0	10	**46**	56	**26**	0	5	**31**	43	101	0	144	**231**
Total Volume	0	0	0	0	0	48	152	200	79	0	18	97	187	365	0	552	849
% App. Total	0	0	0		0	24	76		81.4	0	18.6		33.9	66.1	0		
PHF	.000	.000	.000	.000	.000	.857	.826	.847	.760	.000	.500	.782	.850	.895	.000	.908	.919

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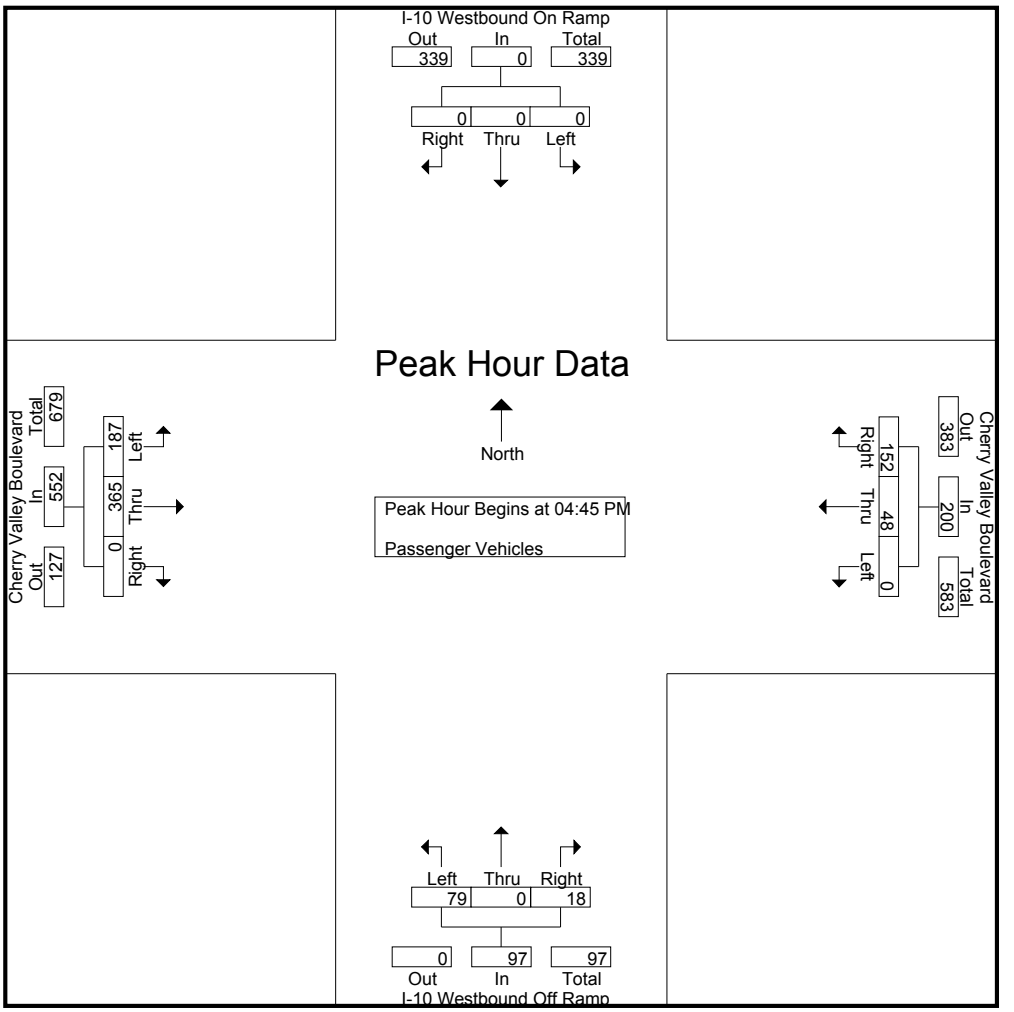
County of Riverside
N/S: I-10 Westbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRV10WCVPM
Site Code : 05114110
Start Date : 4/1/2014
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				04:15 PM				04:45 PM			
+0 mins.	0	0	0	0	0	10	32	42	**30**	0	**5**	**35**	50	**102**	0	**152**
+15 mins.	0	0	0	0	0	**14**	45	59	20	0	5	25	39	89	0	128
+30 mins.	0	0	0	0	0	10	46	56	15	0	3	18	**55**	73	0	128
+45 mins.	0	0	0	0	0	12	**48**	**60**	25	0	1	26	43	101	0	144
Total Volume	0	0	0	0	0	46	171	217	90	0	14	104	187	365	0	552
% App. Total	0	0	0		0	21.2	78.8		86.5	0	13.5		33.9	66.1	0	
PHF	.000	.000	.000	.000	.000	.821	.891	.904	.750	.000	.700	.743	.850	.895	.000	.908

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County of Riverside
N/S: I-10 Westbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRV10WCVPM
Site Code : 05114110
Start Date : 4/1/2014
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Groups Printed- Large 2 Axle Vehicles

	I-10 Westbound On Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Westbound Off Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	2
04:15 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	3	0	3	4
04:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	1	0	0	1	3
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	0	3	2	5	0	0	0	0	1	4	0	5	10
05:00 PM	0	0	0	0	0	0	1	1	2	0	1	3	0	2	0	2	6
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	1	2	0	3	4
05:30 PM	0	0	0	0	0	0	2	2	0	0	1	1	2	0	0	2	5
05:45 PM	0	0	0	0	0	0	1	1	1	0	0	1	0	2	0	2	4
Total	0	0	0	0	0	1	4	5	3	0	2	5	3	6	0	9	19
Grand Total	0	0	0	0	0	4	6	10	3	0	2	5	4	10	0	14	29
Apprch %	0	0	0		0	40	60		60	0	40		28.6	71.4	0		
Total %	0	0	0	0	0	13.8	20.7	34.5	10.3	0	6.9	17.2	13.8	34.5	0	48.3	

	I-10 Westbound On Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Westbound Off Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:00 PM	0	0	0	0	0	0	1	1	**2**	0	**1**	**3**	0	**2**	0	2	**6**
05:15 PM	0	0	0	0	0	**1**	0	1	0	0	0	0	1	2	0	**3**	4
05:30 PM	0	0	0	0	0	0	**2**	**2**	0	0	1	1	**2**	0	0	2	5
Total Volume	0	0	0	0	0	1	3	4	2	0	2	4	3	5	0	8	16
% App. Total	0	0	0		0	25	75		50	0	50		37.5	62.5	0		
PHF	.000	.000	.000	.000	.000	.250	.375	.500	.250	.000	.500	.333	.375	.625	.000	.667	.667

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County of Riverside
N/S: I-10 Westbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRV10WCVPM
Site Code : 05114110
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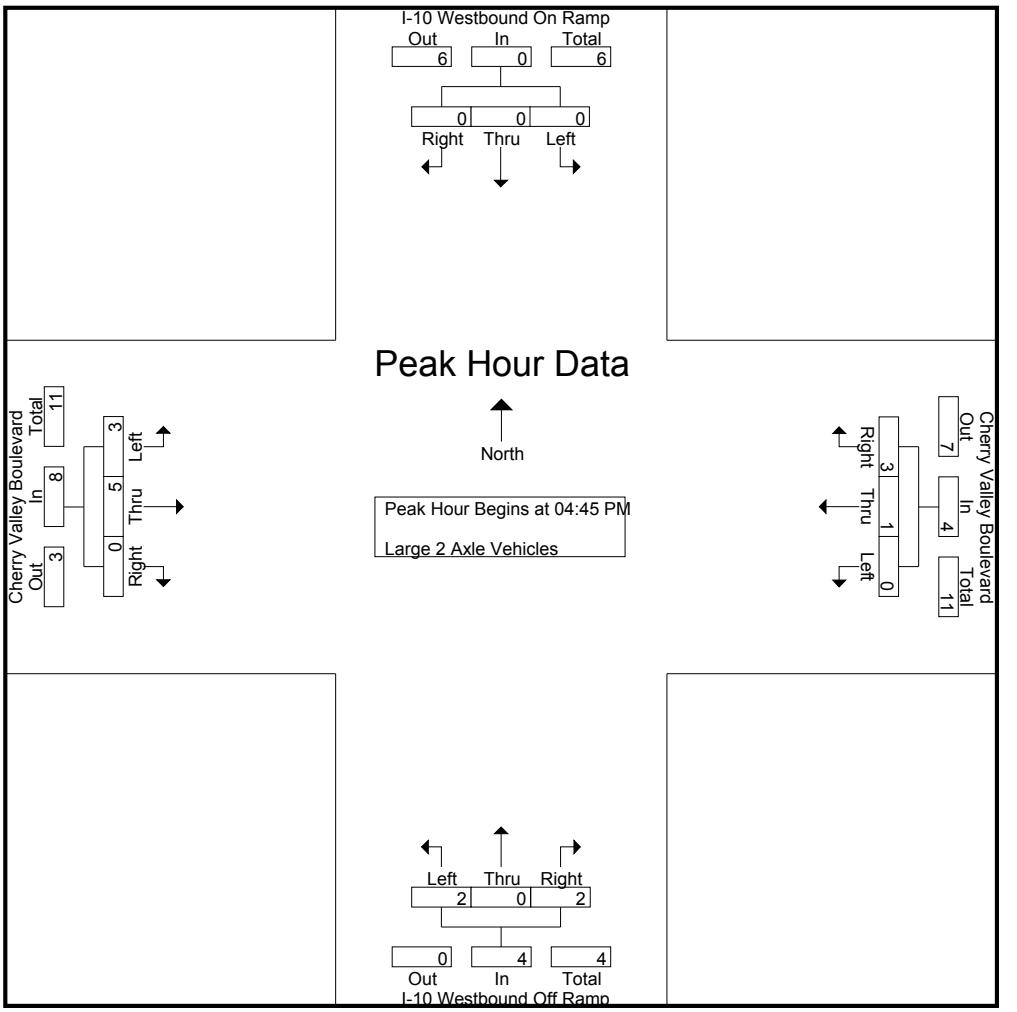

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
+15 mins.	0	0	0	0	0	0	1	1	**2**	0	**1**	**3**	0	**2**	0	2
+30 mins.	0	0	0	0	0	**1**	0	1	0	0	0	0	1	2	0	**3**
+45 mins.	0	0	0	0	0	0	**2**	**2**	0	0	1	1	**2**	0	0	2
Total Volume	0	0	0	0	0	1	3	4	2	0	2	4	3	5	0	8
% App. Total	0	0	0		0	25	75		50	0	50		37.5	62.5	0	
PHF	.000	.000	.000	.000	.000	.250	.375	.500	.250	.000	.500	.333	.375	.625	.000	.667

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County of Riverside
N/S: I-10 Westbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRV10WCVPM
Site Code : 05114110
Start Date : 4/1/2014
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Groups Printed- 3 Axle Vehicles

	I-10 Westbound On Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Westbound Off Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Apprch %	0	0	0		0	0	0		0	0	0		100	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	100	

	I-10 Westbound On Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Westbound Off Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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County of Riverside
N/S: I-10 Westbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRV10WCVPM
Site Code : 05114110
Start Date : 4/1/2014
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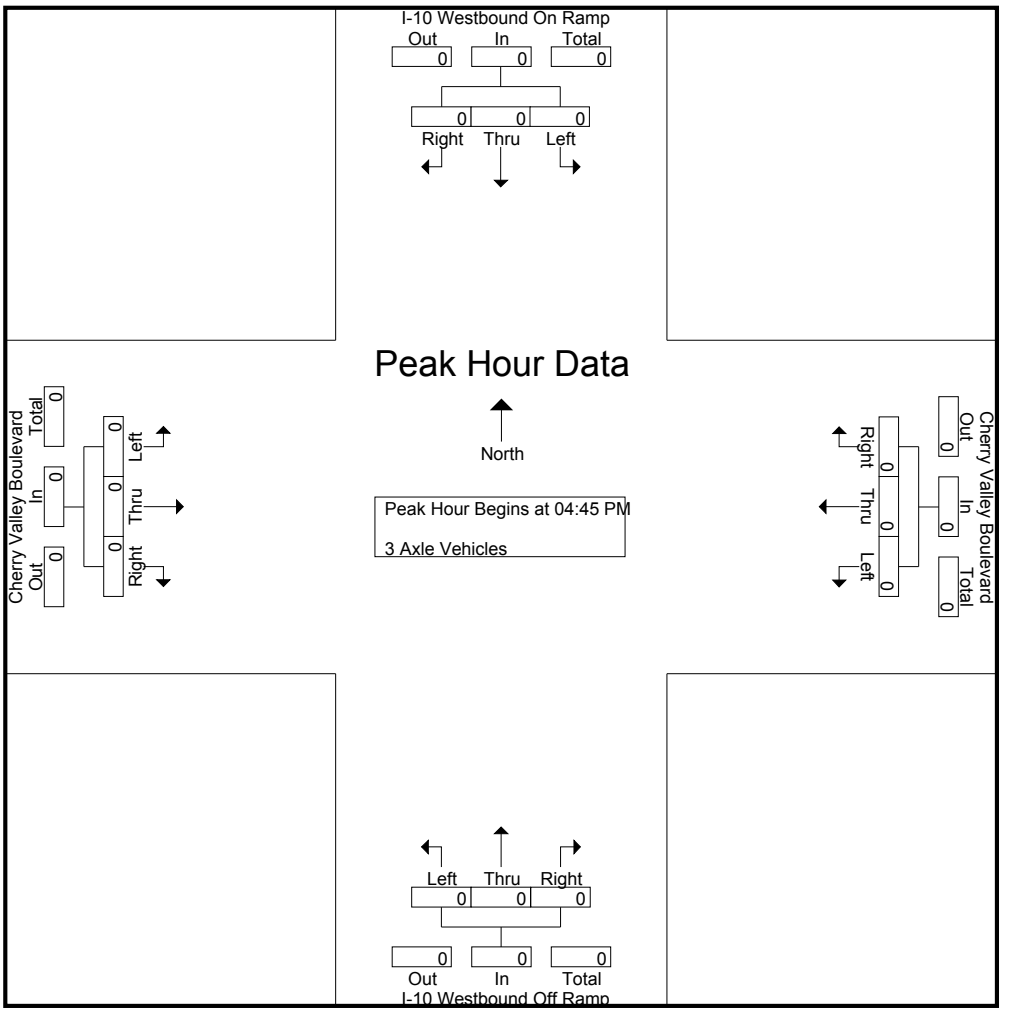

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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County of Riverside
N/S: I-10 Westbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRV10WCVPM
Site Code : 05114110
Start Date : 4/1/2014
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Groups Printed- 4+ Axle Trucks

	I-10 Westbound On Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Westbound Off Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	3
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	2
Grand Total	0	0	0	0	0	0	3	3	0	0	1	1	0	1	0	1	5
Apprch %	0	0	0		0	0	100		0	0	100		0	100	0		
Total %	0	0	0	0	0	0	60	60	0	0	20	20	0	20	0	20	

	I-10 Westbound On Ramp Southbound				Cherry Valley Boulevard Westbound				I-10 Westbound Off Ramp Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	0	**1**	**1**	0	0	0	0	0	0	0	0	**1**
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	0	0	0	1
Total Volume	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0	2
% App. Total	0	0	0		0	0	100		0	0	100		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.250	.250	.000	.000	.250	.250	.000	.000	.000	.000	.500

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County of Riverside
N/S: I-10 Westbound On/Off Ramps
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRV10WCVPM
Site Code : 05114110
Start Date : 4/1/2014
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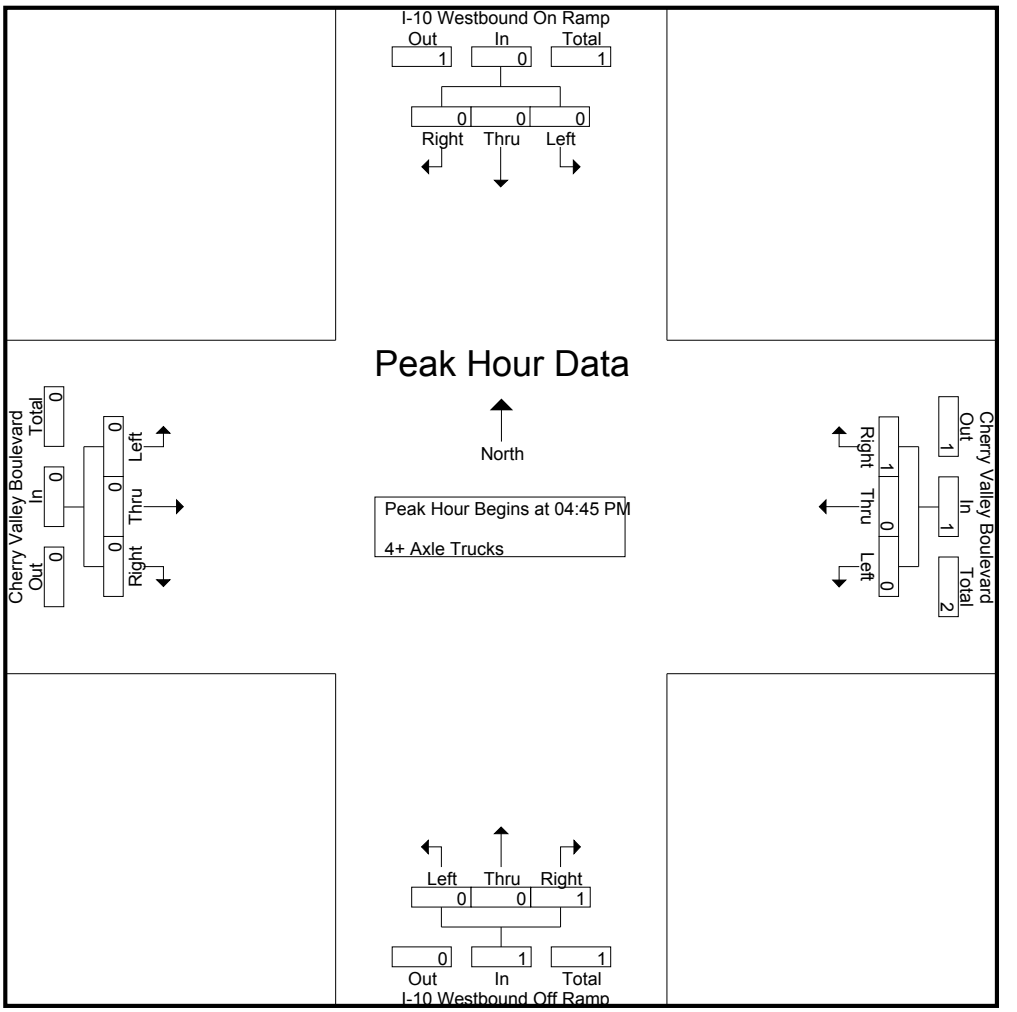

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	0	**1**	**1**	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	**1**	**1**	0	0	0	0
Total Volume	0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0
% App. Total	0	0	0		0	0	100		0	0	100		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.250	.250	.000	.000	.250	.250	.000	.000	.000	.000

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County of Riverside
N/S: Nancy Avenue
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRVNACVAM
Site Code : 05114110
Start Date : 4/1/2014
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Nancy Avenue Southbound				Cherry Valley Boulevard Westbound				Nancy Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	7	11	22	40	7	49	1	57	13	4	50	67	6	37	14	57	221
07:15 AM	3	5	21	29	19	64	2	85	12	8	46	66	4	45	6	55	235
07:30 AM	1	6	11	18	19	56	0	75	7	4	18	29	1	18	5	24	146
07:45 AM	1	5	6	12	1	38	1	40	1	4	5	10	1	25	10	36	98
Total	12	27	60	99	46	207	4	257	33	20	119	172	12	125	35	172	700
08:00 AM	1	6	11	18	3	44	2	49	4	6	1	11	5	26	7	38	116
08:15 AM	0	9	8	17	1	41	0	42	5	3	5	13	4	19	3	26	98
08:30 AM	1	14	8	23	4	34	0	38	16	12	4	32	4	15	6	25	118
08:45 AM	0	14	5	19	5	34	1	40	10	6	1	17	3	18	5	26	102
Total	2	43	32	77	13	153	3	169	35	27	11	73	16	78	21	115	434
Grand Total	14	70	92	176	59	360	7	426	68	47	130	245	28	203	56	287	1134
Apprch %	8	39.8	52.3		13.8	84.5	1.6		27.8	19.2	53.1		9.8	70.7	19.5		
Total %	1.2	6.2	8.1	15.5	5.2	31.7	0.6	37.6	6	4.1	11.5	21.6	2.5	17.9	4.9	25.3	
Passenger Vehicles	9	68	92	169	58	355	7	420	67	44	124	235	28	194	56	278	1102
% Passenger Vehicles	64.3	97.1	100	96	98.3	98.6	100	98.6	98.5	93.6	95.4	95.9	100	95.6	100	96.9	97.2
Large 2 Axle Vehicles	5	2	0	7	1	2	0	3	1	2	6	9	0	9	0	9	28
% Large 2 Axle Vehicles	35.7	2.9	0	4	1.7	0.6	0	0.7	1.5	4.3	4.6	3.7	0	4.4	0	3.1	2.5
3 Axle Vehicles	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	2
% 3 Axle Vehicles	0	0	0	0	0	0.3	0	0.2	0	2.1	0	0.4	0	0	0	0	0.2
4+ Axle Trucks	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
% 4+ Axle Trucks	0	0	0	0	0	0.6	0	0.5	0	0	0	0	0	0	0	0	0.2

	Nancy Avenue Southbound				Cherry Valley Boulevard Westbound				Nancy Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	**7**	**11**	**22**	**40**	7	49	1	57	**13**	4	**50**	**67**	**6**	37	**14**	**57**	221
07:15 AM	3	5	21	29	**19**	**64**	**2**	**85**	12	**8**	46	66	4	**45**	6	55	**235**
07:30 AM	1	6	11	18	19	56	0	75	7	4	18	29	1	18	5	24	146
07:45 AM	1	5	6	12	1	38	1	40	1	4	5	10	1	25	10	36	98
Total Volume	12	27	60	99	46	207	4	257	33	20	119	172	12	125	35	172	700
% App. Total	12.1	27.3	60.6		17.9	80.5	1.6		19.2	11.6	69.2		7	72.7	20.3		
PHF	.429	.614	.682	.619	.605	.809	.500	.756	.635	.625	.595	.642	.500	.694	.625	.754	.745

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County of Riverside
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E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRVNACVAM
Site Code : 05114110
Start Date : 4/1/2014
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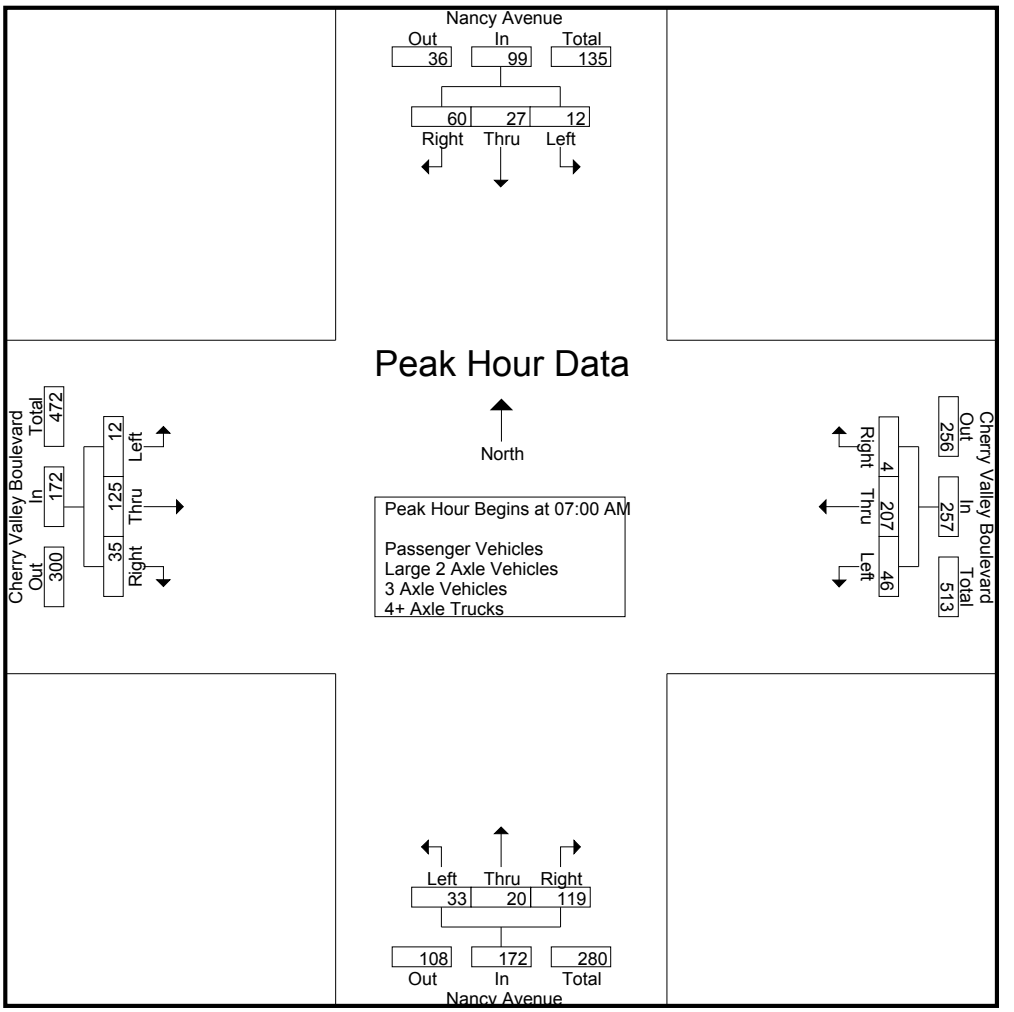

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	**7**	**11**	**22**	**40**	7	49	1	57	**13**	4	**50**	**67**	**6**	37	**14**	**57**
+15 mins.	3	5	21	29	**19**	**64**	**2**	**85**	12	**8**	46	66	4	**45**	6	55
+30 mins.	1	6	11	18	19	56	0	75	7	4	18	29	1	18	5	24
+45 mins.	1	5	6	12	1	38	1	40	1	4	5	10	1	25	10	36
Total Volume	12	27	60	99	46	207	4	257	33	20	119	172	12	125	35	172
% App. Total	12.1	27.3	60.6		17.9	80.5	1.6		19.2	11.6	69.2		7	72.7	20.3	
PHF	.429	.614	.682	.619	.605	.809	.500	.756	.635	.625	.595	.642	.500	.694	.625	.754

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Groups Printed- Passenger Vehicles

	Nancy Avenue Southbound				Cherry Valley Boulevard Westbound				Nancy Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	4	10	22	36	6	49	1	56	13	4	47	64	6	36	14	56	212
07:15 AM	3	5	21	29	19	64	2	85	11	6	46	63	4	44	6	54	231
07:30 AM	1	6	11	18	19	56	0	75	7	4	16	27	1	17	5	23	143
07:45 AM	0	5	6	11	1	37	1	39	1	4	4	9	1	24	10	35	94
Total	8	26	60	94	45	206	4	255	32	18	113	163	12	121	35	168	680
08:00 AM	0	6	11	17	3	42	2	47	4	5	1	10	5	24	7	36	110
08:15 AM	0	8	8	16	1	40	0	41	5	3	5	13	4	17	3	24	94
08:30 AM	1	14	8	23	4	34	0	38	16	12	4	32	4	15	6	25	118
08:45 AM	0	14	5	19	5	33	1	39	10	6	1	17	3	17	5	25	100
Total	1	42	32	75	13	149	3	165	35	26	11	72	16	73	21	110	422
Grand Total	9	68	92	169	58	355	7	420	67	44	124	235	28	194	56	278	1102
Apprch %	5.3	40.2	54.4		13.8	84.5	1.7		28.5	18.7	52.8		10.1	69.8	20.1		
Total %	0.8	6.2	8.3	15.3	5.3	32.2	0.6	38.1	6.1	4	11.3	21.3	2.5	17.6	5.1	25.2	

	Nancy Avenue Southbound				Cherry Valley Boulevard Westbound				Nancy Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	**4**	**10**	**22**	**36**	6	49	1	56	**13**	4	**47**	**64**	**6**	36	**14**	**56**	212
07:15 AM	3	5	21	29	**19**	**64**	**2**	**85**	11	**6**	46	63	4	**44**	6	54	**231**
07:30 AM	1	6	11	18	19	56	0	75	7	4	16	27	1	17	5	23	143
07:45 AM	0	5	6	11	1	37	1	39	1	4	4	9	1	24	10	35	94
Total Volume	8	26	60	94	45	206	4	255	32	18	113	163	12	121	35	168	680
% App. Total	8.5	27.7	63.8		17.6	80.8	1.6		19.6	11	69.3		7.1	72	20.8		
PHF	.500	.650	.682	.653	.592	.805	.500	.750	.615	.750	.601	.637	.500	.688	.625	.750	.736

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Site Code : 05114110
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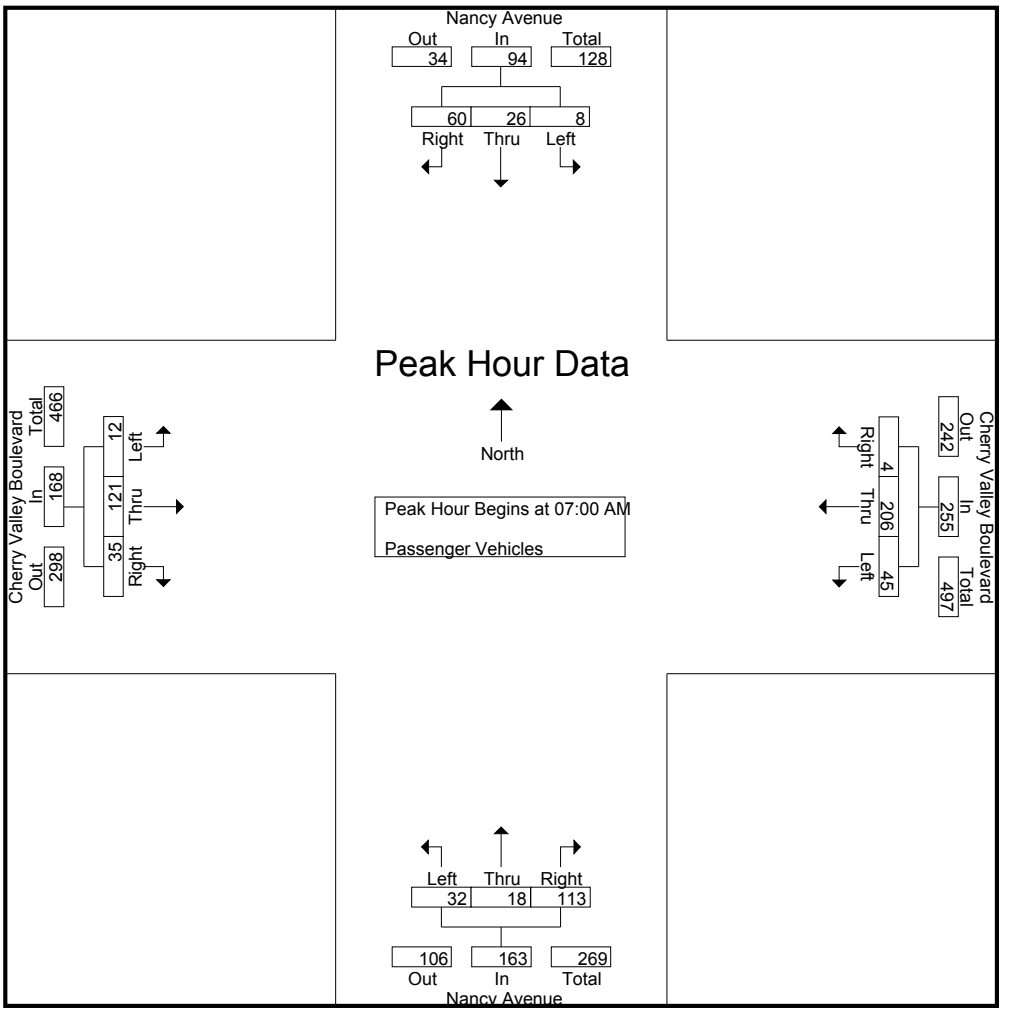

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	**4**	**10**	**22**	**36**	6	49	1	56	**13**	4	**47**	**64**	**6**	36	**14**	**56**
+15 mins.	3	5	21	29	**19**	**64**	**2**	**85**	11	**6**	46	63	4	**44**	6	54
+30 mins.	1	6	11	18	19	56	0	75	7	4	16	27	1	17	5	23
+45 mins.	0	5	6	11	1	37	1	39	1	4	4	9	1	24	10	35
Total Volume	8	26	60	94	45	206	4	255	32	18	113	163	12	121	35	168
% App. Total	8.5	27.7	63.8		17.6	80.8	1.6		19.6	11	69.3		7.1	72	20.8	
PHF	.500	.650	.682	.653	.592	.805	.500	.750	.615	.750	.601	.637	.500	.688	.625	.750

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Groups Printed- Large 2 Axle Vehicles

	Nancy Avenue Southbound				Cherry Valley Boulevard Westbound				Nancy Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	3	1	0	4	1	0	0	1	0	0	3	3	0	1	0	1	9
07:15 AM	0	0	0	0	0	0	0	0	1	1	0	2	0	1	0	1	3
07:30 AM	0	0	0	0	0	0	0	0	0	0	2	2	0	1	0	1	3
07:45 AM	1	0	0	1	0	1	0	1	0	0	1	1	0	1	0	1	4
Total	4	1	0	5	1	1	0	2	1	1	6	8	0	4	0	4	19
08:00 AM	1	0	0	1	0	0	0	0	0	1	0	1	0	2	0	2	4
08:15 AM	0	1	0	1	0	1	0	1	0	0	0	0	0	2	0	2	4
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	1	1	0	2	0	1	0	1	0	1	0	1	0	5	0	5	9
Grand Total	5	2	0	7	1	2	0	3	1	2	6	9	0	9	0	9	28
Apprch %	71.4	28.6	0		33.3	66.7	0		11.1	22.2	66.7		0	100	0		
Total %	17.9	7.1	0	25	3.6	7.1	0	10.7	3.6	7.1	21.4	32.1	0	32.1	0	32.1	

	Nancy Avenue Southbound				Cherry Valley Boulevard Westbound				Nancy Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	**3**	**1**	0	**4**	**1**	0	0	**1**	0	0	**3**	**3**	0	**1**	0	**1**	**9**
07:15 AM	0	0	0	0	0	0	0	0	**1**	**1**	0	2	0	1	0	1	3
07:30 AM	0	0	0	0	0	0	0	0	0	0	2	2	0	1	0	1	3
07:45 AM	1	0	0	1	0	**1**	0	1	0	0	1	1	0	1	0	1	4
Total Volume	4	1	0	5	1	1	0	2	1	1	6	8	0	4	0	4	19
% App. Total	80	20	0		50	50	0		12.5	12.5	75		0	100	0		
PHF	.333	.250	.000	.313	.250	.250	.000	.500	.250	.250	.500	.667	.000	1.00	.000	1.00	.528

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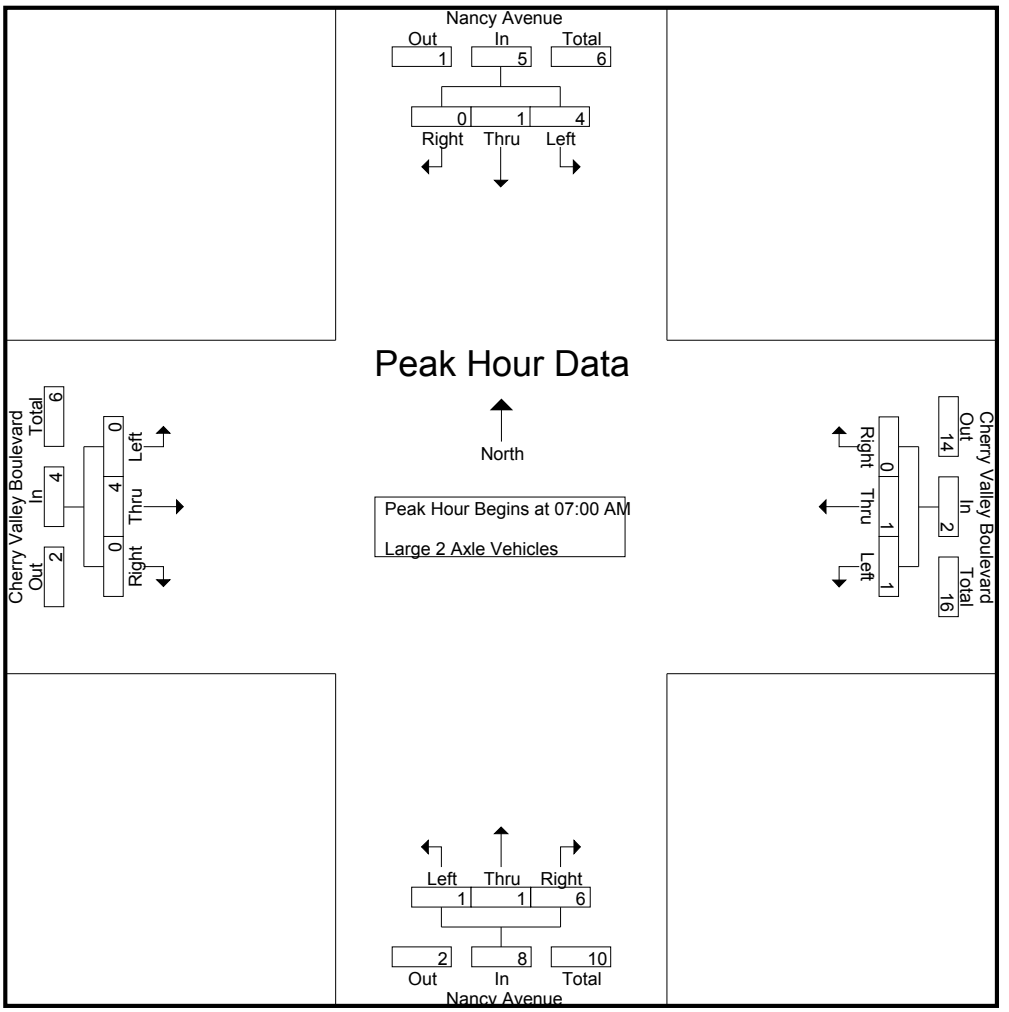

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	**3**	**1**	0	**4**	**1**	0	0	**1**	0	0	**3**	**3**	0	**1**	0	**1**
+15 mins.	0	0	0	0	0	0	0	0	**1**	**1**	0	2	0	1	0	1
+30 mins.	0	0	0	0	0	0	0	0	0	0	2	2	0	1	0	1
+45 mins.	1	0	0	1	0	**1**	0	1	0	0	1	1	0	1	0	1
Total Volume	4	1	0	5	1	1	0	2	1	1	6	8	0	4	0	4
% App. Total	80	20	0		50	50	0		12.5	12.5	75		0	100	0	
PHF	.333	.250	.000	.313	.250	.250	.000	.500	.250	.250	.500	.667	.000	1.000	.000	1.000

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Groups Printed- 3 Axle Vehicles

	Nancy Avenue Southbound				Cherry Valley Boulevard Westbound				Nancy Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	2
Apprch %	0	0	0		0	100	0		0	100	0		0	0	0		
Total %	0	0	0	0	0	50	0	50	0	50	0	50	0	0	0	0	

	Nancy Avenue Southbound				Cherry Valley Boulevard Westbound				Nancy Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	**1**	0	**1**	0	0	0	0	**1**
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
% App. Total	0	0	0		0	0	0		0	100	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.250

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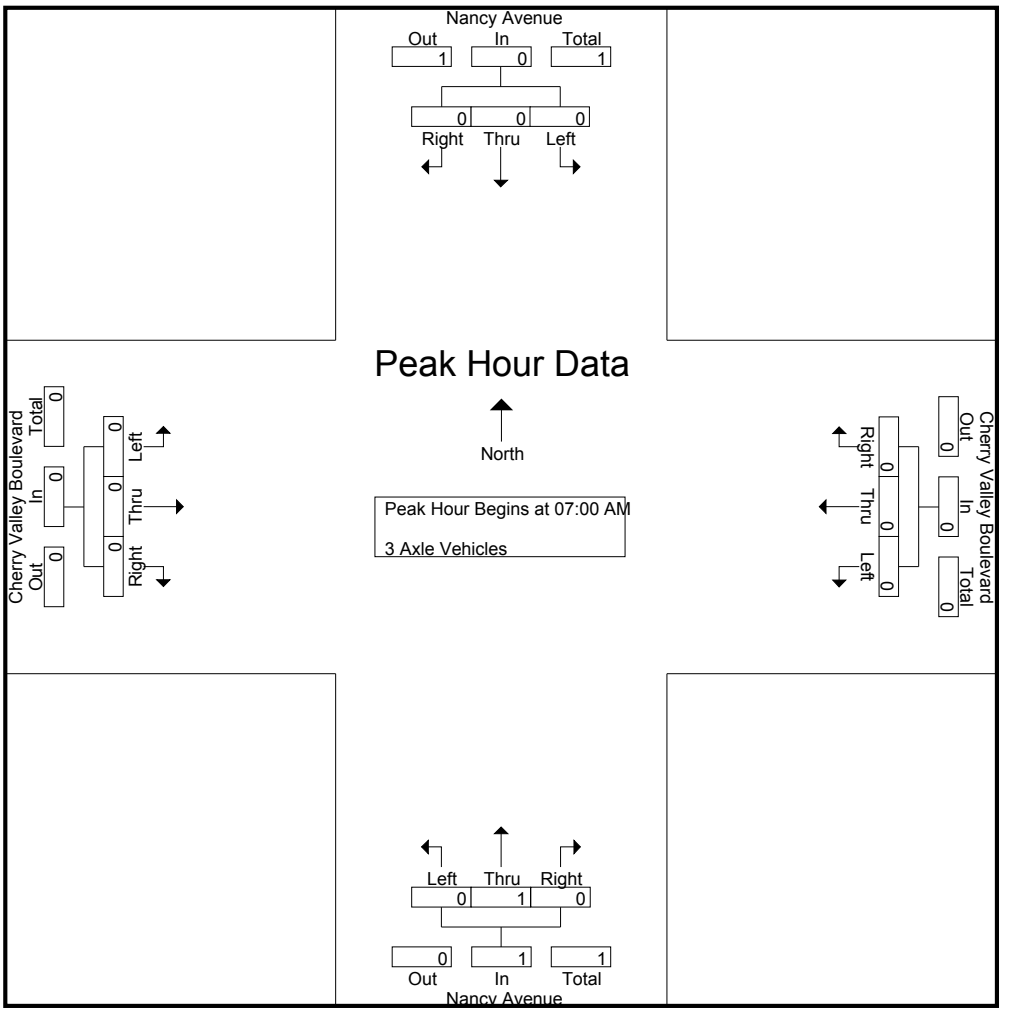

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	**1**	0	**1**	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
% App. Total	0	0	0		0	0	0		0	100	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000

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Groups Printed- 4+ Axle Trucks

	Nancy Avenue Southbound				Cherry Valley Boulevard Westbound				Nancy Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
Grand Total	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
Apprch %	0	0	0		0	100	0		0	0	0		0	0	0		
Total %	0	0	0	0	0	100	0	100	0	0	0	0	0	0	0	0	

	Nancy Avenue Southbound				Cherry Valley Boulevard Westbound				Nancy Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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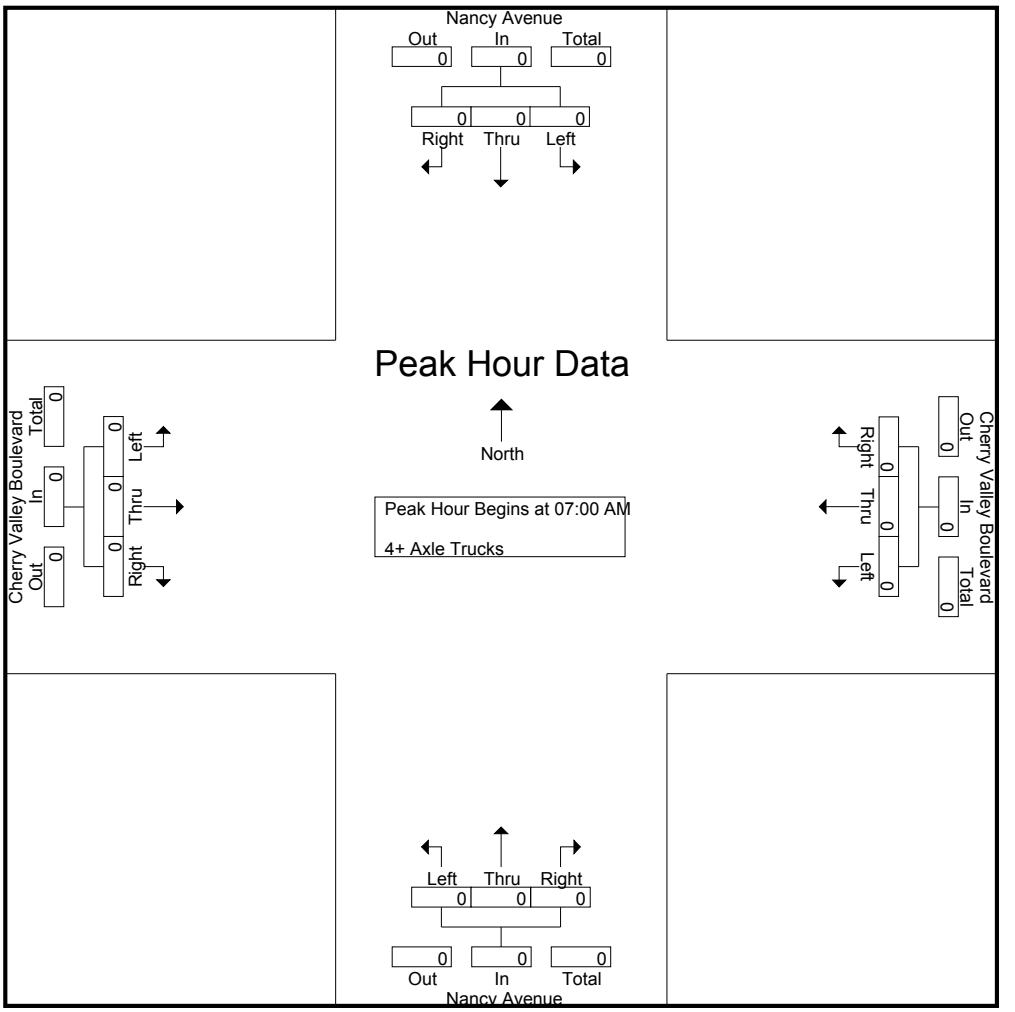

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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County of Riverside
N/S: Nancy Avenue
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRVNACVPM
Site Code : 05114110
Start Date : 4/1/2014
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Nancy Avenue Southbound				Cherry Valley Boulevard Westbound				Nancy Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	2	4	5	11	1	32	4	37	8	9	2	19	11	45	3	59	126
04:15 PM	1	5	4	10	2	25	2	29	5	8	3	16	16	62	5	83	138
04:30 PM	3	4	1	8	1	34	2	37	4	5	2	11	8	48	5	61	117
04:45 PM	2	5	1	8	5	25	2	32	3	3	3	9	8	53	11	72	121
Total	8	18	11	37	9	116	10	135	20	25	10	55	43	208	24	275	502
05:00 PM	2	2	5	9	3	37	0	40	5	6	7	18	13	54	9	76	143
05:15 PM	3	2	1	6	4	31	1	36	6	6	6	18	7	55	6	68	128
05:30 PM	1	5	2	8	2	40	1	43	2	4	6	12	5	68	11	84	147
05:45 PM	2	10	0	12	4	47	2	53	5	10	9	24	11	60	7	78	167
Total	8	19	8	35	13	155	4	172	18	26	28	72	36	237	33	306	585
Grand Total	16	37	19	72	22	271	14	307	38	51	38	127	79	445	57	581	1087
Apprch %	22.2	51.4	26.4		7.2	88.3	4.6		29.9	40.2	29.9		13.6	76.6	9.8		
Total %	1.5	3.4	1.7	6.6	2	24.9	1.3	28.2	3.5	4.7	3.5	11.7	7.3	40.9	5.2	53.4	
Passenger Vehicles	12	36	19	67	22	262	14	298	38	50	34	122	79	434	56	569	1056
% Passenger Vehicles	75	97.3	100	93.1	100	96.7	100	97.1	100	98	89.5	96.1	100	97.5	98.2	97.9	97.1
Large 2 Axle Vehicles	4	1	0	5	0	8	0	8	0	1	3	4	0	10	1	11	28
% Large 2 Axle Vehicles	25	2.7	0	6.9	0	3	0	2.6	0	2	7.9	3.1	0	2.2	1.8	1.9	2.6
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	2
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	2.6	0.8	0	0.2	0	0.2	0.2
4+ Axle Trucks	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
% 4+ Axle Trucks	0	0	0	0	0	0.4	0	0.3	0	0	0	0	0	0	0	0	0.1

	Nancy Avenue Southbound				Cherry Valley Boulevard Westbound				Nancy Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	2	2	**5**	9	3	37	0	40	5	6	7	18	**13**	54	9	76	143
05:15 PM	**3**	2	1	6	**4**	31	1	36	**6**	6	6	18	7	55	6	68	128
05:30 PM	1	5	2	8	2	40	1	43	2	4	6	12	5	**68**	**11**	**84**	147
05:45 PM	2	**10**	0	**12**	4	**47**	**2**	**53**	5	**10**	**9**	**24**	11	60	7	78	**167**
Total Volume	8	19	8	35	13	155	4	172	18	26	28	72	36	237	33	306	585
% App. Total	22.9	54.3	22.9		7.6	90.1	2.3		25	36.1	38.9		11.8	77.5	10.8		
PHF	.667	.475	.400	.729	.813	.824	.500	.811	.750	.650	.778	.750	.692	.871	.750	.911	.876

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Site Code : 05114110
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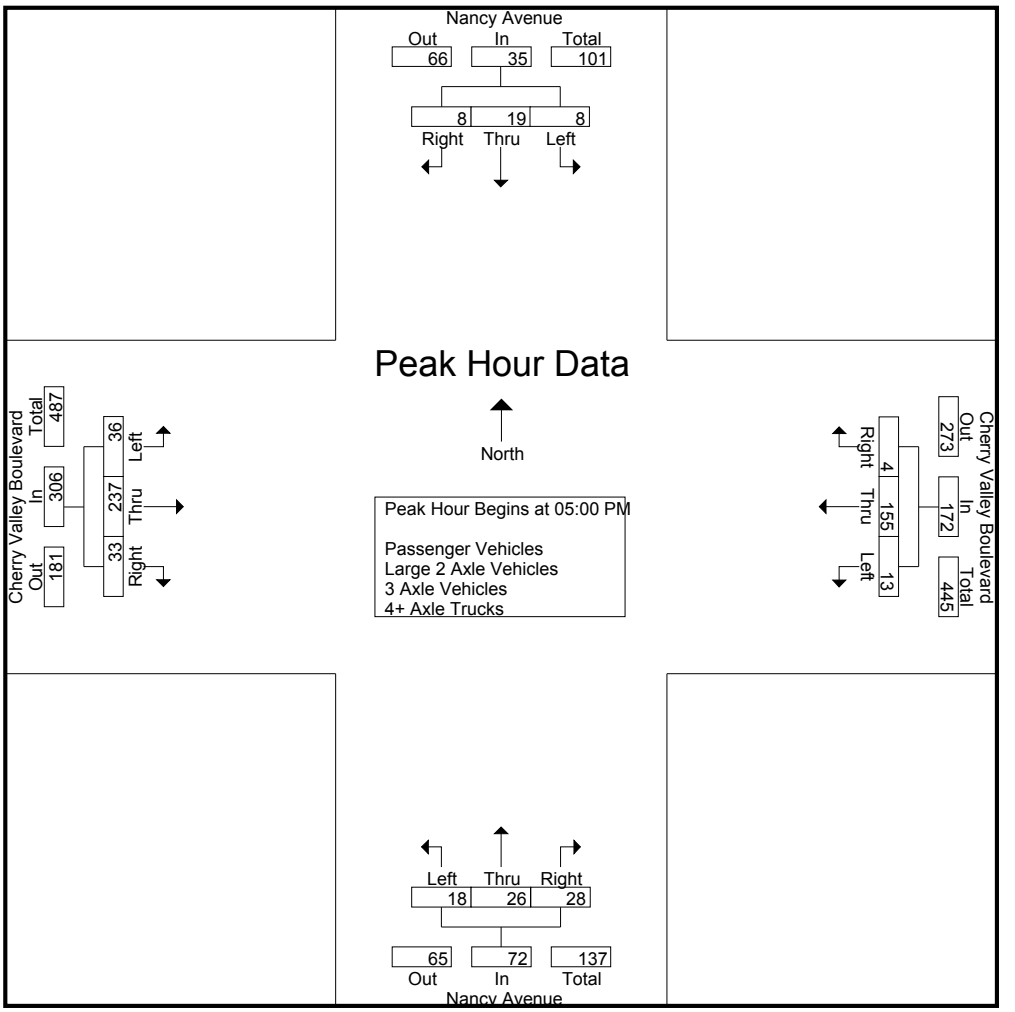

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	2	4	**5**	**11**	3	37	0	40	5	6	7	18	**13**	54	9	76
+15 mins.	1	**5**	4	10	**4**	31	1	36	**6**	6	6	18	7	55	6	68
+30 mins.	**3**	4	1	8	2	40	1	43	2	4	6	12	5	**68**	**11**	**84**
+45 mins.	2	5	1	8	4	**47**	**2**	**53**	5	**10**	**9**	**24**	11	60	7	78
Total Volume	8	18	11	37	13	155	4	172	18	26	28	72	36	237	33	306
% App. Total	21.6	48.6	29.7		7.6	90.1	2.3		25	36.1	38.9		11.8	77.5	10.8	
PHF	.667	.900	.550	.841	.813	.824	.500	.811	.750	.650	.778	.750	.692	.871	.750	.911

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File Name : CRVNACVPM
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Groups Printed- Passenger Vehicles

	Nancy Avenue Southbound				Cherry Valley Boulevard Westbound				Nancy Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	3	5	9	1	31	4	36	8	9	1	18	11	41	3	55	118
04:15 PM	0	5	4	9	2	24	2	28	5	7	2	14	16	60	5	81	132
04:30 PM	3	4	1	8	1	31	2	34	4	5	2	11	8	46	5	59	112
04:45 PM	2	5	1	8	5	24	2	31	3	3	3	9	8	53	11	72	120
Total	6	17	11	34	9	110	10	129	20	24	8	52	43	200	24	267	482
05:00 PM	1	2	5	8	3	37	0	40	5	6	6	17	13	53	9	75	140
05:15 PM	2	2	1	5	4	31	1	36	6	6	6	18	7	53	5	65	124
05:30 PM	1	5	2	8	2	39	1	42	2	4	6	12	5	68	11	84	146
05:45 PM	2	10	0	12	4	45	2	51	5	10	8	23	11	60	7	78	164
Total	6	19	8	33	13	152	4	169	18	26	26	70	36	234	32	302	574
Grand Total	12	36	19	67	22	262	14	298	38	50	34	122	79	434	56	569	1056
Apprch %	17.9	53.7	28.4		7.4	87.9	4.7		31.1	41	27.9		13.9	76.3	9.8		
Total %	1.1	3.4	1.8	6.3	2.1	24.8	1.3	28.2	3.6	4.7	3.2	11.6	7.5	41.1	5.3	53.9	

	Nancy Avenue Southbound				Cherry Valley Boulevard Westbound				Nancy Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	1	2	**5**	8	3	37	0	40	5	6	6	17	**13**	53	9	75	140
05:15 PM	**2**	2	1	5	**4**	31	1	36	**6**	6	6	18	7	53	5	65	124
05:30 PM	1	5	2	8	2	39	1	42	2	4	6	12	5	**68**	**11**	**84**	146
05:45 PM	2	**10**	0	**12**	4	**45**	**2**	**51**	5	**10**	**8**	**23**	11	60	7	78	**164**
Total Volume	6	19	8	33	13	152	4	169	18	26	26	70	36	234	32	302	574
% App. Total	18.2	57.6	24.2		7.7	89.9	2.4		25.7	37.1	37.1		11.9	77.5	10.6		
PHF	.750	.475	.400	.688	.813	.844	.500	.828	.750	.650	.813	.761	.692	.860	.727	.899	.875

CVAR_11430

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Site Code : 05114110
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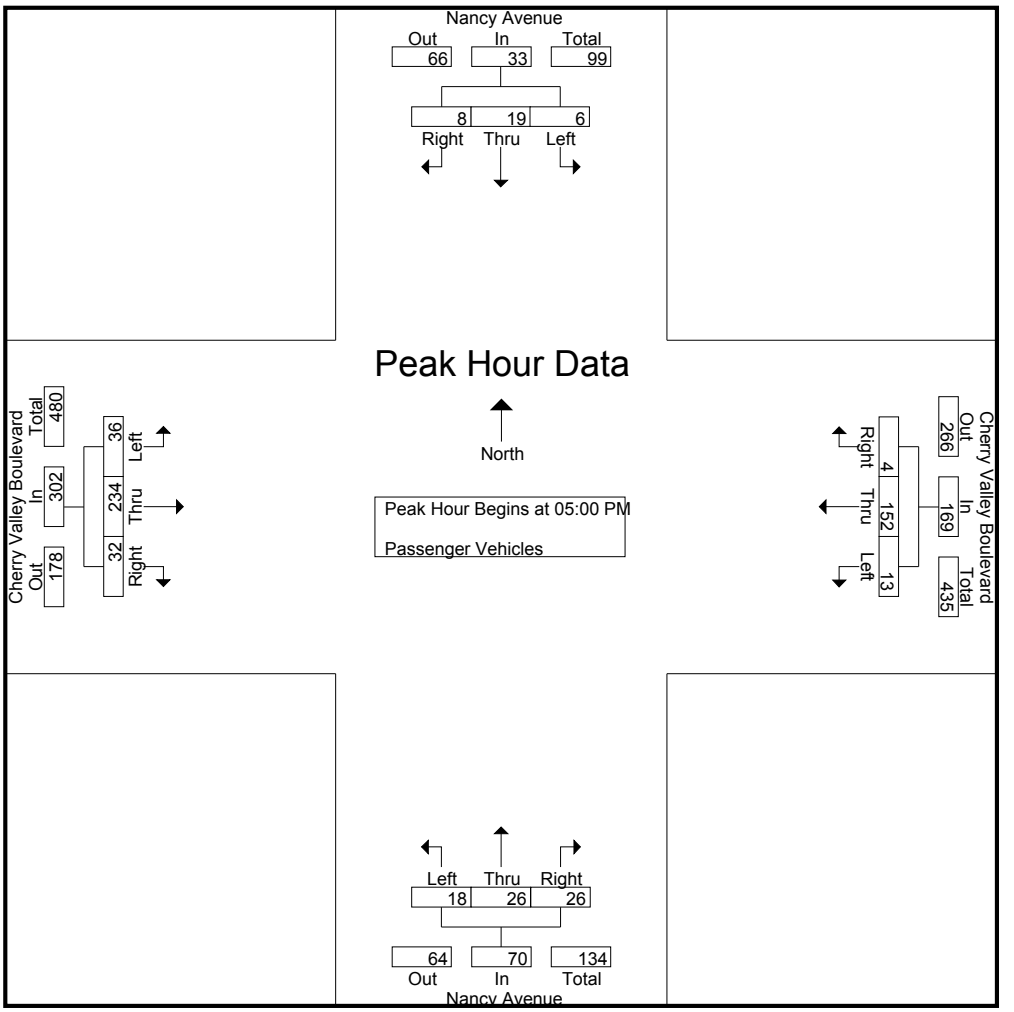

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	1	3	**5**	**9**	3	37	0	40	5	6	6	17	**13**	53	9	75
+15 mins.	0	**5**	4	9	**4**	31	1	36	**6**	6	6	18	7	53	5	65
+30 mins.	**3**	4	1	8	2	39	1	42	2	4	6	12	5	**68**	**11**	**84**
+45 mins.	2	5	1	8	4	**45**	**2**	**51**	5	**10**	**8**	**23**	11	60	7	78
Total Volume	6	17	11	34	13	152	4	169	18	26	26	70	36	234	32	302
% App. Total	17.6	50	32.4		7.7	89.9	2.4		25.7	37.1	37.1		11.9	77.5	10.6	
PHF	.500	.850	.550	.944	.813	.844	.500	.828	.750	.650	.813	.761	.692	.860	.727	.899

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File Name : CRVNACVPM
Site Code : 05114110
Start Date : 4/1/2014
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Nancy Avenue Southbound				Cherry Valley Boulevard Westbound				Nancy Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	1	0	2	0	1	0	1	0	0	0	0	0	4	0	4	7
04:15 PM	1	0	0	1	0	1	0	1	0	1	1	2	0	1	0	1	5
04:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
04:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total	2	1	0	3	0	5	0	5	0	1	1	2	0	7	0	7	17
05:00 PM	1	0	0	1	0	0	0	0	0	0	1	1	0	1	0	1	3
05:15 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	2	1	3	4
05:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	2	0	2	0	0	1	1	0	0	0	0	3
Total	2	0	0	2	0	3	0	3	0	0	2	2	0	3	1	4	11
Grand Total	4	1	0	5	0	8	0	8	0	1	3	4	0	10	1	11	28
Apprch %	80	20	0		0	100	0		0	25	75		0	90.9	9.1		
Total %	14.3	3.6	0	17.9	0	28.6	0	28.6	0	3.6	10.7	14.3	0	35.7	3.6	39.3	

	Nancy Avenue Southbound				Cherry Valley Boulevard Westbound				Nancy Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**1**	0	0	**1**	0	0	0	0	0	0	**1**	**1**	0	1	0	1	3
05:15 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	**2**	**1**	**3**	**4**
05:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	**2**	0	**2**	0	0	1	1	0	0	0	0	3
Total Volume	2	0	0	2	0	3	0	3	0	0	2	2	0	3	1	4	11
% App. Total	100	0	0		0	100	0		0	0	100		0	75	25		
PHF	.500	.000	.000	.500	.000	.375	.000	.375	.000	.000	.500	.500	.000	.375	.250	.333	.688

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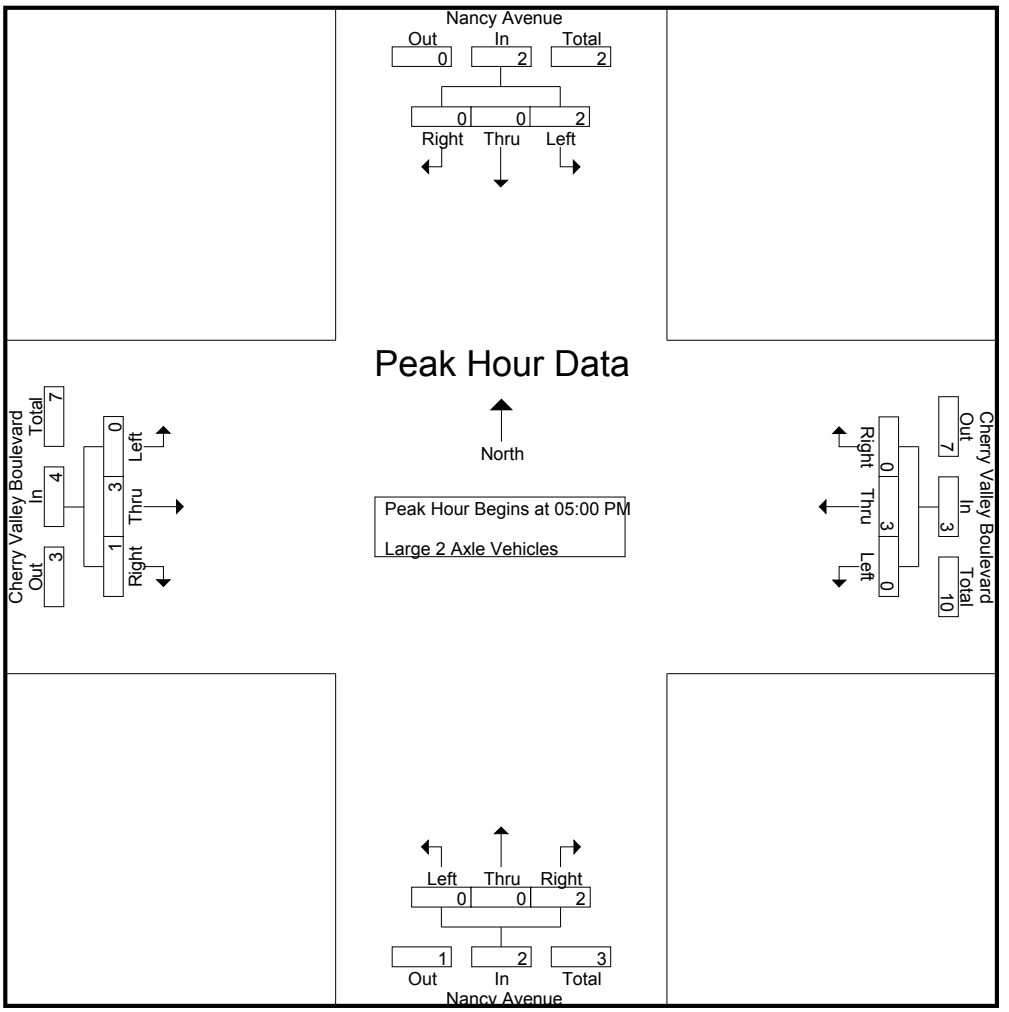

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	**1**	0	0	**1**	0	0	0	0	0	0	**1**	**1**	0	1	0	1
+15 mins.	1	0	0	1	0	0	0	0	0	0	0	0	0	**2**	**1**	**3**
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	**2**	0	**2**	0	0	1	1	0	0	0	0
Total Volume	2	0	0	2	0	3	0	3	0	0	2	2	0	3	1	4
% App. Total	100	0	0		0	100	0		0	0	100		0	75	25	
PHF	.500	.000	.000	.500	.000	.375	.000	.375	.000	.000	.500	.500	.000	.375	.250	.333

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Groups Printed- 3 Axle Vehicles

	Nancy Avenue Southbound				Cherry Valley Boulevard Westbound				Nancy Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	2
Apprch %	0	0	0		0	0	0		0	0	100		0	100	0		
Total %	0	0	0	0	0	0	0	0	0	0	50	50	0	50	0	50	

	Nancy Avenue Southbound				Cherry Valley Boulevard Westbound				Nancy Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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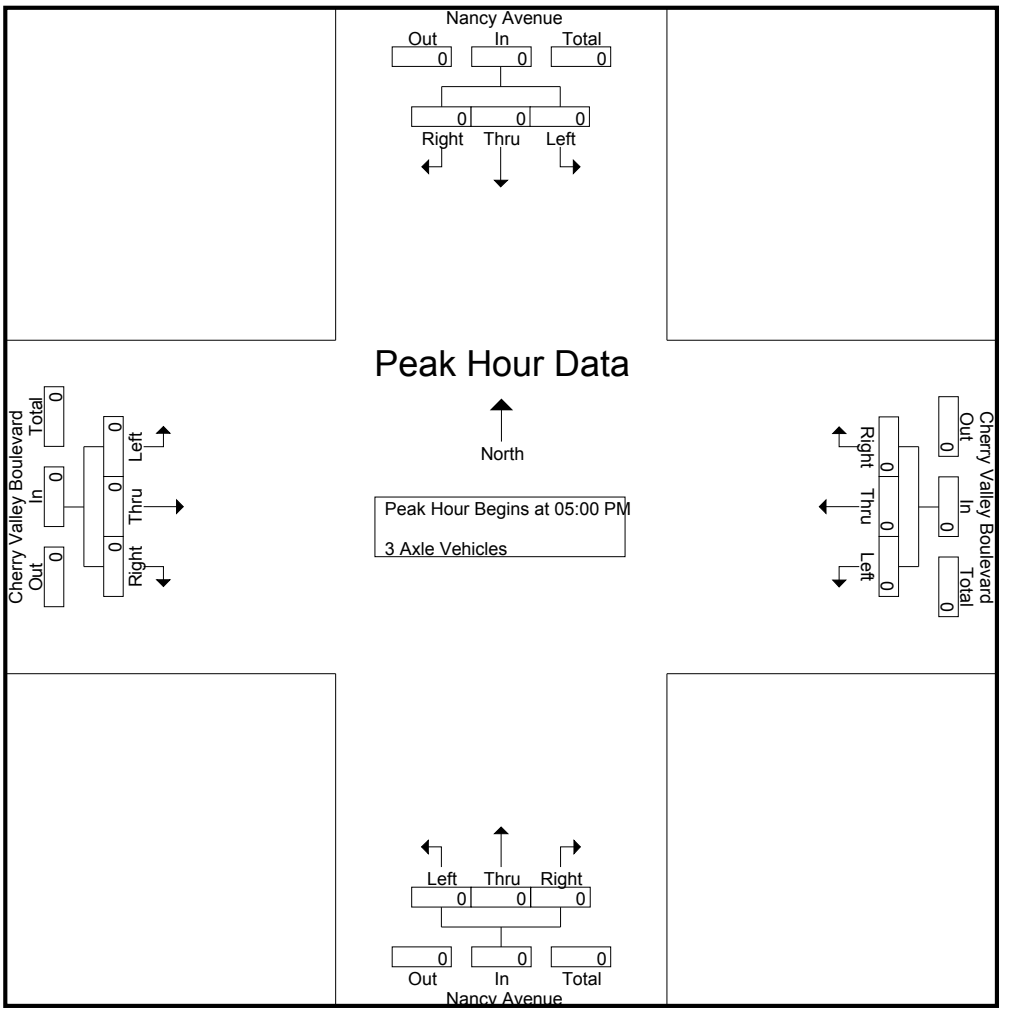

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- 4+ Axle Trucks

	Nancy Avenue Southbound				Cherry Valley Boulevard Westbound				Nancy Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Apprch %	0	0	0		0	100	0		0	0	0		0	0	0		
Total %	0	0	0	0	0	100	0	100	0	0	0	0	0	0	0	0	

	Nancy Avenue Southbound				Cherry Valley Boulevard Westbound				Nancy Avenue Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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County of Riverside
N/S: Nancy Avenue
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRVNACVPM
Site Code : 05114110
Start Date : 4/1/2014
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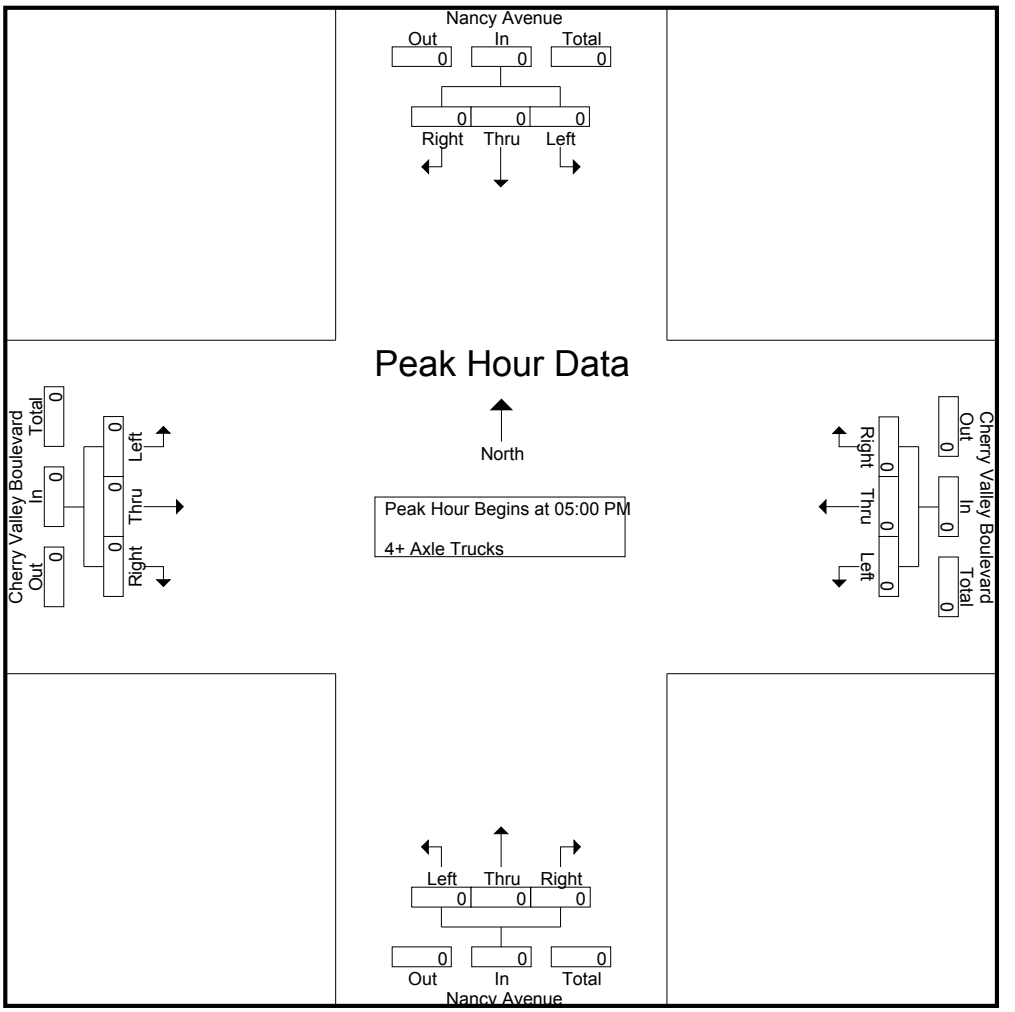

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Weather: Clear

File Name : CRVUNCVAM
Site Code : 05114110
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Union Street Southbound				Cherry Valley Boulevard Westbound				Union Street Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	1	1	18	20	0	80	0	80	1	0	0	1	3	53	1	57	158
07:15 AM	0	0	23	23	1	94	0	95	5	0	3	8	4	47	1	52	178
07:30 AM	0	0	18	18	2	78	0	80	1	0	0	1	5	23	0	28	127
07:45 AM	0	0	8	8	0	49	1	50	5	0	0	5	3	43	1	47	110
Total	1	1	67	69	3	301	1	305	12	0	3	15	15	166	3	184	573
08:00 AM	0	0	24	24	0	56	0	56	4	1	1	6	6	31	1	38	124
08:15 AM	1	1	10	12	1	53	0	54	8	0	0	8	7	28	2	37	111
08:30 AM	0	0	13	13	0	58	0	58	5	0	0	5	1	22	2	25	101
08:45 AM	0	0	16	16	1	45	0	46	1	0	1	2	5	24	0	29	93
Total	1	1	63	65	2	212	0	214	18	1	2	21	19	105	5	129	429
Grand Total	2	2	130	134	5	513	1	519	30	1	5	36	34	271	8	313	1002
Apprch %	1.5	1.5	97		1	98.8	0.2		83.3	2.8	13.9		10.9	86.6	2.6		
Total %	0.2	0.2	13	13.4	0.5	51.2	0.1	51.8	3	0.1	0.5	3.6	3.4	27	0.8	31.2	
Passenger Vehicles	1	2	128	131	5	507	1	513	29	1	5	35	30	265	8	303	982
% Passenger Vehicles	50	100	98.5	97.8	100	98.8	100	98.8	96.7	100	100	97.2	88.2	97.8	100	96.8	98
Large 2 Axle Vehicles	1	0	2	3	0	4	0	4	1	0	0	1	4	5	0	9	17
% Large 2 Axle Vehicles	50	0	1.5	2.2	0	0.8	0	0.8	3.3	0	0	2.8	11.8	1.8	0	2.9	1.7
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
% 4+ Axle Trucks	0	0	0	0	0	0.4	0	0.4	0	0	0	0	0	0.4	0	0.3	0.3

	Union Street Southbound				Cherry Valley Boulevard Westbound				Union Street Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	**1**	**1**	18	20	0	80	0	80	1	0	0	1	3	**53**	**1**	**57**	158
07:15 AM	0	0	**23**	**23**	1	**94**	0	**95**	**5**	0	**3**	**8**	4	47	1	52	**178**
07:30 AM	0	0	18	18	**2**	78	0	80	1	0	0	1	**5**	23	0	28	127
07:45 AM	0	0	8	8	0	49	**1**	50	5	0	0	5	3	43	1	47	110
Total Volume	1	1	67	69	3	301	1	305	12	0	3	15	15	166	3	184	573
% App. Total	1.4	1.4	97.1		1	98.7	0.3		80	0	20		8.2	90.2	1.6		
PHF	.250	.250	.728	.750	.375	.801	.250	.803	.600	.000	.250	.469	.750	.783	.750	.807	.805

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File Name : CRVUNCVAM
Site Code : 05114110
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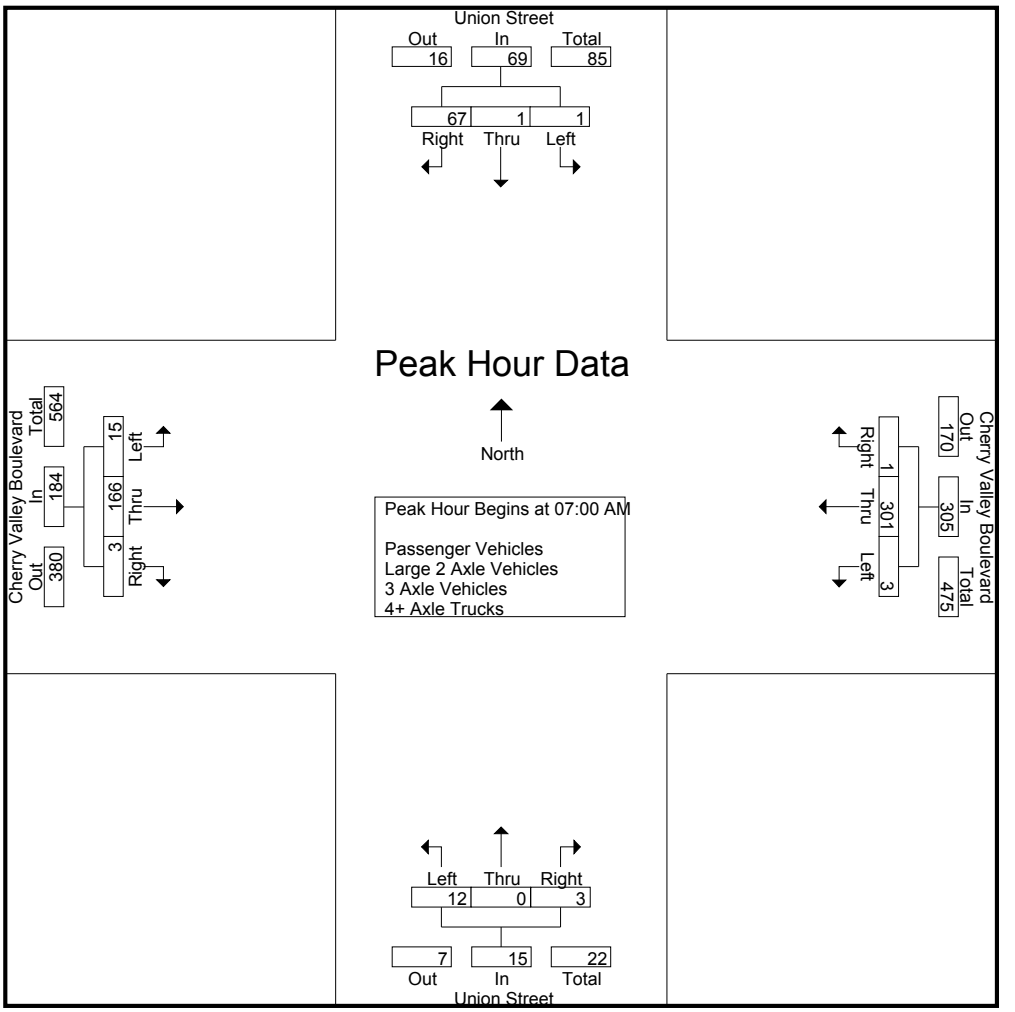

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:45 AM				07:00 AM			
+0 mins.	0	0	23	23	0	80	0	80	5	0	0	5	3	**53**	**1**	**57**
+15 mins.	0	0	18	18	1	**94**	0	**95**	4	**1**	**1**	6	4	47	1	52
+30 mins.	0	0	8	8	**2**	78	0	80	**8**	0	0	**8**	**5**	23	0	28
+45 mins.	0	0	**24**	**24**	0	49	**1**	50	5	0	0	5	3	43	1	47
Total Volume	0	0	73	73	3	301	1	305	22	1	1	24	15	166	3	184
% App. Total	0	0	100		1	98.7	0.3		91.7	4.2	4.2		8.2	90.2	1.6	
PHF	.000	.000	.760	.760	.375	.801	.250	.803	.688	.250	.250	.750	.750	.783	.750	.807

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Groups Printed- Passenger Vehicles

	Union Street Southbound				Cherry Valley Boulevard Westbound				Union Street Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	1	1	18	20	0	80	0	80	1	0	0	1	3	53	1	57	158
07:15 AM	0	0	23	23	1	93	0	94	5	0	3	8	4	46	1	51	176
07:30 AM	0	0	17	17	2	77	0	79	1	0	0	1	5	22	0	27	124
07:45 AM	0	0	8	8	0	48	1	49	5	0	0	5	2	43	1	46	108
Total	1	1	66	68	3	298	1	302	12	0	3	15	14	164	3	181	566
08:00 AM	0	0	23	23	0	54	0	54	3	1	1	5	5	30	1	36	118
08:15 AM	0	1	10	11	1	53	0	54	8	0	0	8	5	27	2	34	107
08:30 AM	0	0	13	13	0	58	0	58	5	0	0	5	1	21	2	24	100
08:45 AM	0	0	16	16	1	44	0	45	1	0	1	2	5	23	0	28	91
Total	0	1	62	63	2	209	0	211	17	1	2	20	16	101	5	122	416
Grand Total	1	2	128	131	5	507	1	513	29	1	5	35	30	265	8	303	982
Apprch %	0.8	1.5	97.7		1	98.8	0.2		82.9	2.9	14.3		9.9	87.5	2.6		
Total %	0.1	0.2	13	13.3	0.5	51.6	0.1	52.2	3	0.1	0.5	3.6	3.1	27	0.8	30.9	

	Union Street Southbound				Cherry Valley Boulevard Westbound				Union Street Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	**1**	**1**	18	20	0	80	0	80	1	0	0	1	3	**53**	**1**	**57**	158
07:15 AM	0	0	**23**	**23**	1	**93**	0	**94**	**5**	0	**3**	**8**	4	46	1	51	**176**
07:30 AM	0	0	17	17	**2**	77	0	79	1	0	0	1	**5**	22	0	27	124
07:45 AM	0	0	8	8	0	48	**1**	49	5	0	0	5	2	43	1	46	108
Total Volume	1	1	66	68	3	298	1	302	12	0	3	15	14	164	3	181	566
% App. Total	1.5	1.5	97.1		1	98.7	0.3		80	0	20		7.7	90.6	1.7		
PHF	.250	.250	.717	.739	.375	.801	.250	.803	.600	.000	.250	.469	.700	.774	.750	.794	.804

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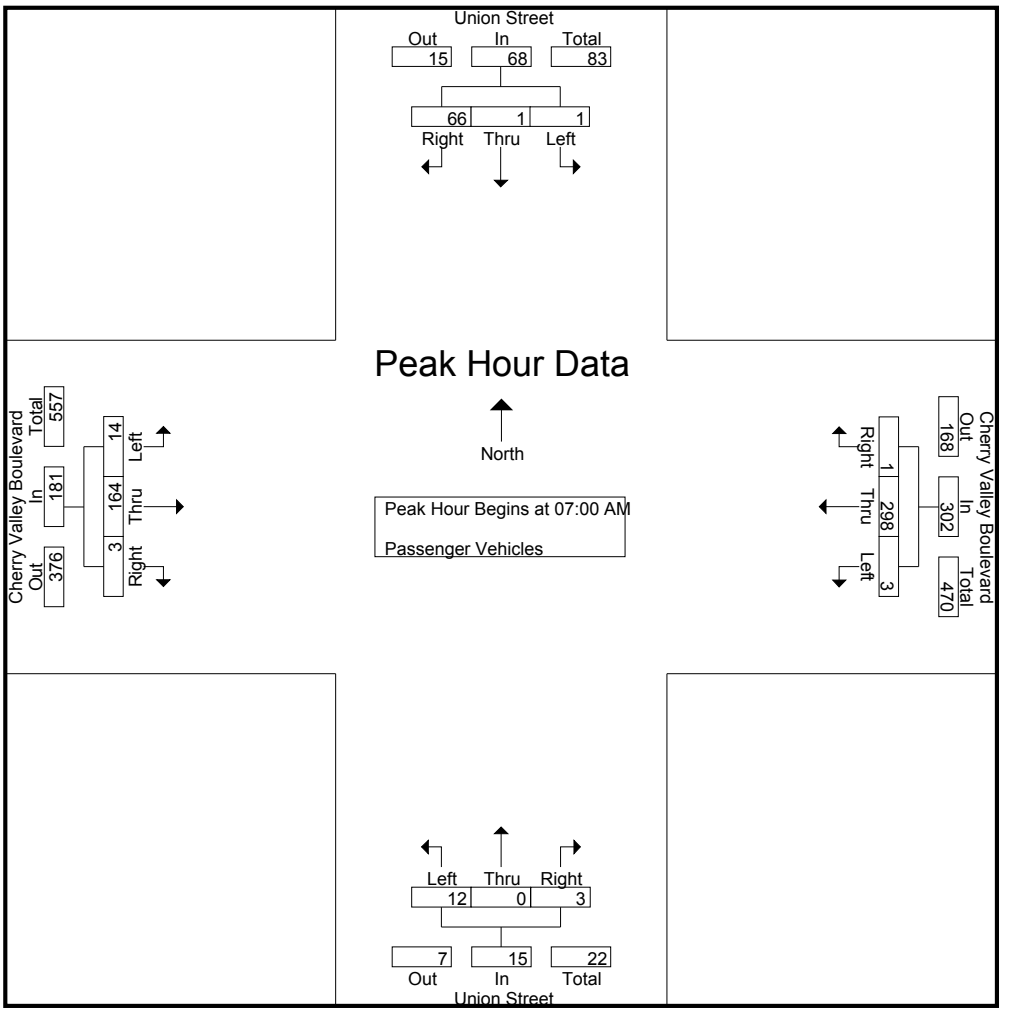

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:45 AM				07:00 AM			
+0 mins.	0	0	**23**	**23**	0	80	0	80	5	0	0	5	3	**53**	**1**	**57**
+15 mins.	0	0	17	17	1	**93**	0	**94**	3	**1**	**1**	5	4	46	1	51
+30 mins.	0	0	8	8	**2**	77	0	79	**8**	0	0	**8**	**5**	22	0	27
+45 mins.	0	0	23	23	0	48	**1**	49	5	0	0	5	2	43	1	46
Total Volume	0	0	71	71	3	298	1	302	21	1	1	23	14	164	3	181
% App. Total	0	0	100		1	98.7	0.3		91.3	4.3	4.3		7.7	90.6	1.7	
PHF	.000	.000	.772	.772	.375	.801	.250	.803	.656	.250	.250	.719	.700	.774	.750	.794

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Site Code : 05114110
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Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Union Street Southbound				Cherry Valley Boulevard Westbound				Union Street Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
07:30 AM	0	0	1	1	0	1	0	1	0	0	0	0	0	1	0	1	3
07:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	1	2
Total	0	0	1	1	0	3	0	3	0	0	0	0	1	2	0	3	7
08:00 AM	0	0	1	1	0	0	0	0	1	0	0	1	1	1	0	2	4
08:15 AM	1	0	0	1	0	0	0	0	0	0	0	0	2	1	0	3	4
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
Total	1	0	1	2	0	1	0	1	1	0	0	1	3	3	0	6	10
Grand Total	1	0	2	3	0	4	0	4	1	0	0	1	4	5	0	9	17
Apprch %	33.3	0	66.7		0	100	0		100	0	0		44.4	55.6	0		
Total %	5.9	0	11.8	17.6	0	23.5	0	23.5	5.9	0	0	5.9	23.5	29.4	0	52.9	

	Union Street Southbound				Cherry Valley Boulevard Westbound				Union Street Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	**1**	0	**1**	2
07:30 AM	0	0	**1**	**1**	0	1	0	1	0	0	0	0	0	1	0	1	**3**
07:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	**1**	0	0	1	2
Total Volume	0	0	1	1	0	3	0	3	0	0	0	0	1	2	0	3	7
% App. Total	0	0	100		0	100	0		0	0	0		33.3	66.7	0		
PHF	.000	.000	.250	.250	.000	.750	.000	.750	.000	.000	.000	.000	.250	.500	.000	.750	.583

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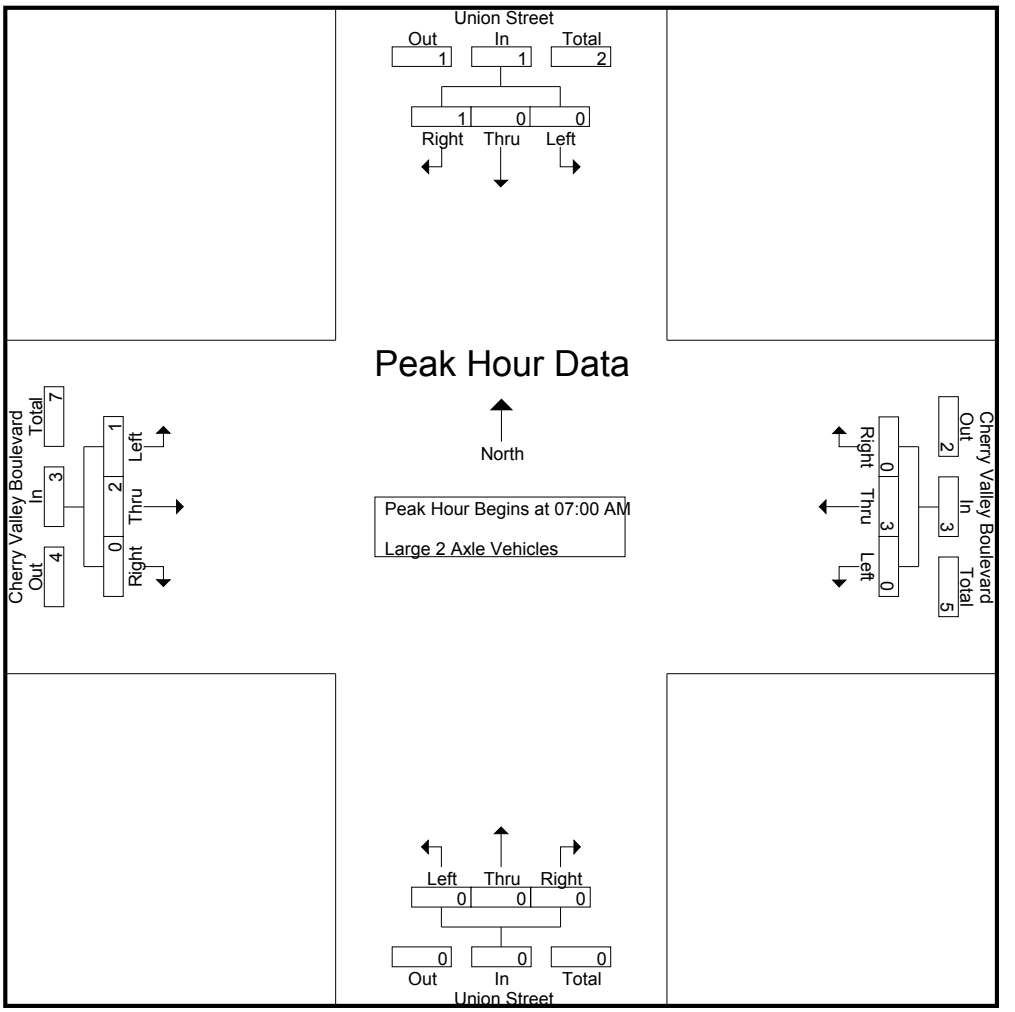

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	**1**	0	**1**
+30 mins.	0	0	**1**	**1**	0	1	0	1	0	0	0	0	0	1	0	1
+45 mins.	0	0	0	0	0	1	0	1	0	0	0	0	**1**	0	0	1
Total Volume	0	0	1	1	0	3	0	3	0	0	0	0	1	2	0	3
% App. Total	0	0	100		0	100	0		0	0	0		33.3	66.7	0	
PHF	.000	.000	.250	.250	.000	.750	.000	.750	.000	.000	.000	.000	.250	.500	.000	.750

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File Name : CRVUNCVAM
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Groups Printed- 3 Axle Vehicles

	Union Street Southbound				Cherry Valley Boulevard Westbound				Union Street Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0		
Total %																	

	Union Street Southbound				Cherry Valley Boulevard Westbound				Union Street Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Weather: Clear

File Name : CRVUNCVAM
Site Code : 05114110
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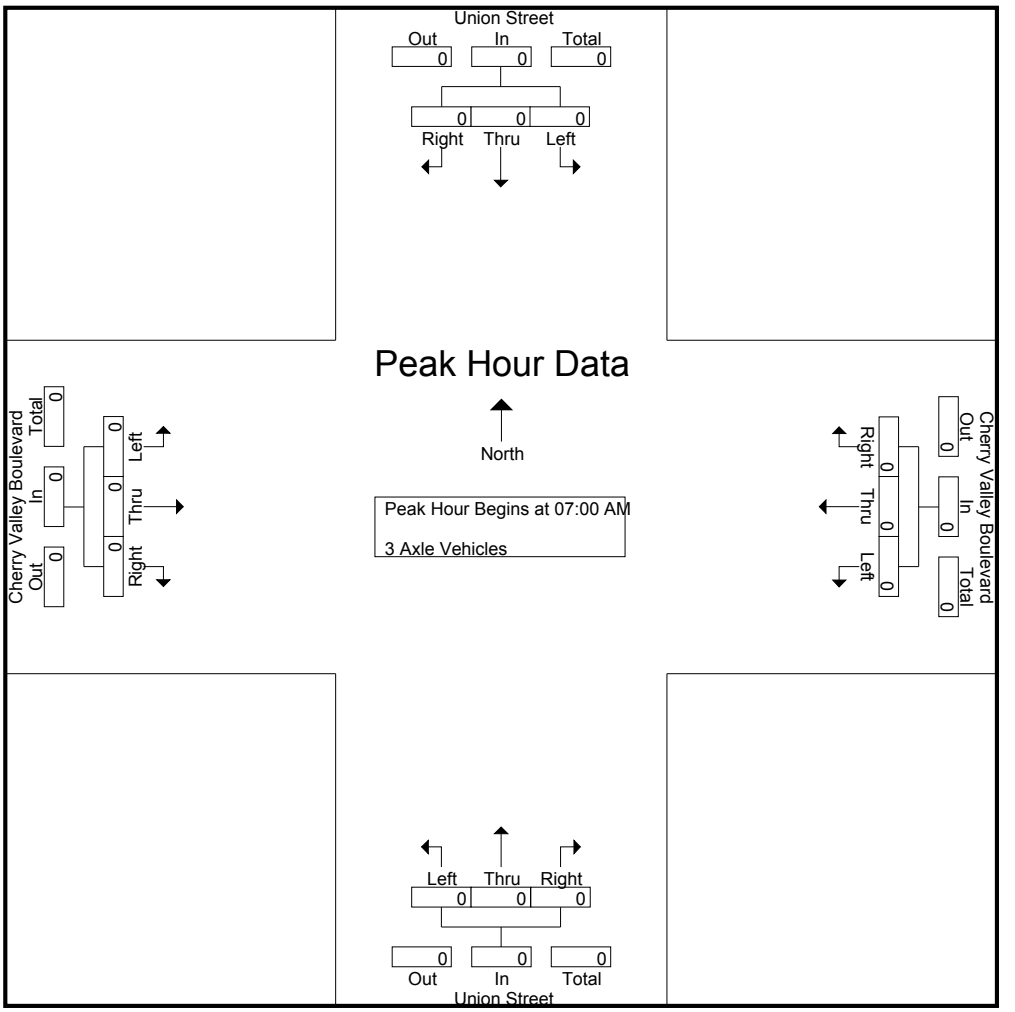

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- 4+ Axle Trucks

	Union Street Southbound				Cherry Valley Boulevard Westbound				Union Street Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
Grand Total	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	66.7	0	66.7	0	0	0	0	0	33.3	0	33.3	

	Union Street Southbound				Cherry Valley Boulevard Westbound				Union Street Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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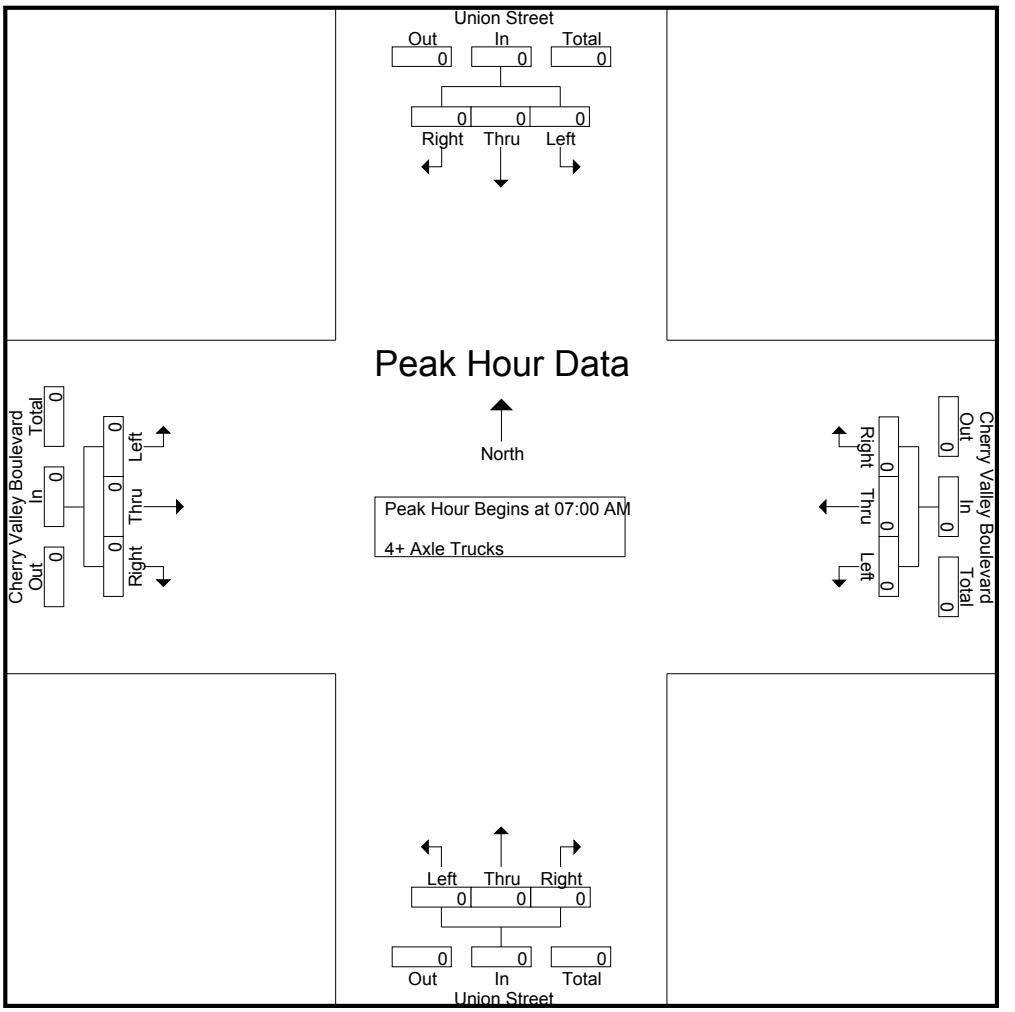

Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Union Street Southbound				Cherry Valley Boulevard Westbound				Union Street Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	5	5	0	38	0	38	4	1	2	7	7	56	2	65	115
04:15 PM	0	0	7	7	0	32	0	32	2	1	1	4	9	79	3	91	134
04:30 PM	0	1	7	8	1	39	0	40	1	1	1	3	16	59	1	76	127
04:45 PM	0	1	8	9	1	29	0	30	0	1	0	1	16	74	4	94	134
Total	0	2	27	29	2	138	0	140	7	4	4	15	48	268	10	326	510
05:00 PM	0	0	5	5	1	46	0	47	3	0	2	5	10	73	4	87	144
05:15 PM	0	0	5	5	2	38	0	40	1	1	0	2	14	68	3	85	132
05:30 PM	0	0	8	8	2	47	0	49	3	0	0	3	5	83	2	90	150
05:45 PM	0	0	7	7	0	50	0	50	2	0	0	2	9	76	3	88	147
Total	0	0	25	25	5	181	0	186	9	1	2	12	38	300	12	350	573
Grand Total	0	2	52	54	7	319	0	326	16	5	6	27	86	568	22	676	1083
Apprch %	0	3.7	96.3		2.1	97.9	0		59.3	18.5	22.2		12.7	84	3.3		
Total %	0	0.2	4.8	5	0.6	29.5	0	30.1	1.5	0.5	0.6	2.5	7.9	52.4	2	62.4	
Passenger Vehicles	0	2	52	54	7	312	0	319	16	4	5	25	86	565	22	673	1071
% Passenger Vehicles	0	100	100	100	100	97.8	0	97.9	100	80	83.3	92.6	100	99.5	100	99.6	98.9
Large 2 Axle Vehicles	0	0	0	0	0	7	0	7	0	0	1	1	0	2	0	2	10
% Large 2 Axle Vehicles	0	0	0	0	0	2.2	0	2.1	0	0	16.7	3.7	0	0.4	0	0.3	0.9
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	20	0	3.7	0	0	0	0	0.1
4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
% 4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0	0.1	0.1

	Union Street Southbound				Cherry Valley Boulevard Westbound				Union Street Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	5	5	1	46	0	47	**3**	0	**2**	**5**	10	73	**4**	87	144
05:15 PM	0	0	5	5	**2**	38	0	40	1	**1**	0	2	**14**	68	3	85	132
05:30 PM	0	0	**8**	**8**	2	47	0	49	3	0	0	3	5	**83**	2	**90**	**150**
05:45 PM	0	0	7	7	0	**50**	0	**50**	2	0	0	2	9	76	3	88	147
Total Volume	0	0	25	25	5	181	0	186	9	1	2	12	38	300	12	350	573
% App. Total	0	0	100		2.7	97.3	0		75	8.3	16.7		10.9	85.7	3.4		
PHF	.000	.000	.781	.781	.625	.905	.000	.930	.750	.250	.250	.600	.679	.904	.750	.972	.955

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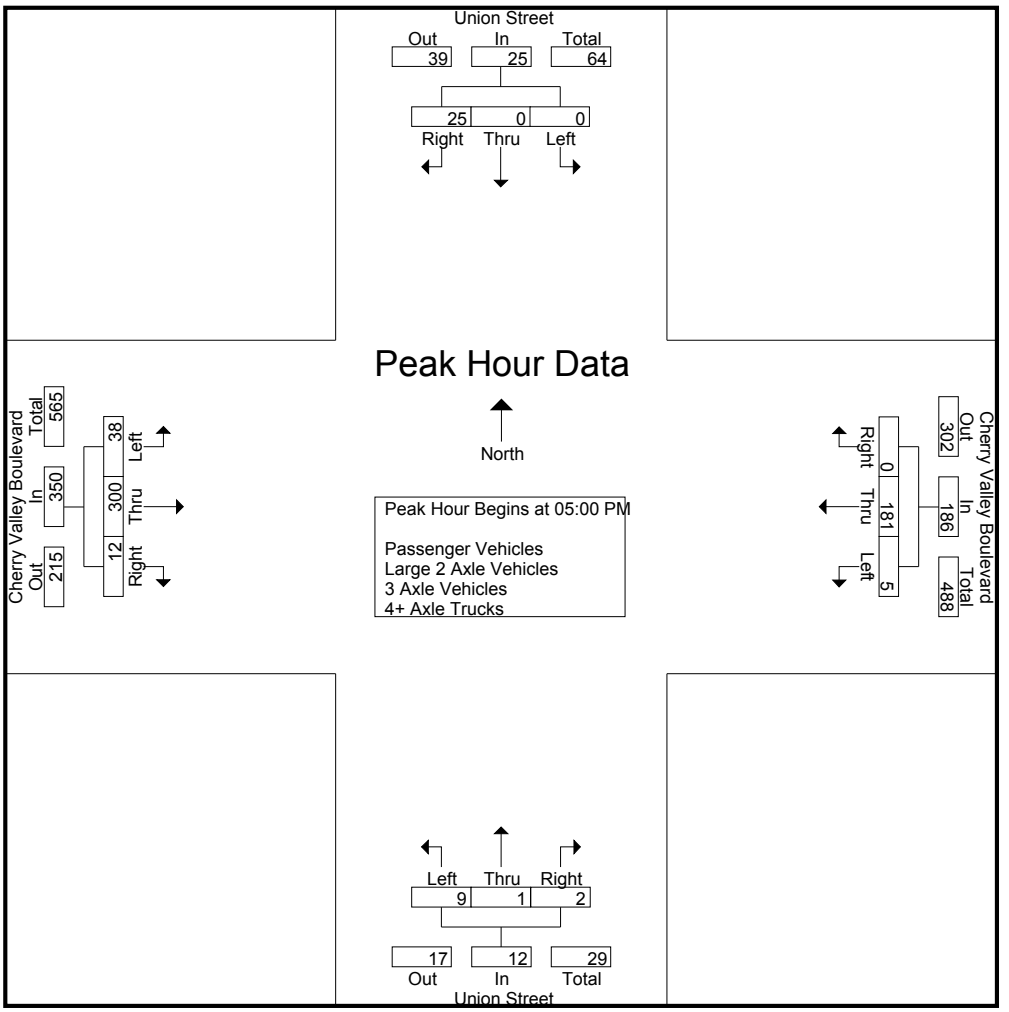

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				04:00 PM				04:45 PM			
+0 mins.	0	0	5	5	1	46	0	47	**4**	**1**	**2**	**7**	**16**	74	**4**	**94**
+15 mins.	0	0	7	7	**2**	38	0	40	2	1	1	4	10	73	4	87
+30 mins.	0	**1**	7	8	2	47	0	49	1	1	1	3	14	68	3	85
+45 mins.	0	1	**8**	**9**	0	**50**	0	**50**	0	1	0	1	5	**83**	2	90
Total Volume	0	2	27	29	5	181	0	186	7	4	4	15	45	298	13	356
% App. Total	0	6.9	93.1		2.7	97.3	0		46.7	26.7	26.7		12.6	83.7	3.7	
PHF	.000	.500	.844	.806	.625	.905	.000	.930	.438	1.000	.500	.536	.703	.898	.813	.947

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Groups Printed- Passenger Vehicles

	Union Street Southbound				Cherry Valley Boulevard Westbound				Union Street Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	5	5	0	38	0	38	4	1	2	7	7	56	2	65	115
04:15 PM	0	0	7	7	0	31	0	31	2	0	0	2	9	79	3	91	131
04:30 PM	0	1	7	8	1	37	0	38	1	1	1	3	16	59	1	76	125
04:45 PM	0	1	8	9	1	28	0	29	0	1	0	1	16	74	4	94	133
Total	0	2	27	29	2	134	0	136	7	3	3	13	48	268	10	326	504
05:00 PM	0	0	5	5	1	46	0	47	3	0	2	5	10	72	4	86	143
05:15 PM	0	0	5	5	2	38	0	40	1	1	0	2	14	67	3	84	131
05:30 PM	0	0	8	8	2	46	0	48	3	0	0	3	5	83	2	90	149
05:45 PM	0	0	7	7	0	48	0	48	2	0	0	2	9	75	3	87	144
Total	0	0	25	25	5	178	0	183	9	1	2	12	38	297	12	347	567
Grand Total	0	2	52	54	7	312	0	319	16	4	5	25	86	565	22	673	1071
Apprch %	0	3.7	96.3		2.2	97.8	0		64	16	20		12.8	84	3.3		
Total %	0	0.2	4.9	5	0.7	29.1	0	29.8	1.5	0.4	0.5	2.3	8	52.8	2.1	62.8	

	Union Street Southbound				Cherry Valley Boulevard Westbound				Union Street Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	5	5	1	46	0	47	**3**	0	**2**	**5**	10	72	**4**	86	143
05:15 PM	0	0	5	5	**2**	38	0	40	1	**1**	0	2	**14**	67	3	84	131
05:30 PM	0	0	**8**	**8**	2	46	0	**48**	3	0	0	3	5	**83**	2	**90**	**149**
05:45 PM	0	0	7	7	0	**48**	0	48	2	0	0	2	9	75	3	87	144
Total Volume	0	0	25	25	5	178	0	183	9	1	2	12	38	297	12	347	567
% App. Total	0	0	100		2.7	97.3	0		75	8.3	16.7		11	85.6	3.5		
PHF	.000	.000	.781	.781	.625	.927	.000	.953	.750	.250	.250	.600	.679	.895	.750	.964	.951

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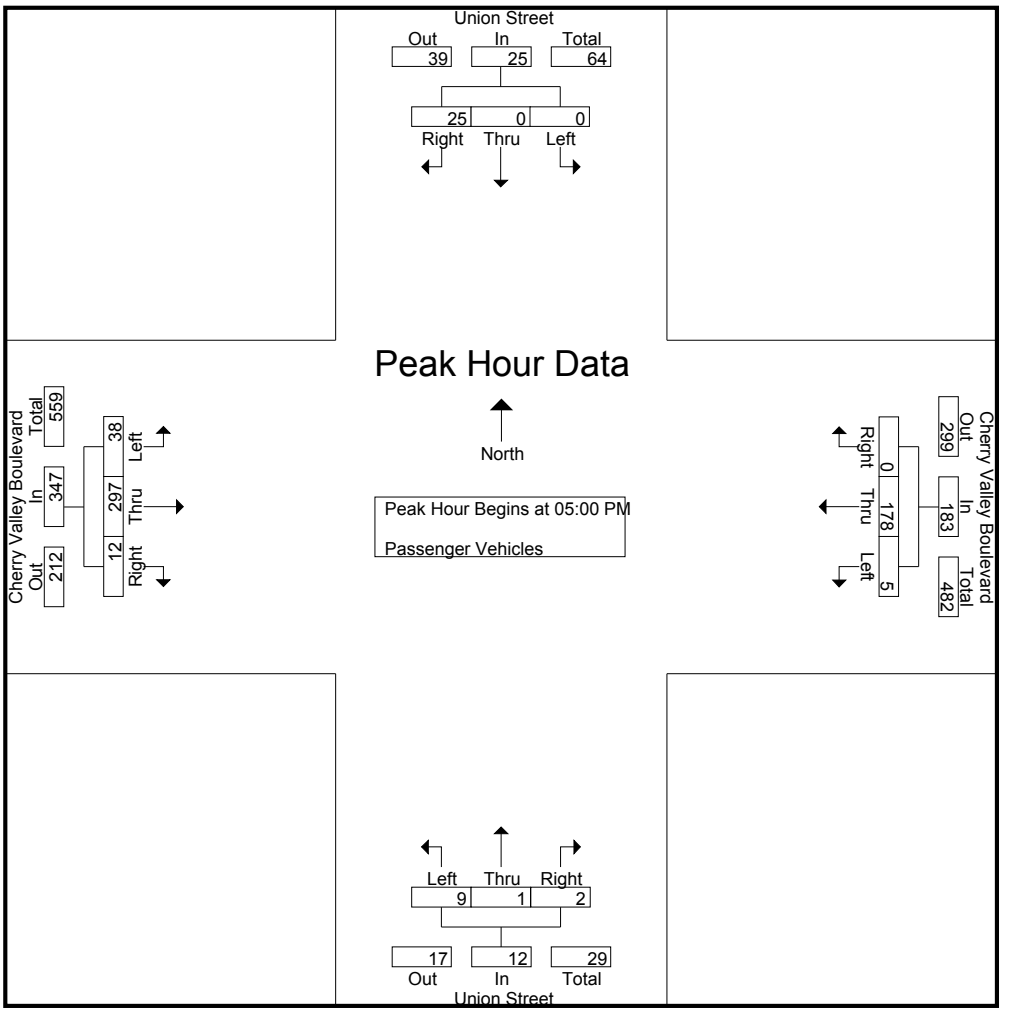

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				04:00 PM				04:45 PM			
+0 mins.	0	0	5	5	1	46	0	47	**4**	**1**	**2**	**7**	**16**	74	**4**	**94**
+15 mins.	0	0	7	7	**2**	38	0	40	2	0	0	2	10	72	4	86
+30 mins.	0	**1**	7	8	2	46	0	**48**	1	1	1	3	14	67	3	84
+45 mins.	0	1	**8**	**9**	0	**48**	0	48	0	1	0	1	5	**83**	2	90
Total Volume	0	2	27	29	5	178	0	183	7	3	3	13	45	296	13	354
% App. Total	0	6.9	93.1		2.7	97.3	0		53.8	23.1	23.1		12.7	83.6	3.7	
PHF	.000	.500	.844	.806	.625	.927	.000	.953	.438	.750	.375	.464	.703	.892	.813	.941

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Groups Printed- Large 2 Axle Vehicles

	Union Street Southbound				Cherry Valley Boulevard Westbound				Union Street Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	1	0	1	0	0	1	1	0	0	0	0	2
04:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
04:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	4	0	4	0	0	1	1	0	0	0	0	5
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
Total	0	0	0	0	0	3	0	3	0	0	0	0	0	2	0	2	5
Grand Total	0	0	0	0	0	7	0	7	0	0	1	1	0	2	0	2	10
Apprch %	0	0	0		0	100	0		0	0	100		0	100	0		
Total %	0	0	0	0	0	70	0	70	0	0	10	10	0	20	0	20	

	Union Street Southbound				Cherry Valley Boulevard Westbound				Union Street Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	0	0	0	**2**
Total Volume	0	0	0	0	0	3	0	3	0	0	0	0	0	2	0	2	5
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.375	.000	.375	.000	.000	.000	.000	.000	.500	.000	.500	.625

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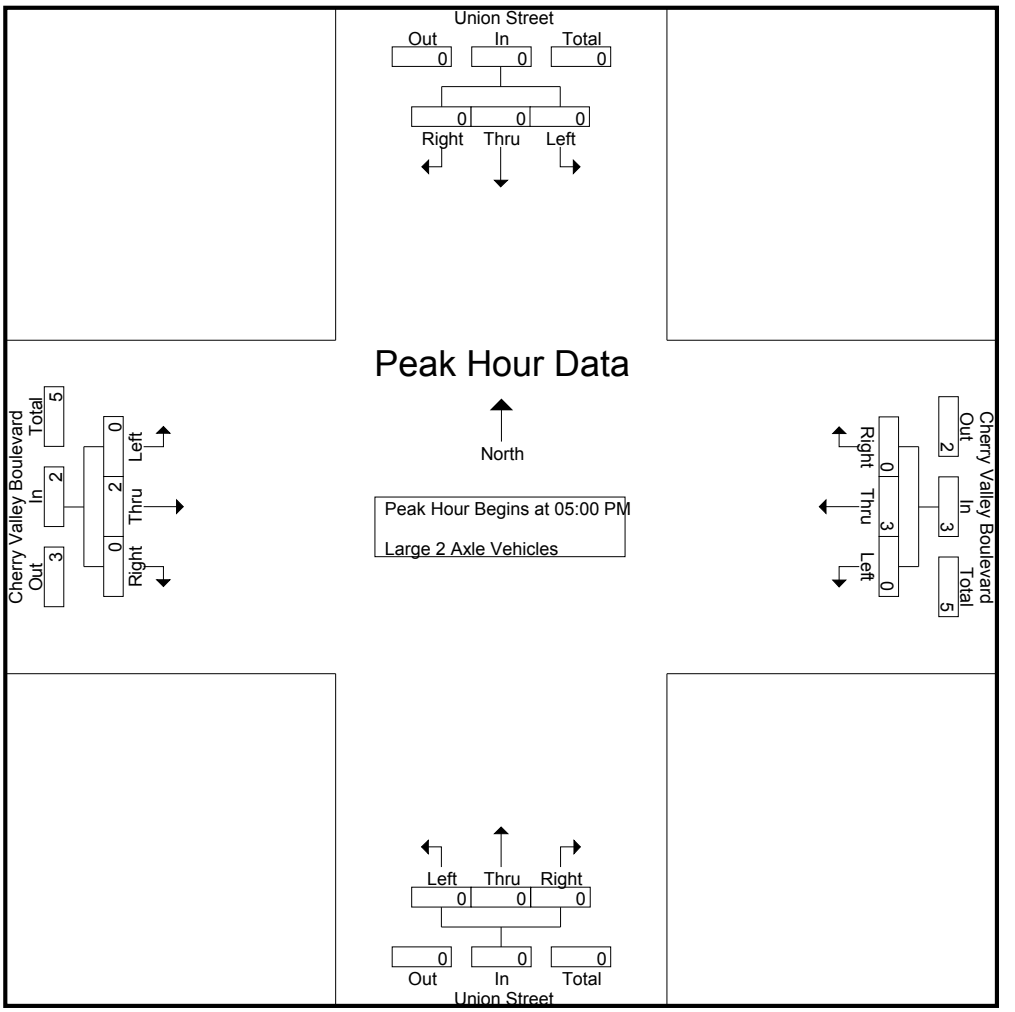

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	3	0	3	0	0	0	0	0	2	0	2
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.375	.000	.375	.000	.000	.000	.000	.000	.500	.000	.500

Counts Unlimited, Inc.
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Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Union Street
E/W: Cherry Valley Boulevard
Weather: Clear

File Name : CRVUNCVPM
Site Code : 05114110
Start Date : 4/1/2014
Page No : 1

Groups Printed- 3 Axle Vehicles

	Union Street Southbound				Cherry Valley Boulevard Westbound				Union Street Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Apprch %	0	0	0		0	0	0		0	100	0		0	0	0		
Total %	0	0	0	0	0	0	0	0	0	100	0	100	0	0	0	0	

	Union Street Southbound				Cherry Valley Boulevard Westbound				Union Street Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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File Name : CRVUNCVPM
Site Code : 05114110
Start Date : 4/1/2014
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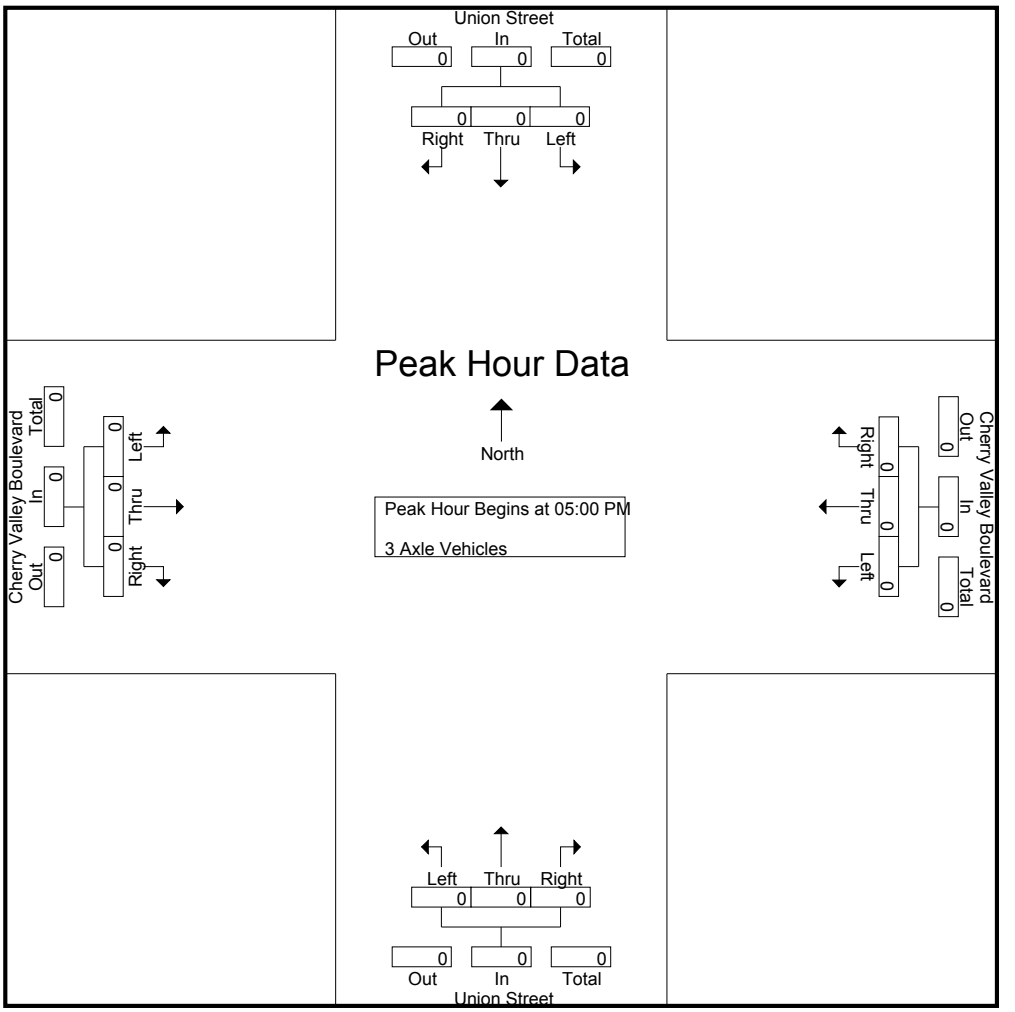

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Start Date : 4/1/2014
Page No : 1

Groups Printed- 4+ Axle Trucks

	Union Street Southbound				Cherry Valley Boulevard Westbound				Union Street Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Apprch %	0	0	0		0	0	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	100	

	Union Street Southbound				Cherry Valley Boulevard Westbound				Union Street Northbound				Cherry Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**	**1**
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
% App. Total	0	0	0		0	0	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.250

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N/S: Union Street
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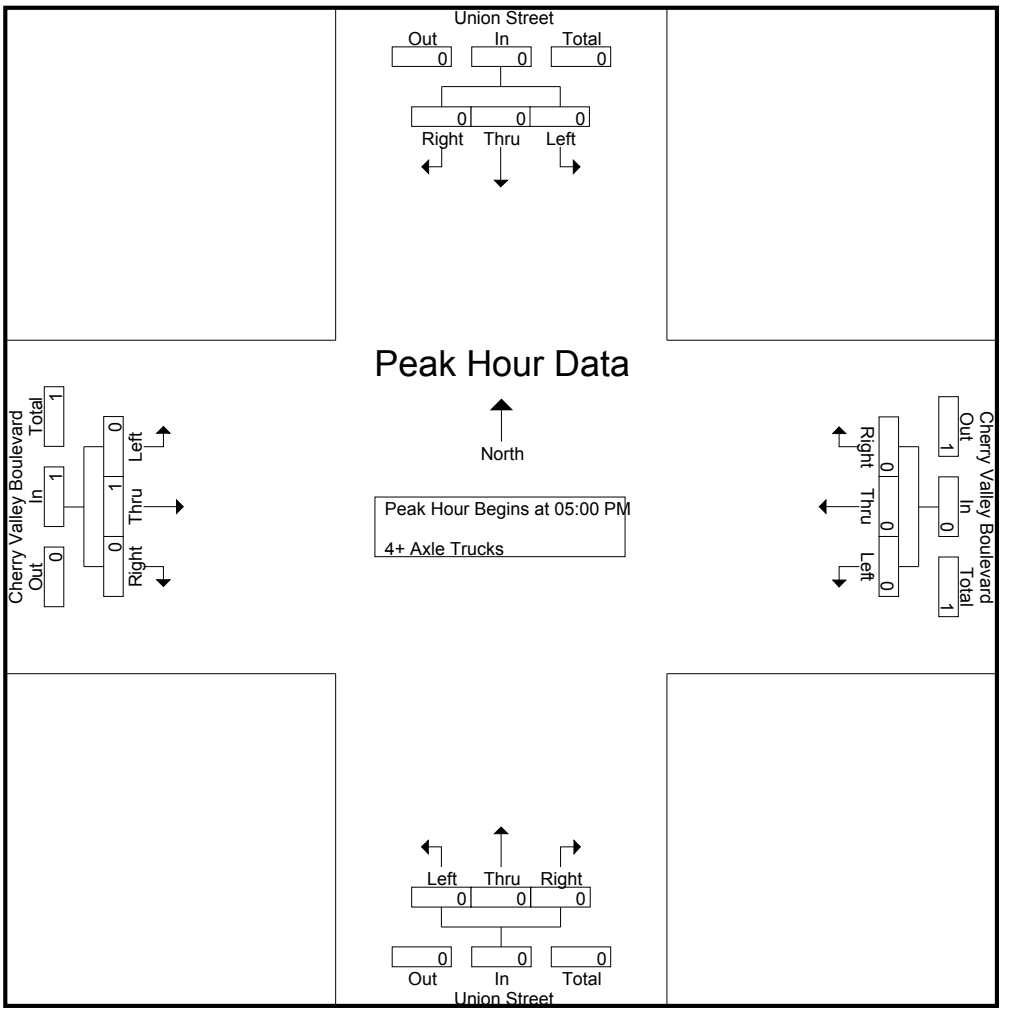

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
% App. Total	0	0	0		0	0	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250

APPENDIX 3.2:

EXISTING (2014) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	555	67	20	84	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	624	75	22	94	0	0	0	0

Major/Minor	Major1			Major2		
Conflicting Flow All	94	0	0	699	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	1513	-	-	907	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	1513	-	-	907	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB
HCM Control Delay, s	0	1.7
HCM LOS		

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1513	-	-	907	-	-	475
HCM Lane V/C Ratio	-	-	-	0.025	-	-	0.478
HCM Control Delay (s)	0	-	-	9.1	0	-	19.3
HCM Lane LOS	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	0	-	-	0.1	-	-	2.5

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	117	1	84
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	89	89	89
Heavy Vehicles, %	0	0	0
Mvmt Flow	131	1	94

Major/Minor	Minor2		
Conflicting Flow All	800	838	94
Stage 1	139	139	-
Stage 2	661	699	-
Critical Hdwy	6.4	6.5	6.2
Critical Hdwy Stg 1	5.4	5.5	-
Critical Hdwy Stg 2	5.4	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	357	305	968
Stage 1	893	785	-
Stage 2	517	445	-
Platoon blocked, %			
Mov Cap-1 Maneuver	348	0	968
Mov Cap-2 Maneuver	348	0	-
Stage 1	870	0	-
Stage 2	517	0	-

Approach	SB
HCM Control Delay, s	19.3
HCM LOS	C

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	9.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	480	192	0	0	78	378	26	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	558	223	0	0	91	440	30	0	9

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	530	0	0	223	0	0	1650	1870	223
Stage 1	-	-	-	-	-	-	1340	1340	-
Stage 2	-	-	-	-	-	-	310	530	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1048	-	-	1358	-	-	110	73	822
Stage 1	-	-	-	-	-	-	247	223	-
Stage 2	-	-	-	-	-	-	748	530	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1048	-	-	1358	-	-	43	0	822
Mov Cap-2 Maneuver	-	-	-	-	-	-	43	0	-
Stage 1	-	-	-	-	-	-	97	0	-
Stage 2	-	-	-	-	-	-	748	0	-

Approach	EB	WB	NB
HCM Control Delay, s	8.8	0	165.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	55	1048	-	-	1358	-	-
HCM Lane V/C Ratio	0.719	0.533	-	-	-	-	-
HCM Control Delay (s)	165.9	12.3	0	-	0	-	-
HCM Lane LOS	F	B	A	-	A	-	-
HCM 95th %tile Q(veh)	3	3.2	-	-	0	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	86	86	86
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	0

Major/Minor	
Conflicting Flow All	
Stage 1	
Stage 2	
Critical Hdwy	
Critical Hdwy Stg 1	
Critical Hdwy Stg 2	
Follow-up Hdwy	
Pot Cap-1 Maneuver	
Stage 1	
Stage 2	
Platoon blocked, %	
Mov Cap-1 Maneuver	
Mov Cap-2 Maneuver	
Stage 1	
Stage 2	

Approach	
HCM Control Delay, s	
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	17	183	436	10	18	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	20	210	501	11	21	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	513	0	-	0	756	507
Stage 1	-	-	-	-	507	-
Stage 2	-	-	-	-	249	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1063	-	-	-	379	570
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	797	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1063	-	-	-	371	570
Mov Cap-2 Maneuver	-	-	-	-	371	-
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	780	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1063	-	-	-	452
HCM Lane V/C Ratio	0.018	-	-	-	0.094
HCM Control Delay (s)	8.4	0	-	-	13.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	16	167	3	3	303	1	12	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	20	206	4	4	374	1	15	0	4

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	375	0	0	210	0	0	673	631	208
Stage 1	-	-	-	-	-	-	248	248	-
Stage 2	-	-	-	-	-	-	425	383	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1195	-	-	1373	-	-	372	401	837
Stage 1	-	-	-	-	-	-	760	705	-
Stage 2	-	-	-	-	-	-	611	616	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1195	-	-	1373	-	-	319	392	837
Mov Cap-2 Maneuver	-	-	-	-	-	-	319	392	-
Stage 1	-	-	-	-	-	-	746	692	-
Stage 2	-	-	-	-	-	-	532	614	-

Approach	EB	WB	NB
HCM Control Delay, s	0.7	0.1	15.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	364	1195	-	-	1373	-	-	662
HCM Lane V/C Ratio	0.051	0.017	-	-	0.003	-	-	0.131
HCM Control Delay (s)	15.4	8.1	0	-	7.6	0	-	11.3
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.4

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	1	1	68
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	81	81	81
Heavy Vehicles, %	0	0	0
Mvmt Flow	1	1	84

Major/Minor	Minor2		
Conflicting Flow All	631	631	375
Stage 1	382	382	-
Stage 2	249	249	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	396	401	676
Stage 1	645	616	-
Stage 2	759	704	-
Platoon blocked, %			
Mov Cap-1 Maneuver	387	392	676
Mov Cap-2 Maneuver	387	392	-
Stage 1	633	614	-
Stage 2	741	691	-

Approach	SB
HCM Control Delay, s	11.3
HCM LOS	B

Minor Lane/Major Mvmt

Intersection	
Intersection Delay, s/veh	12.9
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	12	127	35	0	47	208	4	0	34	22	122
Peak Hour Factor	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	16	169	47	0	63	277	5	0	45	29	163
Number of Lanes	0	0	1	1	0	0	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	2
HCM Control Delay	11.1	16.2	11.5
HCM LOS	B	C	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	19%	9%	0%	18%	0%	14%
Vol Thru, %	12%	91%	0%	82%	0%	27%
Vol Right, %	69%	0%	100%	0%	100%	59%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	178	139	35	255	4	102
LT Vol	22	127	0	208	0	28
Through Vol	122	0	35	0	4	60
RT Vol	34	12	0	47	0	14
Lane Flow Rate	237	185	47	340	5	136
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.358	0.315	0.07	0.566	0.008	0.214
Departure Headway (Hd)	5.427	6.123	5.367	5.993	5.189	5.676
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	660	586	665	602	687	628
Service Time	3.49	3.881	3.124	3.742	2.938	3.747
HCM Lane V/C Ratio	0.359	0.316	0.071	0.565	0.007	0.217
HCM Control Delay	11.5	11.7	8.5	16.3	8	10.3
HCM Lane LOS	B	B	A	C	A	B
HCM 95th-tile Q	1.6	1.3	0.2	3.5	0	0.8

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	14	28	60
Peak Hour Factor	0.92	0.75	0.75	0.75
Heavy Vehicles, %	0	0	0	0
Mvmt Flow	0	19	37	80
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	10.3
HCM LOS	B

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	104	238	15	236	8	252	101	4	5	181	69
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	51	151	162	22	342	9	365	146	3	7	262	75
Adj No. of Lanes	1	1	1	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	65	538	449	36	484	13	409	820	689	13	404	335
Arrive On Green	0.04	0.28	0.28	0.02	0.26	0.26	0.23	0.43	0.43	0.01	0.21	0.21
Sat Flow, veh/h	1810	1900	1586	1810	1842	48	1810	1900	1596	1810	1900	1577
Grp Volume(v), veh/h	51	151	162	22	0	351	365	146	3	7	262	75
Grp Sat Flow(s),veh/h/ln	1810	1900	1586	1810	0	1890	1810	1900	1596	1810	1900	1577
Q Serve(g_s), s	2.0	4.4	5.8	0.9	0.0	12.0	13.9	3.4	0.1	0.3	9.0	2.8
Cycle Q Clear(g_c), s	2.0	4.4	5.8	0.9	0.0	12.0	13.9	3.4	0.1	0.3	9.0	2.8
Prop In Lane	1.00		1.00	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	65	538	449	36	0	497	409	820	689	13	404	335
V/C Ratio(X)	0.79	0.28	0.36	0.61	0.00	0.71	0.89	0.18	0.00	0.53	0.65	0.22
Avail Cap(c_a), veh/h	102	720	601	102	0	708	490	1109	932	102	701	582
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.1	19.9	20.4	34.7	0.0	23.8	26.7	12.5	11.5	35.3	25.6	23.2
Incr Delay (d2), s/veh	19.1	0.4	0.7	6.2	0.0	2.6	14.7	0.5	0.0	11.9	7.8	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	2.4	2.6	0.5	0.0	6.6	8.6	1.9	0.0	0.2	5.6	1.4
LnGrp Delay(d),s/veh	53.2	20.3	21.1	40.8	0.0	26.4	41.5	12.9	11.5	47.1	33.4	24.7
LnGrp LOS	D	C	C	D		C	D	B	B	D	C	C
Approach Vol, veh/h		364			373			514			344	
Approach Delay, s/veh		25.3			27.2			33.2			31.8	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.2	60.2	5.1	25.5	19.8	44.6	6.5	24.0
Change Period (Y+Rc), s	3.7	5.7	3.7	5.3	3.7	* 5.7	4.0	* 5.3
Max Green Setting (Gmax), s	4.0	41.6	4.0	27.0	19.3	* 26	4.0	* 27
Max Q Clear Time (g_c+I1), s	2.3	5.4	2.9	7.8	15.9	11.0	4.0	14.0
Green Ext Time (p_c), s	0.0	3.0	0.0	4.6	0.2	2.4	0.0	3.8

Intersection Summary	
HCM 2010 Ctrl Delay	29.7
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	58.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	227	49	13	119	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	241	52	14	127	0	0	0	0

Major/Minor	Major1			Major2		
Conflicting Flow All	127	0	0	294	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	1472	-	-	1279	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	1472	-	-	1279	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB
HCM Control Delay, s	0	0.8
HCM LOS		

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1472	-	-	1279	-	-	736
HCM Lane V/C Ratio	-	-	-	0.011	-	-	1.11
HCM Control Delay (s)	0	-	-	7.8	0	-	89.9
HCM Lane LOS	A	-	-	A	A	-	F
HCM 95th %tile Q(veh)	0	-	-	0	-	-	23.3

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	341	1	426
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	94	94	94
Heavy Vehicles, %	0	0	0
Mvmt Flow	363	1	453

Major/Minor	Minor2		
Conflicting Flow All	422	448	127
Stage 1	154	154	-
Stage 2	268	294	-
Critical Hdwy	6.4	6.5	6.2
Critical Hdwy Stg 1	5.4	5.5	-
Critical Hdwy Stg 2	5.4	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	592	509	929
Stage 1	879	774	-
Stage 2	782	673	-
Platoon blocked, %			
Mov Cap-1 Maneuver	585	0	929
Mov Cap-2 Maneuver	585	0	-
Stage 1	868	0	-
Stage 2	782	0	-

Approach	SB
HCM Control Delay, s	89.9
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	193	375	0	0	50	171	82	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	210	408	0	0	54	186	89	0	26

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	240	0	0	408	0	0	974	1067	408
Stage 1	-	-	-	-	-	-	827	827	-
Stage 2	-	-	-	-	-	-	147	240	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1339	-	-	1162	-	-	282	224	648
Stage 1	-	-	-	-	-	-	433	389	-
Stage 2	-	-	-	-	-	-	885	711	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1339	-	-	1162	-	-	225	0	648
Mov Cap-2 Maneuver	-	-	-	-	-	-	225	0	-
Stage 1	-	-	-	-	-	-	345	0	-
Stage 2	-	-	-	-	-	-	885	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2.8	0	28.8
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	264	1339	-	-	1162	-	-
HCM Lane V/C Ratio	0.436	0.157	-	-	-	-	-
HCM Control Delay (s)	28.8	8.2	0	-	0	-	-
HCM Lane LOS	D	A	A	-	A	-	-
HCM 95th %tile Q(veh)	2.1	0.6	-	-	0	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	0

Major/Minor	
Conflicting Flow All	
Stage 1	
Stage 2	
Critical Hdwy	
Critical Hdwy Stg 1	
Critical Hdwy Stg 2	
Follow-up Hdwy	
Pot Cap-1 Maneuver	
Stage 1	
Stage 2	
Platoon blocked, %	
Mov Cap-1 Maneuver	
Mov Cap-2 Maneuver	
Stage 1	
Stage 2	

Approach	
HCM Control Delay, s	
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	21	378	200	14	26	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	24	430	227	16	30	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	243	0	-	0	712	235
Stage 1	-	-	-	-	235	-
Stage 2	-	-	-	-	477	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1335	-	-	-	402	809
Stage 1	-	-	-	-	809	-
Stage 2	-	-	-	-	629	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1335	-	-	-	392	809
Mov Cap-2 Maneuver	-	-	-	-	392	-
Stage 1	-	-	-	-	809	-
Stage 2	-	-	-	-	614	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	13
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1335	-	-	-	505
HCM Lane V/C Ratio	0.018	-	-	-	0.104
HCM Control Delay (s)	7.7	0	-	-	13
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	38	303	12	5	183	0	9	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	40	316	12	5	191	0	9	1	2

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	191	0	0	328	0	0	615	602	322
Stage 1	-	-	-	-	-	-	401	401	-
Stage 2	-	-	-	-	-	-	214	201	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1395	-	-	1243	-	-	406	416	724
Stage 1	-	-	-	-	-	-	630	604	-
Stage 2	-	-	-	-	-	-	793	739	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1395	-	-	1243	-	-	382	400	724
Mov Cap-2 Maneuver	-	-	-	-	-	-	382	400	-
Stage 1	-	-	-	-	-	-	608	583	-
Stage 2	-	-	-	-	-	-	766	736	-

Approach	EB	WB	NB
HCM Control Delay, s	0.8	0.2	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	416	1395	-	-	1243	-	-	856
HCM Lane V/C Ratio	0.03	0.028	-	-	0.004	-	-	0.03
HCM Control Delay (s)	13.9	7.7	0	-	7.9	0	-	9.3
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	25
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	96	96	96
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	26

Major/Minor	Minor2		
Conflicting Flow All	604	608	191
Stage 1	201	201	-
Stage 2	403	407	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	413	413	856
Stage 1	805	739	-
Stage 2	628	601	-
Platoon blocked, %			
Mov Cap-1 Maneuver	399	397	856
Mov Cap-2 Maneuver	399	397	-
Stage 1	777	736	-
Stage 2	603	580	-

Approach	SB
HCM Control Delay, s	9.3
HCM LOS	A

Minor Lane/Major Mvmt

Intersection	
Intersection Delay, s/veh	10.3
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	36	239	34	0	13	157	4	0	18	26	29
Peak Hour Factor	0.92	0.88	0.88	0.88	0.92	0.88	0.88	0.88	0.92	0.88	0.88	0.88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	41	272	39	0	15	178	5	0	20	30	33
Number of Lanes	0	0	1	1	0	0	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	2
HCM Control Delay	11.2	9.8	8.8
HCM LOS	B	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	25%	13%	0%	8%	0%	25%
Vol Thru, %	36%	87%	0%	92%	0%	53%
Vol Right, %	40%	0%	100%	0%	100%	22%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	73	275	34	170	4	36
LT Vol	26	239	0	157	0	19
Through Vol	29	0	34	0	4	8
RT Vol	18	36	0	13	0	9
Lane Flow Rate	83	312	39	193	5	41
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.117	0.439	0.046	0.277	0.006	0.06
Departure Headway (Hd)	5.078	5.057	4.287	5.164	4.42	5.253
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	703	709	832	694	806	678
Service Time	3.133	2.799	2.029	2.911	2.168	3.314
HCM Lane V/C Ratio	0.118	0.44	0.047	0.278	0.006	0.06
HCM Control Delay	8.8	11.7	7.2	9.9	7.2	8.7
HCM Lane LOS	A	B	A	A	A	A
HCM 95th-tile Q	0.4	2.2	0.1	1.1	0	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	9	19	8
Peak Hour Factor	0.92	0.88	0.88	0.88
Heavy Vehicles, %	0	0	0	0
Mvmt Flow	0	10	22	9
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	8.7
HCM LOS	A

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	61	111	186	7	47	14	141	275	20	20	203	37
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	65	118	124	7	50	4	150	293	18	21	216	7
Adj No. of Lanes	1	1	1	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	89	427	355	13	305	24	193	643	539	37	479	399
Arrive On Green	0.05	0.22	0.22	0.01	0.18	0.18	0.11	0.34	0.34	0.02	0.25	0.25
Sat Flow, veh/h	1810	1900	1579	1810	1732	139	1810	1900	1591	1810	1900	1583
Grp Volume(v), veh/h	65	118	124	7	0	54	150	293	18	21	216	7
Grp Sat Flow(s),veh/h/ln	1810	1900	1579	1810	0	1871	1810	1900	1591	1810	1900	1583
Q Serve(g_s), s	1.6	2.3	3.0	0.2	0.0	1.1	3.6	5.4	0.3	0.5	4.3	0.1
Cycle Q Clear(g_c), s	1.6	2.3	3.0	0.2	0.0	1.1	3.6	5.4	0.3	0.5	4.3	0.1
Prop In Lane	1.00		1.00	1.00		0.07	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	89	427	355	13	0	329	193	643	539	37	479	399
V/C Ratio(X)	0.73	0.28	0.35	0.52	0.00	0.16	0.78	0.46	0.03	0.57	0.45	0.02
Avail Cap(c_a), veh/h	161	1140	948	161	0	1110	334	1334	1118	161	1153	961
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.1	14.4	14.7	22.2	0.0	15.7	19.6	11.6	10.0	21.8	14.2	12.6
Incr Delay (d2), s/veh	10.6	0.5	0.8	11.0	0.0	0.3	2.5	2.3	0.1	4.9	3.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	1.3	1.4	0.1	0.0	0.6	1.9	3.3	0.2	0.3	2.6	0.1
LnGrp Delay(d),s/veh	31.7	14.9	15.5	33.3	0.0	16.1	22.1	14.0	10.1	26.8	17.2	12.7
LnGrp LOS	C	B	B	C		B	C	B	B	C	B	B
Approach Vol, veh/h		307			61			461			244	
Approach Delay, s/veh		18.7			18.0			16.5			17.9	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.6	60.9	4.0	15.4	8.5	57.1	6.2	13.2
Change Period (Y+Rc), s	3.7	5.7	3.7	5.3	3.7	* 5.7	4.0	* 5.3
Max Green Setting (Gmax), s	4.0	31.6	4.0	27.0	8.3	* 27	4.0	* 27
Max Q Clear Time (g_c+I1), s	2.5	7.4	2.2	5.0	5.6	6.3	3.6	3.1
Green Ext Time (p_c), s	0.0	3.6	0.0	1.8	0.0	3.4	0.0	1.8

Intersection Summary	
HCM 2010 Ctrl Delay	17.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX 3.3:

EXISTING (2014) CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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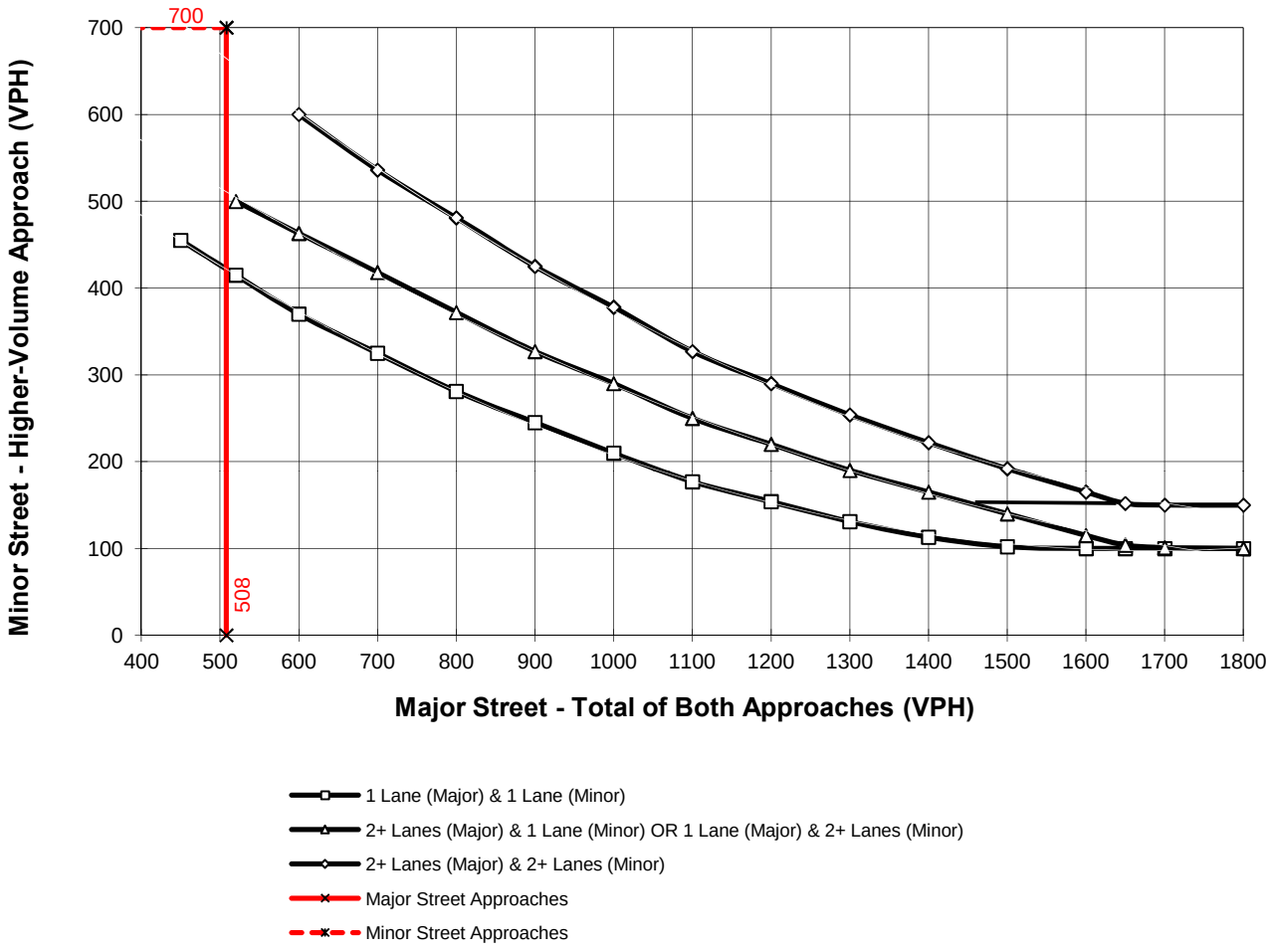
Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **Existing (2014) Conditions - Weekday PM Peak Hour**

Major Street Name = **Cherry Valley Boulevard** Total of Both Approaches (VPH) = **508**
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **I-10 EB Ramps** High Volume Approach (VPH) = **768**
Number of Approach Lanes On Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

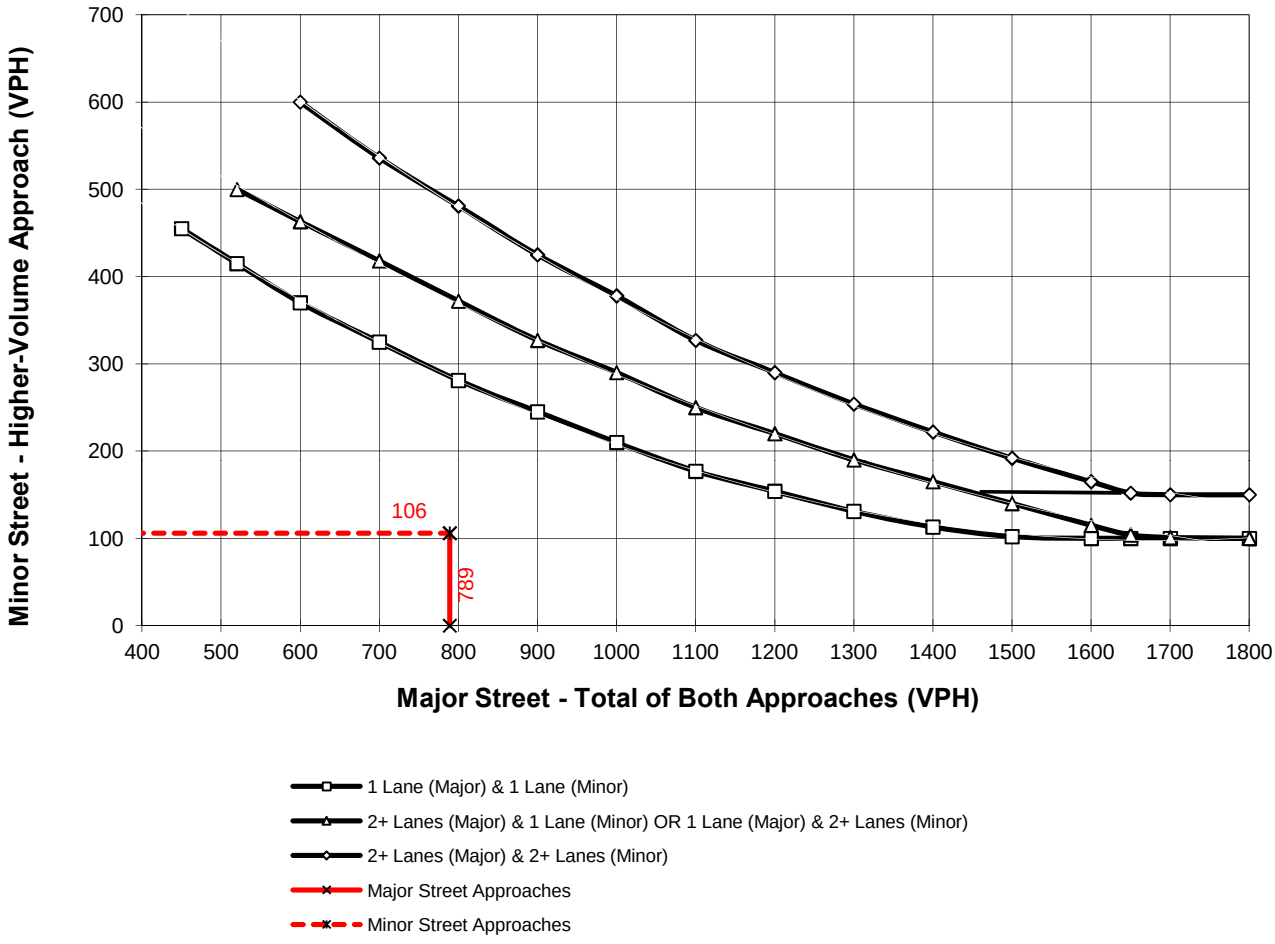
Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **Existing (2014) Conditions - Weekday PM Peak Hour**

Major Street Name = **Cherry Valley Boulevard** Total of Both Approaches (VPH) = **789**
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **I-10 WB Ramps** High Volume Approach (VPH) = **106**
Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

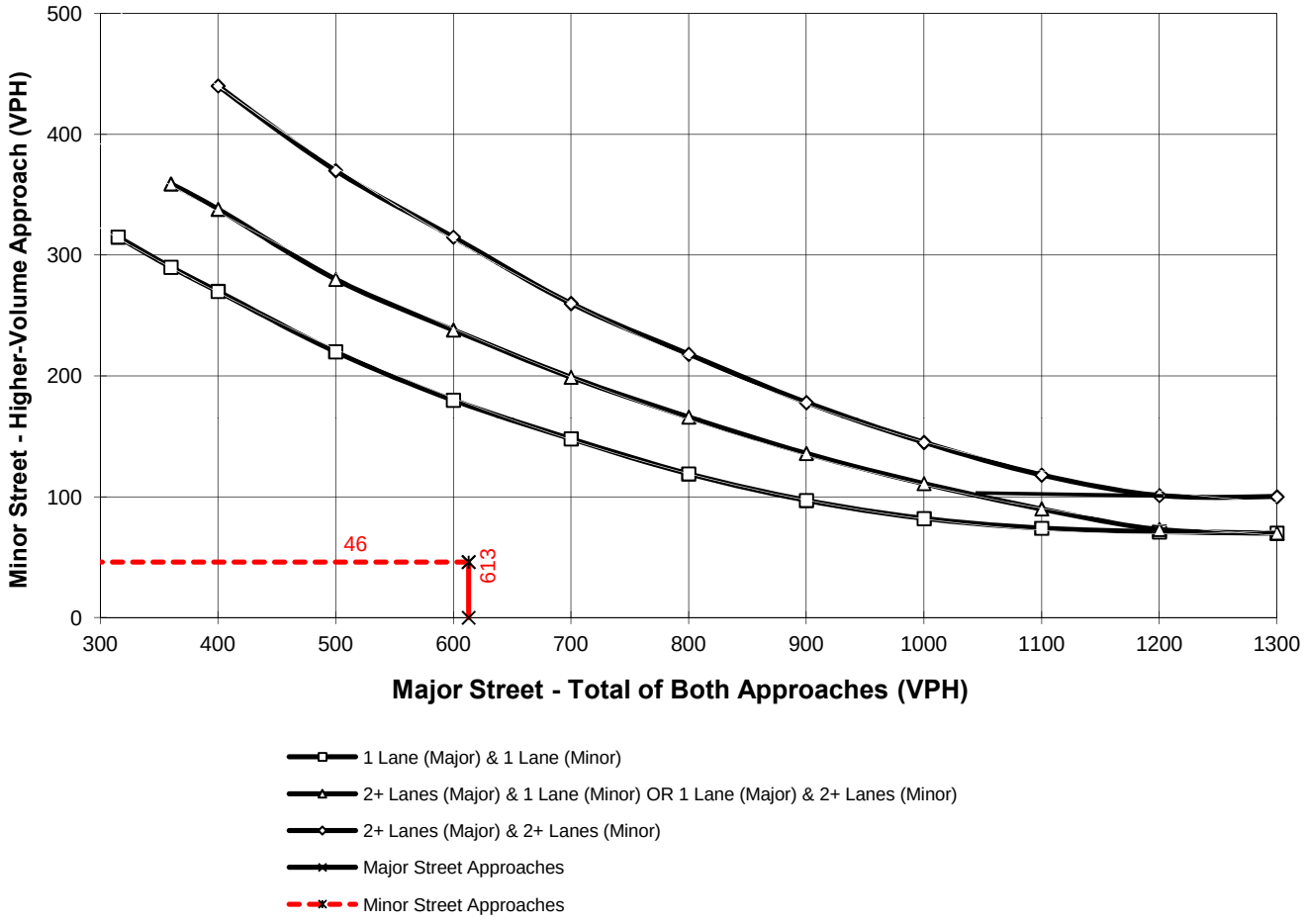
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing (2014) Conditions - Weekday PM Peak Hour**

Major Street Name = **Cherry Valley Boulevard** Total of Both Approaches (VPH) = **613**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Calimesa Boulevard** High Volume Approach (VPH) = **46**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

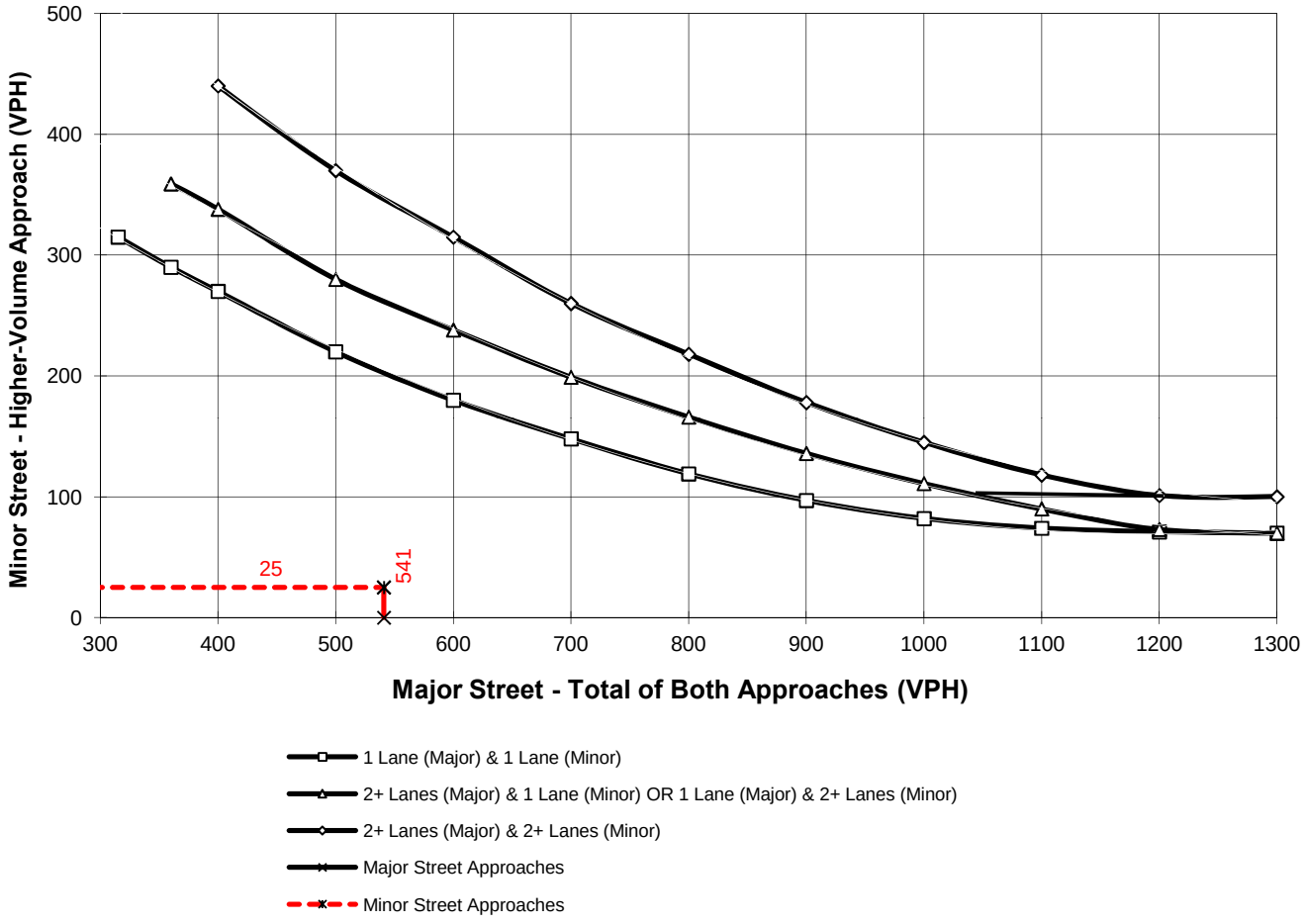
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing (2014) Conditions - Weekday PM Peak Hour**

Major Street Name = **Cherry Valley Boulevard** Total of Both Approaches (VPH) = **541**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Union Street** High Volume Approach (VPH) = **25**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

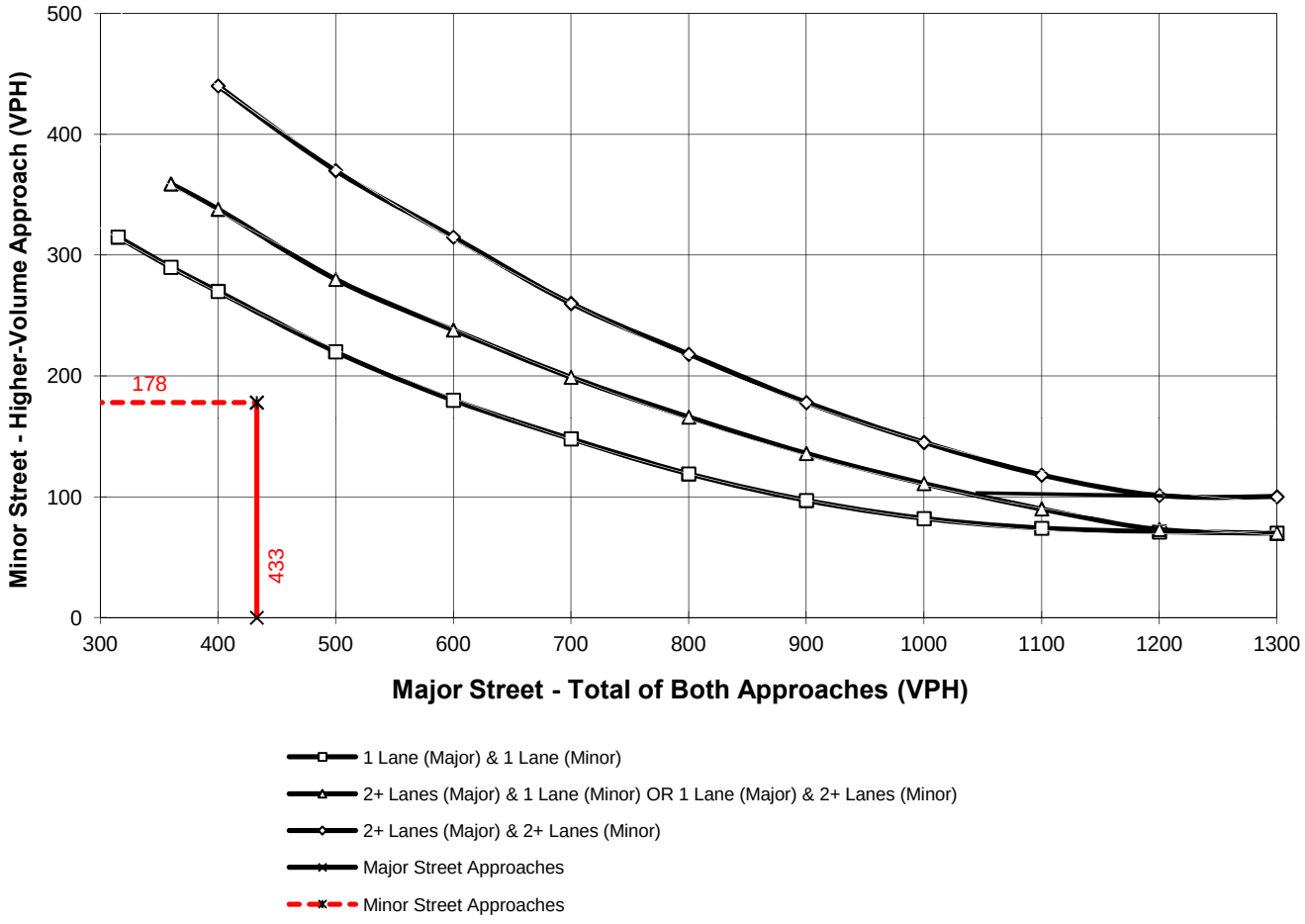
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing (2014) Conditions - Weekday AM Peak Hour**

Major Street Name = **Cherry Valley Boulevard** Total of Both Approaches (VPH) = **433**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Nancy Street** High Volume Approach (VPH) = **178**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

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APPENDIX 3.4:

EXISTING (2014) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS, WITH RECOMMENDED IMPROVEMENTS

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	555	67	20	84	0	0	0	0	117	1	84
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900	1900	1900	0				1900	1900	1900
Adj Flow Rate, veh/h	0	624	63	22	94	0				131	1	52
Adj No. of Lanes	0	1	0	1	1	0				0	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89				0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Cap, veh/h	0	924	93	80	1246	0				262	2	104
Arrive On Green	0.00	0.54	0.54	0.03	0.44	0.00				0.21	0.21	0.21
Sat Flow, veh/h	0	1697	171	1810	1900	0				1242	9	493
Grp Volume(v), veh/h	0	0	687	22	94	0				184	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1869	1810	1900	0				1744	0	0
Q Serve(g_s), s	0.0	0.0	23.8	1.1	2.6	0.0				8.4	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	23.8	1.1	2.6	0.0				8.4	0.0	0.0
Prop In Lane	0.00		0.09	1.00		0.00				0.71		0.28
Lane Grp Cap(c), veh/h	0	0	1017	80	1246	0				368	0	0
V/C Ratio(X)	0.00	0.00	0.68	0.27	0.08	0.00				0.50	0.00	0.00
Avail Cap(c_a), veh/h	0	0	1017	80	1246	0				368	0	0
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.21	0.21	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	14.8	42.2	9.4	0.0				31.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	3.6	0.1	0.0	0.0				4.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	13.2	0.5	1.4	0.0				4.5	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	18.4	42.4	9.4	0.0				36.1	0.0	0.0
LnGrp LOS			B	D	A					D		
Approach Vol, veh/h		687			116						184	
Approach Delay, s/veh		18.4			15.7						36.1	
Approach LOS		B			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	10.0	55.0		25.0		65.0		
Change Period (Y+Rc), s	6.0	* 6		6.0		6.0		
Max Green Setting (Gmax), s	4.0	* 49		19.0		59.0		
Max Q Clear Time (g_c+I1), s	3.1	25.8		10.4		4.6		
Green Ext Time (p_c), s	0.0	3.0		0.0		0.3		

Intersection Summary	
HCM 2010 Ctrl Delay	21.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	480	192	0	0	78	378	26	0	8	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	558	223	0	0	91	181	30	0	9			
Adj No. of Lanes	1	1	0	0	1	0	0	1	0			
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	607	1145	0	0	107	213	329	0	99			
Arrive On Green	0.34	0.60	0.00	0.00	0.19	0.19	0.24	0.00	0.24			
Sat Flow, veh/h	1810	1900	0	0	564	1121	1351	0	405			
Grp Volume(v), veh/h	558	223	0	0	0	272	39	0	0			
Grp Sat Flow(s),veh/h/ln	1810	1900	0	0	0	1685	1756	0	0			
Q Serve(g_s), s	23.1	4.1	0.0	0.0	0.0	12.2	1.3	0.0	0.0			
Cycle Q Clear(g_c), s	23.1	4.1	0.0	0.0	0.0	12.2	1.3	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		0.67	0.77		0.23			
Lane Grp Cap(c), veh/h	607	1145	0	0	0	320	428	0	0			
V/C Ratio(X)	0.92	0.19	0.00	0.00	0.00	0.85	0.09	0.00	0.00			
Avail Cap(c_a), veh/h	719	1438	0	0	0	475	428	0	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.76	0.76	0.00	0.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	24.9	7.0	0.0	0.0	0.0	30.5	22.8	0.0	0.0			
Incr Delay (d2), s/veh	11.4	0.0	0.0	0.0	0.0	6.2	0.4	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	13.4	2.2	0.0	0.0	0.0	6.2	0.7	0.0	0.0			
LnGrp Delay(d),s/veh	36.3	7.0	0.0	0.0	0.0	36.7	23.2	0.0	0.0			
LnGrp LOS	D	A				D	C					
Approach Vol, veh/h		781			272			39				
Approach Delay, s/veh		28.0			36.7			23.2				
Approach LOS		C			D			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		37.0		53.0			32.2	20.8
Change Period (Y+Rc), s		6.0		6.0			6.0	* 6
Max Green Setting (Gmax), s		19.0		59.0			31.0	* 22
Max Q Clear Time (g_c+I1), s		3.3		6.1			25.1	14.2
Green Ext Time (p_c), s		0.0		1.6			1.1	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	30.0
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	227	49	13	119	0	0	0	0	341	1	426
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900	1900	1900	0				1900	1900	1900
Adj Flow Rate, veh/h	0	241	37	14	127	0				363	1	313
Adj No. of Lanes	0	1	0	1	1	0				0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Cap, veh/h	0	364	56	72	633	0				489	1	422
Arrive On Green	0.00	0.23	0.23	0.08	0.67	0.00				0.53	0.53	0.53
Sat Flow, veh/h	0	1607	247	1810	1900	0				917	3	791
Grp Volume(v), veh/h	0	0	278	14	127	0				677	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1853	1810	1900	0				1710	0	0
Q Serve(g_s), s	0.0	0.0	12.3	0.7	2.3	0.0				27.5	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	12.3	0.7	2.3	0.0				27.5	0.0	0.0
Prop In Lane	0.00		0.13	1.00		0.00				0.54		0.46
Lane Grp Cap(c), veh/h	0	0	420	72	633	0				912	0	0
V/C Ratio(X)	0.00	0.00	0.66	0.19	0.20	0.00				0.74	0.00	0.00
Avail Cap(c_a), veh/h	0	0	420	72	633	0				912	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.62	0.62	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	31.7	40.0	10.4	0.0				16.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	8.0	0.3	0.4	0.0				5.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	7.2	0.3	1.3	0.0				14.2	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	39.6	40.3	10.8	0.0				21.6	0.0	0.0
LnGrp LOS			D	D	B					C		
Approach Vol, veh/h		278			141						677	
Approach Delay, s/veh		39.6			13.8						21.6	
Approach LOS		D			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	9.6	26.4		54.0		36.0		
Change Period (Y+Rc), s	6.0	* 6		6.0		6.0		
Max Green Setting (Gmax), s	3.6	* 20		48.0		30.0		
Max Q Clear Time (g_c+I1), s	2.7	14.3		29.5		4.3		
Green Ext Time (p_c), s	0.0	0.5		0.0		0.4		

Intersection Summary	
HCM 2010 Ctrl Delay	25.2
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	193	375	0	0	50	171	82	0	24	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	210	408	0	0	54	0	89	0	0			
Adj No. of Lanes	1	1	0	0	1	0	0	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	304	709	0	0	186	0	745	0	0			
Arrive On Green	0.17	0.37	0.00	0.00	0.10	0.00	0.41	0.00	0.00			
Sat Flow, veh/h	1810	1900	0	0	1900	0	1810	0	0			
Grp Volume(v), veh/h	210	408	0	0	54	0	89	0	0			
Grp Sat Flow(s),veh/h/ln	1810	1900	0	0	1900	0	1810	0	0			
Q Serve(g_s), s	6.1	9.6	0.0	0.0	1.5	0.0	1.7	0.0	0.0			
Cycle Q Clear(g_c), s	6.1	9.6	0.0	0.0	1.5	0.0	1.7	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		0.00	1.00		0.00			
Lane Grp Cap(c), veh/h	304	709	0	0	186	0	745	0	0			
V/C Ratio(X)	0.69	0.58	0.00	0.00	0.29	0.00	0.12	0.00	0.00			
Avail Cap(c_a), veh/h	778	1872	0	0	851	0	745	0	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.86	0.86	0.00	0.00	1.00	0.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	21.9	14.0	0.0	0.0	23.4	0.0	10.2	0.0	0.0			
Incr Delay (d2), s/veh	0.9	0.2	0.0	0.0	0.3	0.0	0.3	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	3.1	5.0	0.0	0.0	0.8	0.0	0.9	0.0	0.0			
LnGrp Delay(d),s/veh	22.8	14.2	0.0	0.0	23.7	0.0	10.5	0.0	0.0			
LnGrp LOS	C	B			C		B					
Approach Vol, veh/h		618			54			89				
Approach Delay, s/veh		17.1			23.7			10.5				
Approach LOS		B			C			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		63.2		26.8			15.4	11.5
Change Period (Y+Rc), s		6.0		6.0			6.0	* 6
Max Green Setting (Gmax), s		23.0		55.0			24.0	* 25
Max Q Clear Time (g_c+I1), s		3.7		11.6			8.1	3.5
Green Ext Time (p_c), s		0.0		1.8			1.6	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	16.8
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX 3.5:

EXISTING (2014) CONDITIONS BASIC FREEWAY SEGMENT ANALYSIS WORKSHEETS

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*CKS*	Highway/Direction of Travel	*I-10 Eastbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*North of Cherry Valley*
Date Performed	*04/24/14*	Jurisdiction	*Caltrans*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Existing (2014)*
Project Description	*I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*		

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2195*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*
			Up/Down %	

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*3*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow					

Speed, BFFS		mph

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*843*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	*65.0*	mph	S	mph
D = v_p / S	*13.0*	pc/mi/ln	D = v_p / S	pc/mi/ln
LOS	*B*		Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*CKS*	Highway/Direction of Travel	*I-10 Eastbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*South of Cherry Valley*
Date Performed	*04/24/14*	Jurisdiction	*Caltrans*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Existing (2014)*
Project Description	*I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*		

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1947*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*
			Up/Down %	

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*3*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow					

Speed, BFFS	mph	

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*751*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	*65.0*	mph	S	mph
D = v_p / S	*11.6*	pc/mi/ln	D = v_p / S	pc/mi/ln
LOS	*B*		Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*CKS*	Highway/Direction of Travel	*I-10 Westbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*North of Cherry Valley*
Date Performed	*04/24/14*	Jurisdiction	*Caltrans*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Existing (2014)*
Project Description	*I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*		

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4006*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*
			Up/Down %	

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*3*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow					

Speed, BFFS	mph	

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1531*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	 pc/h/ln
S	*64.8*	mph	S	mph
D = v_p / S	*23.6*	pc/mi/ln	D = v_p / S	pc/mi/ln
LOS	*C*		Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*CKS*	Highway/Direction of Travel	*I-10 Westbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*South of Cherry Valley*
Date Performed	*04/24/14*	Jurisdiction	*Caltrans*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Existing (2014)*
Project Description	*I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*		

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3251*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*
			Up/Down %	

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*3*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow					

Speed, BFFS	mph	

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1254*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	*65.0*	mph	S	mph
D = v_p / S	*19.3*	pc/mi/ln	D = v_p / S	pc/mi/ln
LOS	*C*		Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*CKS*	Highway/Direction of Travel	*I-10 Eastbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*North of Cherry Valley*
Date Performed	*04/24/14*	Jurisdiction	*Caltrans*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Existing (2014)*
Project Description	*I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*		

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3248*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*
			Up/Down %	

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*3*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow					

Speed, BFFS	mph	

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1242*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	 pc/h/ln
S	*65.0*	mph	S	mph
D = v_p / S	*19.1*	pc/mi/ln	D = v_p / S	pc/mi/ln
LOS	*C*		Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*CKS*	Highway/Direction of Travel	*I-10 Eastbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*South of Cherry Valley*
Date Performed	*04/24/14*	Jurisdiction	*Caltrans*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Existing (2014)*
Project Description	*I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*		

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2490*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*
			Up/Down %	

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*3*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow					

Speed, BFFS	mph	

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*961*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	 pc/h/ln
S	*65.0*	mph	S	mph
D = v_p / S	*14.8*	pc/mi/ln	D = v_p / S	pc/mi/ln
LOS	*B*		Required Number of Lanes, N	

Glossary			Factor Location	
N - Number of lanes	S - Speed		E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density		E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed		f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed		LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume				

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*CKS*	Highway/Direction of Travel	*I-10 Westbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*North of Cherry Valley*
Date Performed	*04/24/14*	Jurisdiction	*Caltrans*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Existing (2014)*
Project Description	*I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*		

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3389*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*
			Up/Down %	

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*3*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow					

Speed, BFFS		mph	
LOS and Performance Measures			**Design (N)**
Operational (LOS)			Design (N)
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1302*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p) pc/h/ln
S	*65.0*	mph	S mph
D = v_p / S	*20.0*	pc/mi/ln	D = v_p / S pc/mi/ln
LOS	*C*		Required Number of Lanes, N

Glossary		**Factor Location**	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*CKS*	Highway/Direction of Travel	*I-10 Westbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*South of Cherry Valley*
Date Performed	*04/24/14*	Jurisdiction	*Caltrans*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Existing (2014)*
Project Description	*I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*		

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3120*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length	*mi*
			Up/Down %	

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*3*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow					

Speed, BFFS	mph	

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1204*	pc/h/ln	Design LOS v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	*65.0*	mph	S	mph
D = v_p / S	*18.5*	pc/mi/ln	D = v_p / S	pc/mi/ln
LOS	*C*		Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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APPENDIX 3.6:

EXISTING (2014) CONDITIONS FREEWAY RAMP JUNCTION ANALYSIS WORKSHEETS

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CKS	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	4/24/2014	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	Existing (2014)

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	565
Freeway Volume, V_F	2195
Ramp Volume, V_R	251
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1660 ft
V_D = 82 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2195	0.92	Level	12	0	0.943	1.00	2529
Ramp	251	0.92	Level	1	0	0.995	1.00	274
UpStream								
DownStream	82	0.92	Level	1	0	0.995	1.00	90

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = using Equation (Exhibit 13-6)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)
S_R= mph (Exhibit 13-11)
S_0= mph (Exhibit 13-11)
S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = 0.684 using Equation (Exhibit 13-7)
V_{12} = 1817 pc/h
V_3 or V_{av34} 712 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	2529	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	2255	Exhibit 13-8	7050	No
V_R	274	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	1817	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$
D_R = 14.8 (pc/mi/ln)
LOS = B (Exhibit 13-2)

Speed Determination

D_s = 0.323 (Exhibit 13-12)
S_R= 57.6 mph (Exhibit 13-12)
S_0= 71.3 mph (Exhibit 13-12)
S = 60.9 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CKS	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	04/24/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	Existing (2014)

Project Description: I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1660 ft
V_u = 251 veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	410
Deceleration Lane Length L_D	
Freeway Volume, V_F	1944
Ramp Volume, V_R	82
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	1944	0.92	Level	14	0	0.935	1.00	2261
Ramp	82	0.92	Level	1	0	0.995	1.00	90
UpStream	251	0.92	Level	1	0	0.995	1.00	274
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 636.55 (Equation 13-6 or 13-7)

P_{FM} = 0.589 using Equation (Exhibit 13-6)

V_{12} = 1332 pc/h

V_3 or V_{av34} = 929 pc/h (Equation 13-14 or 13-17)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} = pc/h (Equation 13-14 or 13-17)

☐ Yes ☐ No

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No If Yes, V_{12a} = 1332 pc/h (Equation 13-16, 13-18, or 13-19)	Is V_3 or V_{av34} > 2,700 pc/h? Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	2351	Exhibit 13-8		No

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	1422	Exhibit 13-8	4600:All	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$$

D_R = 14.0 (pc/mi/ln)
LOS = B (Exhibit 13-2)

Level of Service Determination (if not F)

$$D_R = 4.252 + 0.0086\, V_{12} - 0.009\, L_D$$

D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

M_S = 0.300 (Exibit 13-11)
S_R = 58.1 mph (Exhibit 13-11)
S_0 = 63.5 mph (Exhibit 13-11)
S = 60.1 mph (Exhibit 13-13)

Speed Determination

D_s = (Exhibit 13-12)
S_R = mph (Exhibit 13-12)
S_0 = mph (Exhibit 13-12)
S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CKS	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	04/24/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	Existing (2014)

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1745 ft
V_u = 34 veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	500
Deceleration Lane Length L_D	
Freeway Volume, V_F	3348
Ramp Volume, V_R	789
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	3348	0.92	Level	13	0	0.939	1.00	3876
Ramp	789	0.92	Level	1	0	0.995	1.00	862
UpStream	34	0.92	Level	6	0	0.971	1.00	38
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1187.33 (Equation 13-6 or 13-7)

P_{FM} = 0.591 using Equation (Exhibit 13-6)

V_{12} = 2293 pc/h

V_3 or V_{av34} = 1583 pc/h (Equation 13-14 or 13-17)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} = pc/h (Equation 13-14 or 13-17)

☐ Yes ☐ No

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes, V_{12a} = 2293 pc/h (Equation 13-16, 13-18, or 13-19)

Is V_3 or V_{av34} > 2,700 pc/h?

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	4738	Exhibit 13-8		No

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	3155	Exhibit 13-8	4600:All	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$$

D_R = 26.6 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Level of Service Determination (if not F)

$$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = 0.367 (Exibit 13-11)

S_R = 56.5 mph (Exhibit 13-11)

S_0 = 61.1 mph (Exhibit 13-11)

S = 58.0 mph (Exhibit 13-13)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CKS	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	04/24/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	Existing (2014)

Project Description: I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Freeway Number of Lanes, N_3	
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	535
Freeway Volume, V_F	3382
Ramp Volume, V_R	34
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1745 ft
V_D = 789 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3382	0.92	Level	13	0	0.939	1.00	3915
Ramp	34	0.92	Level	6	0	0.971	1.00	38
UpStream								
DownStream	789	0.92	Level	1	0	0.995	1.00	862

Merge Areas

Estimation of v_{12}

$$V_{12} = V_F (P_{FM})$$

L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = using Equation (Exhibit 13-6)
V_{12} = pc/h
V_3 or V_{av34} = pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Diverge Areas

Estimation of v_{12}

$$V_{12} = V_R + (V_F - V_R)P_{FD}$$

L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = 0.660 using Equation (Exhibit 13-7)
V_{12} = 2598 pc/h
V_3 or V_{av34} = 1317 pc/h (Equation 13-14 or 13-17)
☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐Yes ☐No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Is V_3 or V_{av34} > 2,700 pc/h?

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐Yes ☑No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3915	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	3877	Exhibit 13-8	7050	No
V_R	38	Exhibit 13-10	2100	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2598	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Level of Service Determination (if not F)

$$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$$

D_R = 21.8 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Speed Determination

D_s = 0.301 (Exhibit 13-12)

S_R = 58.1 mph (Exhibit 13-12)

S_0 = 70.1 mph (Exhibit 13-12)

S = 61.6 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CKS	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	04/24/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	Existing (2014)

Project Description: I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Freeway Number of Lanes, N_3	
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	565
Freeway Volume, V_F	3248
Ramp Volume, V_R	728
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1660 ft
V_D = 71 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3248	0.92	Level	10	0	0.952	1.00	3707
Ramp	728	0.92	Level	1	0	0.995	1.00	795
UpStream								
DownStream	71	0.92	Level	1	0	0.995	1.00	78

Merge Areas

Estimation of v_{12}

$$V_{12} = V_F (P_{FM})$$

L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = using Equation (Exhibit 13-6)
V_{12} = pc/h
V_3 or V_{av34} = pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Diverge Areas

Estimation of v_{12}

$$V_{12} = V_R + (V_F - V_R)P_{FD}$$

L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = 0.631 using Equation (Exhibit 13-7)
V_{12} = 2632 pc/h
V_3 or V_{av34} = 1075 pc/h (Equation 13-14 or 13-17)
☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐Yes ☐No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Is V_3 or V_{av34} > 2,700 pc/h?

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐Yes ☑No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3707	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	2912	Exhibit 13-8	7050	No
V_R	795	Exhibit 13-10	2100	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2632	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Level of Service Determination (if not F)

$$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$$

D_R = 21.8 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Speed Determination

D_s = 0.370 (Exhibit 13-12)

S_R = 56.5 mph (Exhibit 13-12)

S_0 = 71.0 mph (Exhibit 13-12)

S = 60.1 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CKS	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	04/24/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	Existing (2014)

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1660 ft
V_u = 728 veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	410
Deceleration Lane Length L_D	
Freeway Volume, V_F	2520
Ramp Volume, V_R	71
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	2520	0.92	Level	13	0	0.939	1.00	2917
Ramp	71	0.92	Level	1	0	0.995	1.00	78
UpStream	728	0.92	Level	1	0	0.995	1.00	795
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 774.37 (Equation 13-6 or 13-7)

P_{FM} = 0.589 using Equation (Exhibit 13-6)

V_{12} = 1718 pc/h

V_3 or V_{av34} = 1199 pc/h (Equation 13-14 or 13-17)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} = pc/h (Equation 13-14 or 13-17)

☐ Yes ☐ No

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No If Yes, V_{12a} = 1718 pc/h (Equation 13-16, 13-18, or 13-19)	Is V_3 or V_{av34} > 2,700 pc/h? Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	2995	Exhibit 13-8		No

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	1796	Exhibit 13-8	4600:All	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$$

D_R = 16.9 (pc/mi/ln)
LOS = B (Exhibit 13-2)

Level of Service Determination (if not F)

$$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$$

D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

M_S = 0.308 (Exibit 13-11)
S_R = 57.9 mph (Exhibit 13-11)
S_0 = 62.5 mph (Exhibit 13-11)
S = 59.7 mph (Exhibit 13-13)

Speed Determination

D_s = (Exhibit 13-12)
S_R = mph (Exhibit 13-12)
S_0 = mph (Exhibit 13-12)
S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CKS	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	04/24/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	Existing (2014)

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1745 ft
V_u = 103 veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	500
Deceleration Lane Length L_D	
Freeway Volume, V_F	3143
Ramp Volume, V_R	372
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	3143	0.92	Level	13	0	0.939	1.00	3638
Ramp	372	0.92	Level	1	0	0.995	1.00	406
UpStream	103	0.92	Level	1	0	0.995	1.00	113
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1038.82 (Equation 13-6 or 13-7)

P_{FM} = 0.591 using Equation (Exhibit 13-6)

V_{12} = 2152 pc/h

V_3 or V_{av34} = 1486 pc/h (Equation 13-14 or 13-17)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} = pc/h (Equation 13-14 or 13-17)

☐ Yes ☐ No

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes, V_{12a} = 2152 pc/h (Equation 13-16, 13-18, or 13-19)

Is V_3 or V_{av34} > 2,700 pc/h?

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	4044	Exhibit 13-8		No

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2558	Exhibit 13-8	4600:All	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$$

D_R = 22.1 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Level of Service Determination (if not F)

$$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = 0.326 (Exibit 13-11)

S_R = 57.5 mph (Exhibit 13-11)

S_0 = 61.5 mph (Exhibit 13-11)

S = 58.9 mph (Exhibit 13-13)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CKS	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	04/24/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	Existing (2014)

Project Description: I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Freeway Number of Lanes, N_3	
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	535
Freeway Volume, V_F	3246
Ramp Volume, V_R	103
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1745 ft
V_D = 372 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3246	0.92	Level	13	0	0.939	1.00	3758
Ramp	103	0.92	Level		0	1.000	1.00	112
UpStream								
DownStream	372	0.92	Level	1	0	0.995	1.00	406

Merge Areas

Estimation of v_{12}

$$V_{12} = V_F (P_{FM})$$

L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = using Equation (Exhibit 13-6)
V_{12} = pc/h
V_3 or V_{av34} = pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Diverge Areas

Estimation of v_{12}

$$V_{12} = V_R + (V_F - V_R)P_{FD}$$

L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = 0.661 using Equation (Exhibit 13-7)
V_{12} = 2522 pc/h
V_3 or V_{av34} = 1236 pc/h (Equation 13-14 or 13-17)
☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐Yes ☐No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Is V_3 or V_{av34} > 2,700 pc/h?

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐Yes ☑No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3758	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	3646	Exhibit 13-8	7050	No
V_R	112	Exhibit 13-10	2100	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2522	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Level of Service Determination (if not F)

$$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$$

D_R = 21.1 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Speed Determination

D_s = 0.308 (Exhibit 13-12)

S_R = 57.9 mph (Exhibit 13-12)

S_0 = 70.4 mph (Exhibit 13-12)

S = 61.5 mph (Exhibit 13-13)

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APPENDIX 4.1:

POST-PROCESSING AND FINAL VOLUME DEVELOPMENT WORKSHEETS FOR HORIZON YEAR (2035) WITHOUT PROJECT CONDITIONS

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Project:	==========>	I-10 Gateway Job Center TIA	<===	Job #:	08312
Scenario:	==========>	2035 Without Project	<===	Analyst:	PT
Existing Conditions Model Run ID:	==>	2008 RivTAM	<===	Date:	1/16/13
Future Conditions Model Run ID:	==>	2035 RivTAM	<===		

LOCATION: **I-10 EB Ramps / Cherry Valley Boulevard**

AM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2012			**129**	**0**	**126**			
			<	v	>			
	0	^				^	**0**	
	493	>				<	**59**	
	57	v				v	**27**	
			<	^	>			
891			**0**	**0**	**0**			

EXISTING MODEL YEAR:

2008				**129**	**0**			
				v	^			
	48	<	IN =	248	<	**24**		
	95	>	OUT =	249	>	**173**		
				v	^			
				28	**0**			

FUTURE MODEL YEAR:

2035				**502**	**0**			
				v	^			
	261	<	IN =	1030	<	**138**		
	390	>	OUT =	1030	>	**626**		
				v	^			
				143	**0**			

EXISTING (COUNTED) ADTs BY LEG:

2012				**8,814**				
				N				
	9,918	W	**LEG**	E	**8,700**			
			S					
			876					

REFINED FUTURE ADT'S BY LEG:

2035				**8,950**				
				N				
	10,284	W	**LEG**	E				
			S					
			1,286					

PM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2012			**398**	**2**	**335**			
			<	v	>			
	0	^				^	**0**	
	246	>				<	**128**	
	55	v				v	**16**	
			<	^	>			
1180			**0**	**0**	**0**			

EXISTING MODEL YEAR:

2008				**456**	**0**			
				v	^			
	240	<	IN =	556	<	**34**		
	66	>	OUT =	556	>	**294**		
				v	^			
				22	**0**			

FUTURE MODEL YEAR:

2035				**1149**	**0**			
				v	^			
	847	<	IN =	1875	<	**349**		
	377	>	OUT =	1875	>	**968**		
				v	^			
				60	**0**			

EXISTING (COUNTED) ADTs BY LEG:

2012				8,814				
				N				
	9,918	W	+	E	8,700			
			S					
			876					

REFINED FUTURE ADT'S BY LEG:

2035				8,950				
				N				
	10,284	W	+	E	0			
			S					
			1,286					

U:\UcJobs_08100-08500_08300\08312\Post Processing\Count Based\[1 I-10 EB_Cherry Valley.xls]Input (1)

Project: I-10 Gateway Job Center TIA
Scenario: 2035 Without Project

Job #: 08312
Analyst: PT
Date: 1/16/13

LOCATION: I-10 EB Ramps / Cherry Valley Boulevard

EXISTING COUNTED INBOUND AND OUTBOUND VOLUME CALCULATION

AM

EXISTING COUNT YEAR: 2012

		255	0		
		v	^		
188 <	IN =	891	<	86	
550 >	OUT =	891	>	619	
		v	^		
		84	0		

GROWTH CALCULATION DECISION RULE
MIN = Minimum Count Growth Approach
ADD = Additive (Growth Increment) Approach
MUL = Multiplicative (Ratio) Approach

		ADD	MUL		
		v	^		
ADD <			<	ADD	
ADD >			>	ADD	
		v	^		
		ADD	MUL		

MINIMUM GROWTH %s 2008 TO 2035

		0%	0%		
		v	^		
0% <			<	#####	
0% >			>	#####	
		v	^		
		0%	0%		

REFINED GROWTH: 2008 TO 2035

		370	0		
		v	^		
210 <			<	110	
300 >			>	450	
		v	^		
		120	0		

PRORATED GROWTH: 2012 TO 2035
23 YEARS

		320	0		
		v	^		
180 <			<	90	
260 >			>	380	
		v	^		
		100	0		

NEW PROJECTED VOLUMES: 2035

		580	0		
		v	^		
375 <	IN =	1570	<	180	
810 >	OUT =	1570	>	1013	
		v	^	*	
		182	0		

PM

EXISTING COUNT YEAR: 2012

		735	0		
		v	^		
526 <	IN =	1180	<	144	
301 >	OUT =	1180	>	581	
		v	^		
		73	0		

MIN = Minimum Count Growth Approach
ADD = Additive (Growth Increment) Approach
MUL = Multiplicative (Ratio) Approach

		ADD	MUL		
		v	^		
ADD <			<	ADD	
ADD >			>	ADD	
		v	^		
		ADD	MUL		

		0%	0%		
		v	^		
0% <			<	#####	
0% >			>	#####	
		v	^		
		0%	0%		

ADJUSTED GROWTH: 2008 TO 2035

		690	0		
		v	^		
610 <			<	320	
310 >			>	670	
		v	^		
		40	0		

PRORATED GROWTH: 2012 TO 2035
23 YEARS

		590	0		
		v	^		
520 <			<	270	
260 >			>	570	
		v	^		
		30	0		

NEW PROJECTED VOLUMES: 2035

		1330	0		
		v	^		
1050 <	IN =	2300	<	410	
560 >	OUT =	2300	>	1150	
		v	^	*	
		100	0		

* NOTE: Outbound future volume may be factored (increased) to match inbound if inbound is greater than outbound.

U:\UcJobs_08100-08500_08300\08312\Post Processing\Count Based\[1 I-10 EB_Cherry Valley.xls] Growth Summary (2)

Project: I-10 Gateway Job Center TIA
Scenario: 2035 Without Project

Job #: 08312
Analyst: PT
Date: 1/16/13

LOCATION: I-10 EB Ramps / Cherry Valley Boulevard
FORECAST YEAR: 2035

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	NB Total	0	0	0	#DIV/0!	0	0	0	#DIV/0!
SOUTH BOUND	Left	126	310	184	146%	335	655	320	96%
	Through	0	0	0	#DIV/0!	2	2	0	0%
	Right	129	270	141	109%	398	672	274	69%
	SB Total	255	580	325	127%	735	1,329	594	81%
EAST BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	493	703	210	43%	246	495	249	101%
	Right	57	107	50	88%	55	65	10	18%
	EB Total	550	810	260	47%	301	560	259	86%
WEST BOUND	Left	27	75	48	178%	16	32	16	100%
	Through	59	105	46	78%	128	378	250	195%
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	WB Total	86	180	94	109%	144	410	266	185%
TOTAL ENTERING VOLUME		891	1,570	679	76%	1,180	2,299	1119	95%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	580	1,329			
North Leg	Outbound	0	0			
North Leg	**TOTAL**	**580**	**1,329**	**6%**	**15%**	**8,950**
South Leg	Inbound	0	0			
South Leg	Outbound	182	99			
South Leg	**TOTAL**	**182**	**99**	**14%**	**8%**	**1,286**
East Leg	Inbound	180	410			
East Leg	Outbound	1,013	1,150			
East Leg	**TOTAL**	**1,193**	**1,560**	**#DIV/0!**	**#DIV/0!**	**-**
West Leg	Inbound	810	560			
West Leg	Outbound	375	1,050			
West Leg	**TOTAL**	**1,185**	**1,610**	**12%**	**16%**	**10,284**
OVERALL TOTAL		***3,140***	***4,598***	**15%**	***22%***	***20,520***

U:\UcJobs_08100-08500_08300\08312\Post Processing\Count Based\[1 I-10 EB_Cherry Valley.xls]Output (3)

Project:	==========>	I-10 Gateway Job Center TIA	<===	Job #:	08312
Scenario:	==========>	2035 Without Project	<===	Analyst:	PT
Existing Conditions Model Run ID:	==>	2008 RivTAM	<===	Date:	1/16/13
Future Conditions Model Run ID:	==>	2035 RivTAM	<===		

LOCATION: **I-10 Westbound Ramps / Cherry Valley Boulevard**

AM PEAK HOUR	PM PEAK HOUR
EXISTING TURNING MOVEMENT VOLUMES: **2012** **0 0 0** < v > **441** ^ ^ **355** **178** > < **59** **0** v v **0** < ^ > 1071 **27 0 11**	EXISTING TURNING MOVEMENT VOLUMES: 2012 **0 0 0** < v > **204** ^ ^ **173** **377** > < **60** **0** v v **0** < ^ > 919 **84 3 18**
EXISTING MODEL YEAR: **2008** **0 303** v ^ **24** < IN = 436 < **247** **173** > OUT = 436 > **109** v ^ **0 16**	EXISTING MODEL YEAR: 2008 **0 204** v ^ **34** < IN = 500 < **175** **294** > OUT = 499 > **261** v ^ **0 31**
FUTURE MODEL YEAR: **2035** **0 640** v ^ **188** < IN = 1632 < **567** **626** > OUT = 1681 > **853** v ^ **0 439**	FUTURE MODEL YEAR: 2035 **0 548** v ^ **349** < IN = 2042 < **543** **968** > OUT = 2043 > **1146** v ^ **0 531**
EXISTING (COUNTED) ADTs BY LEG: 2012 **4,560** N **8,700** W **LEG** E **7,536** S **1,260**	EXISTING (COUNTED) ADTs BY LEG: 2012 4,560 N 8,700 W + E 7,536 S 1,260
REFINED FUTURE ADT'S BY LEG: 2035 **7,009** N W **LEG** E **17,362** S **4,746**	REFINED FUTURE ADT'S BY LEG: 2035 7,009 N 0 W + E 17,362 S 4,746

U:\UcJobs_08100-08500_08300\08312\Post Processing\Count Based\[2 I-10 WB_Cherry Valley.xls]Input (1)

Project: I-10 Gateway Job Center TIA
Scenario: 2035 Without Project

Job #: 08312
Analyst: PT
Date: 1/16/13

LOCATION: I-10 Westbound Ramps / Cherry Valley Boulevard

EXISTING COUNTED INBOUND AND OUTBOUND VOLUME CALCULATION

AM

EXISTING COUNT YEAR:
2012

			0	796		
			v	^		
	86	< IN =	1071	<	414	
	619	> OUT =	1071	>	189	
			v	^		
			0	38		

GROWTH CALCULATION DECISION RULE
MIN = Minimum Count Growth Approach
ADD = Additive (Growth Increment) Approach
MUL = Multiplicative (Ratio) Approach

			MUL	ADD		
			v	^		
	ADD	<		<	ADD	
	ADD	>		>	ADD	
			v	^		
			MUL	ADD		

MINIMUM GROWTH %s 2008 TO 2035

			0%	0%		
			v	^		
	#####	<		<	0%	
	#####	>		>	0%	
			v	^		
			0%	0%		

REFINED GROWTH: 2008 TO 2035

			0	340		
			v	^		
	160	<		<	320	
	450	>		>	740	
			v	^		
			0	420		

PRORATED GROWTH: 2012 TO 2035
23 YEARS

			0	290		
			v	^		
	140	<		<	270	
	380	>		>	630	
			v	^		
			0	360		

NEW PROJECTED VOLUMES: 2035

			0	1090		
			v	^		
	230	< IN =	2080	<	680	
	1000	> OUT =	2140	>	820	
			v	^ *		
			0	400		

PM

EXISTING COUNT YEAR:
2012

			0	380		
			v	^		
	144	< IN =	919	<	233	
	581	> OUT =	919	>	395	
			v	^		
			0	105		

MIN = Minimum Count Growth Approach
ADD = Additive (Growth Increment) Approach
MUL = Multiplicative (Ratio) Approach

			MUL	ADD		
			v	^		
	ADD	<		<	ADD	
	ADD	>		>	ADD	
			v	^		
			MUL	ADD		

			0%	0%		
			v	^		
	#####	<		<	0%	
	#####	>		>	0%	
			v	^		
			0%	0%		

ADJUSTED GROWTH: 2008 TO 2035

			0	340		
			v	^		
	320	<		<	370	
	670	>		>	890	
			v	^		
			0	500		

PRORATED GROWTH: 2012 TO 2035
23 YEARS

			0	290		
			v	^		
	270	<		<	320	
	570	>		>	760	
			v	^		
			0	430		

NEW PROJECTED VOLUMES: 2035

			0	670		
			v	^		
	410	< IN =	2240	<	550	
	1150	> OUT =	2240	>	1160	
			v	^ *		
			0	540		

* NOTE: Outbound future volume may be factored (increased) to match inbound if inbound is greater than outbound.

U:\UcJobs_08100-08500_08300\08312\Post Processing\Count Based\[2 I-10 WB_Cherry Valley.xls] Growth Summary (2)

Project:	I-10 Gateway Job Center TIA	Job #:	08312
Scenario:	2035 Without Project	Analyst:	PT
		Date:	1/16/13

LOCATION: I-10 Westbound Ramps / Cherry Valley Boulevard
FORECAST YEAR: 2035

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	27	154	127	470%	84	303	219	261%
	Through	0	0	0	#DIV/0!	3	15	12	400%
	Right	11	257	246	2236%	18	221	203	1128%
	NB Total	38	411	373	982%	105	539	434	413%
SOUTH BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	SB Total	0	0	0	#DIV/0!	0	0	0	#DIV/0!
EAST BOUND	Left	441	466	25	6%	204	213	9	4%
	Through	178	563	385	216%	377	939	562	149%
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	EB Total	619	1,029	410	66%	581	1,152	571	98%
WEST BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	59	76	17	29%	60	107	47	78%
	Right	355	624	269	76%	173	442	269	155%
	WB Total	414	700	286	69%	233	549	316	136%
TOTAL ENTERING VOLUME		1,071	2,140	1069	100%	919	2,240	1321	144%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	0	0			
North Leg	Outbound	1,090	670			
North Leg	**TOTAL**	**1,090**	**670**	**16%**	**10%**	**7,009**
South Leg	Inbound	411	539			
South Leg	Outbound	0	0			
South Leg	**TOTAL**	**411**	**539**	**9%**	**11%**	**4,746**
East Leg	Inbound	700	549			
East Leg	Outbound	820	1,160			
East Leg	**TOTAL**	**1,520**	**1,709**	**9%**	**10%**	**17,362**
West Leg	Inbound	1,029	1,152			
West Leg	Outbound	230	410			
West Leg	**TOTAL**	**1,259**	**1,562**	**#DIV/0!**	**#DIV/0!**	**-**
OVERALL TOTAL		***4,280***	***4,480***	**15%**	***15%***	***29,117***

U:\UcJobs_08100-08500_08300\08312\Post Processing\Count Based\[2 I-10 WB_Cherry Valley.xls]Output (3)

Project:	==========>	I-10 Gateway Job Center TIA	<===	Job #:	08312
Scenario:	==========>	2035 Without Project	<===	Analyst:	PT
Existing Conditions Model Run ID:	==>	2008 RivTAM	<===	Date:	1/16/13
Future Conditions Model Run ID:	==>	2035 RivTAM	<===		

LOCATION: **Calimesa Boulevard / Cherry Valley Boulevard**

AM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2012			**10**	**0**	**8**			
			<	v	>			
	7	^				^	**10**	
	182	>				<	**404**	
	0	v				v	**0**	
			<	^	>			
621			**0**	**0**	**0**			

EXISTING MODEL YEAR:

2008				**9**	**9**			
				v	^			
	247	<	IN =	374	<	**256**		
	109	>	OUT =	374	>	**118**		
				v	^			
				0	**0**			

FUTURE MODEL YEAR:

2035				**40**	**439**			
				v	^			
	567	<	IN =	1792	<	**899**		
	853	>	OUT =	1791	>	**785**		
				v	^			
				0	**0**			

EXISTING (COUNTED) ADTs BY LEG:

2012			**798**		
			N		
	7,536	W	**LEG**	E	**7,590**
			S		
			0		

REFINED FUTURE ADT'S BY LEG:

2035			**4,591**		
			N		
	17,362	W	**LEG**	E	**19,730**
			S		
			0		

PM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2012			**15**	**0**	**24**			
			<	v	>			
	16	^				^	**12**	
	379	>				<	**218**	
	0	v				v	**0**	
			<	^	>			
664			**0**	**0**	**0**			

EXISTING MODEL YEAR:

2008				**35**	**14**			
				v	^			
	175	<	IN =	485	<	**189**		
	261	>	OUT =	486	>	**297**		
				v	^			
				0	**0**			

FUTURE MODEL YEAR:

2035				**235**	**600**			
				v	^			
	543	<	IN =	2293	<	**912**		
	1146	>	OUT =	2293	>	**1150**		
				v	^			
				0	**0**			

EXISTING (COUNTED) ADTs BY LEG:

2012			798		
			N		
	7,536	W	+	E	7,590
			S		
			0		

REFINED FUTURE ADT'S BY LEG:

2035			4,591		
			N		
	17,362	W	+	E	19,730
			S		
			0		

U:\UcJobs_08100-08500_08300\08312\Post Processing\Count Based\[3 Calimesa_Cherry Valley.xls]Input (1)

Project: I-10 Gateway Job Center TIA
Scenario: 2035 Without Project

Job #: 08312
Analyst: PT
Date: 1/16/13

LOCATION: Calimesa Boulevard / Cherry Valley Boulevard

EXISTING COUNTED INBOUND AND OUTBOUND VOLUME CALCULATION

AM

EXISTING COUNT YEAR: 2012

		18	17		
		v	^		
414	<	IN =	621	<	414
189	>	OUT =	621	>	190
		v	^		
		0	0		

GROWTH CALCULATION DECISION RULE
MIN = Minimum Count Growth Approach
ADD = Additive (Growth Increment) Approach
MUL = Multiplicative (Ratio) Approach

		ADD	ADD		
		v	^		
ADD	<			<	ADD
ADD	>			>	ADD
		v	^		
		MUL	MUL		

MINIMUM GROWTH %s 2008 TO 2035

		0%	0%		
		v	^		
0%	<			<	0%
0%	>			>	0%
		v	^		
		0%	0%		

REFINED GROWTH: 2008 TO 2035

		30	430		
		v	^		
320	<			<	640
740	>			>	670
		v	^		
		0	0		

PRORATED GROWTH: 2012 TO 2035
23 YEARS

		30	370		
		v	^		
270	<			<	550
630	>			>	570
		v	^		
		0	0		

NEW PROJECTED VOLUMES: 2035

		50	390		
		v	^		
680	<	IN =	1830	<	960
820	>	OUT =	1830	>	760
		v	^	*	
		0	0		

PM

EXISTING COUNT YEAR: 2012

		39	28		
		v	^		
233	<	IN =	664	<	230
395	>	OUT =	664	>	403
		v	^		
		0	0		

MIN = Minimum Count Growth Approach
ADD = Additive (Growth Increment) Approach
MUL = Multiplicative (Ratio) Approach

		ADD	ADD		
		v	^		
ADD	<			<	ADD
ADD	>			>	ADD
		v	^		
		MUL	MUL		

		0%	0%		
		v	^		
0%	<			<	0%
0%	>			>	0%
		v	^		
		0%	0%		

ADJUSTED GROWTH: 2008 TO 2035

		200	590		
		v	^		
370	<			<	720
890	>			>	850
		v	^		
		0	0		

PRORATED GROWTH: 2012 TO 2035
23 YEARS

		170	500		
		v	^		
320	<			<	610
760	>			>	720
		v	^		
		0	0		

NEW PROJECTED VOLUMES: 2035

		210	532		
		v	^		
553	<	IN =	2210	<	840
1160	>	OUT =	2210	>	1125
		v	^	*	
		0	0		

* NOTE: Outbound future volume may be factored (increased) to match inbound if inbound is greater than outbound.

U:\UcJobs_08100-08500_08300\08312\Post Processing\Count Based\[3 Calimesa_Cherry Valley.xls] Growth Summary (2)

Project:	I-10 Gateway Job Center TIA	Job #:	08312
Scenario:	2035 Without Project	Analyst:	PT
		Date:	1/16/13

LOCATION: Calimesa Boulevard / Cherry Valley Boulevard
FORECAST YEAR: 2035

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	NB Total	0	0	0	#DIV/0!	0	0	0	#DIV/0!
SOUTH BOUND	Left	8	38	30	375%	24	165	141	588%
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	10	13	3	30%	15	45	30	200%
	SB Total	18	51	33	183%	39	210	171	438%
EAST BOUND	Left	7	125	118	1686%	16	208	192	1200%
	Through	182	722	540	297%	379	960	581	153%
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	EB Total	189	847	658	348%	395	1,168	773	196%
WEST BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	404	667	263	65%	218	507	289	133%
	Right	10	265	255	2550%	12	325	313	2608%
	WB Total	414	932	518	125%	230	832	602	262%
TOTAL ENTERING VOLUME		621	1,830	1209	195%	664	2,210	1546	233%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	51	210			
North Leg	Outbound	390	533			
North Leg	**TOTAL**	**441**	**743**	**10%**	**16%**	**4,591**
South Leg	Inbound	0	0			
South Leg	Outbound	0	0			
South Leg	**TOTAL**	**0**	**0**	**#DIV/0!**	**#DIV/0!**	**-**
East Leg	Inbound	932	832			
East Leg	Outbound	760	1,125			
East Leg	**TOTAL**	**1,692**	**1,957**	**9%**	**10%**	**19,730**
West Leg	Inbound	847	1,168			
West Leg	Outbound	680	552			
West Leg	**TOTAL**	**1,527**	**1,720**	**9%**	**10%**	**17,362**
OVERALL TOTAL		***3,660***	***4,420***	**9%**	***11%***	***41,683***

U:\UcJobs_08100-08500_08300\08312\Post Processing\Count Based\[3 Calimesa_Cherry Valley.xls]Output (3)

Project:	==========>	I-10 Gateway Job Center TIA	<===	Job #:	08312
Scenario:	==========>	2035 Without Project	<===	Analyst:	PT
Existing Conditions Model Run ID:	==>	2008 RivTAM	<===	Date:	1/16/13
Future Conditions Model Run ID:	==>	2035 RivTAM	<===		

LOCATION: **Driveway 2 / Cherry Valley Boulevard**

AM PEAK HOUR	**PM PEAK HOUR**
FUTURE MODEL YEAR:	FUTURE MODEL YEAR:
2035	2035
0 **0**	**0** **0**
v ^	v ^
1096 < IN = 1827 < **1039**	**1348** < IN = 2951 < **1348**
700 > OUT = 1827 > **698**	**1302** > OUT = 2865 > **1302**
v ^	v ^
33 **88**	**215** **301**
REFINED FUTURE ADTs BY LEG:	REFINED FUTURE ADTs BY LEG:
2035	2035
0	0
N	N
22,801 W **LEG** E **21,046**	22,801 W + E 21,046
S	S
2,431	2,431

U:\UcJobs_08100-08500_08300\08312\Post Processing\Semi Count Based\[5 Dwy 2_Cherry Valley.xls]Input (1)

Project: I-10 Gateway Job Center TIA
Scenario: 2035 Without Project

Job #: 08312
Analyst: PT
Date: 1/16/13

LOCATION: Driveway 2 / Cherry Valley Boulevard

EXISTING COUNTED INBOUND AND OUTBOUND VOLUME CALCULATION

AM

EXISTING COUNT YEAR: 2012

		0	0		
		v	^		
4	<	IN =	10	<	4
4	>	OUT =	10	>	4
		v	^		
		2	2		

GROWTH CALCULATION DECISION RULE
MIN = Minimum Count Growth Approach
ADD = Additive (Growth Increment) Approach
MUL = Multiplicative (Ratio) Approach

		ADD	ADD		
		v	^		
MUL	<			<	MUL
MUL	>			>	MUL
		v	^		
		MUL	MUL		

MINIMUM GROWTH %s 2008 TO 2035

		0%	0%		
		v	^		
0%	<			<	0%
0%	>			>	0%
		v	^		
		0%	0%		

REFINED GROWTH: 2008 TO 2035

		0	0		
		v	^		
1096	<			<	1036
696	>			>	696
		v	^		
		28	88		

PRORATED GROWTH: 2012 TO 2035
23 YEARS

		0	0		
		v	^		
930	<			<	880
590	>			>	590
		v	^		
		20	70		

NEW PROJECTED VOLUMES: 2035

			0	0		
			v	^		
930	<	IN =	1540	<	880	
590	>	OUT =	1540	>	590	
			v	^	*	
			20	70		

PM

EXISTING COUNT YEAR: 2012

		0	0		
		v	^		
4	<	IN =	10	<	4
4	>	OUT =	10	>	4
		v	^		
		2	2		

MIN = Minimum Count Growth Approach
ADD = Additive (Growth Increment) Approach
MUL = Multiplicative (Ratio) Approach

		ADD	ADD		
		v	^		
MUL	<			<	MUL
MUL	>			>	MUL
		v	^		
		MUL	MUL		

		0%	0%		
		v	^		
0%	<			<	0%
0%	>			>	0%
		v	^		
		0%	0%		

ADJUSTED GROWTH: 2008 TO 2035

		0	0		
		v	^		
1346	<			<	1346
1296	>			>	1296
		v	^		
		218	298		

PRORATED GROWTH: 2012 TO 2035
23 YEARS

		0	0		
		v	^		
1150	<			<	1150
1100	>			>	1100
		v	^		
		190	250		

NEW PROJECTED VOLUMES: 2035

			0	0		
			v	^		
1178	<	IN =	2500	<	1150	
1100	>	OUT =	2500	>	1127	
			v	^	*	
			195	250		

* NOTE: Outbound future volume may be factored (increased) to match inbound if inbound is greater than outbound.

U:\UcJobs_08100-08500_08300\08312\Post Processing\Semi Count Based\[5 Dwy 2_Cherry Valley.xls] Growth Summary (2)

Project: I-10 Gateway Job Center TIA
Scenario: 2035 Without Project

Job #: 08312
Analyst: PT
Date: 1/16/13

LOCATION: Driveway 2 / Cherry Valley Boulevard
FORECAST YEAR: 2035

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	1	47	46	4600%	1	127	126	12600%
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	1	23	22	2200%	1	123	122	12200%
	NB Total	2	70	68	3400%	2	250	248	12400%
SOUTH BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	SB Total	0	0	0	#DIV/0!	0	0	0	#DIV/0!
EAST BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	3	567	564	18800%	3	1,004	1,001	33367%
	Right	1	11	10	1000%	1	97	96	9600%
	EB Total	4	578	574	14350%	4	1,101	1,097	27425%
WEST BOUND	Left	1	9	8	800%	1	98	97	9700%
	Through	3	883	880	29333%	3	1,051	1,048	34933%
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	WB Total	4	892	888	22200%	4	1,149	1,145	28625%
TOTAL ENTERING VOLUME		10	1,540	1530	15300%	10	2,500	2490	24900%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	0	0			
North Leg	Outbound	0	0			
North Leg	**TOTAL**	**0**	**0**	**#DIV/0!**	**#DIV/0!**	**-**
South Leg	Inbound	70	250			
South Leg	Outbound	20	195			
South Leg	**TOTAL**	**90**	**445**	**4%**	**18%**	**2,431**
East Leg	Inbound	892	1,149			
East Leg	Outbound	590	1,127			
East Leg	**TOTAL**	**1,482**	**2,276**	**7%**	**11%**	**21,046**
West Leg	Inbound	578	1,101			
West Leg	Outbound	930	1,178			
West Leg	**TOTAL**	**1,508**	**2,279**	**7%**	**10%**	**22,801**
OVERALL TOTAL		***3,080***	***5,000***	**7%**	***11%***	***46,278***

U:\UcJobs_08100-08500_08300\08312\Post Processing\Semi Count Based\[5 Dwy 2_Cherry Valley.xls]Output (3)

Project:	==========>	I-10 Gateway Job Center TIA	<===	Job #:	08312
Scenario:	==========>	2035 Without Project	<===	Analyst:	PT
Existing Conditions Model Run ID:	==>	2008 RivTAM	<===	Date:	1/16/13
Future Conditions Model Run ID:	==>	2035 RivTAM	<===		

LOCATION: **Union Street / Cherry Valley Boulevard**

AM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2012			**62**	**3**	**2**			
			<	v	>			
	18	^				^	**1**	
	183	>				<	**248**	
	7	v				v	**2**	
			<	^	>			
550			**17**	**4**	**3**			

EXISTING MODEL YEAR:

2008				**93**	**26**			
				v	^			
	227	<	IN =	364	<	**152**		
	96	>	OUT =	364	>	**94**		
				v	^			
				17	**23**			

FUTURE MODEL YEAR:

2035				**164**	**63**			
				v	^			
	902	<	IN =	1671	<	**727**		
	628	>	OUT =	1670	>	**523**		
				v	^			
				182	**152**			

EXISTING (COUNTED) ADTs BY LEG:

2012			**834**		
			N		
	6,648	W	**LEG**	E	**5,658**
			S		
			384		

REFINED FUTURE ADT'S BY LEG:

2035			**3,200**		
			N		
	18,208	W	**LEG**	E	**15,234**
			S		
			3,856		

PM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2012			**20**	**1**	**2**			
			<	v	>			
	45	^				^	**2**	
	293	>				<	**170**	
	14	v				v	**2**	
			<	^	>			
564			**12**	**0**	**3**			

EXISTING MODEL YEAR:

2008				**59**	**102**			
				v	^			
	155	<	IN =	462	<	**127**		
	259	>	OUT =	462	>	**174**		
				v	^			
				31	**17**			

FUTURE MODEL YEAR:

2035				**165**	**266**			
				v	^			
	965	<	IN =	2123	<	**787**		
	969	>	OUT =	2123	>	**795**		
				v	^			
				97	**202**			

EXISTING (COUNTED) ADTs BY LEG:

2012			834		
			N		
	6,648	W	+	E	5,658
			S		
			384		

REFINED FUTURE ADT'S BY LEG:

2035			3,200		
			N		
	18,208	W	+	E	15,234
			S		
			3,856		

U:\UcJobs_08100-08500_08300\08312\Post Processing\Count Based\[7 Union_Cherry Valley.xls]Input (1)

Project: I-10 Gateway Job Center TIA
Scenario: 2035 Without Project

Job #: 08312
Analyst: PT
Date: 1/16/13

LOCATION: Union Street / Cherry Valley Boulevard

EXISTING COUNTED INBOUND AND OUTBOUND VOLUME CALCULATION

AM

EXISTING COUNT YEAR:
2012

		67	23		
		v	^		
327	<	IN =	550	<	251
208	>	OUT =	550	>	188
		v	^		
		12	24		

GROWTH CALCULATION DECISION RULE
MIN = Minimum Count Growth Approach
ADD = Additive (Growth Increment) Approach
MUL = Multiplicative (Ratio) Approach

		MUL	MUL		
		v	^		
ADD	<			<	ADD
ADD	>			>	ADD
		v	^		
		MUL	ADD		

MINIMUM GROWTH %s 2008 TO 2035

		0%	0%		
		v	^		
0%	<			<	0%
0%	>			>	0%
		v	^		
		0%	0%		

REFINED GROWTH: 2008 TO 2035

		53	37		
		v	^		
680	<			<	580
530	>			>	430
		v	^		
		118	130		

PRORATED GROWTH: 2012 TO 2035
23 YEARS

		50	30		
		v	^		
580	<			<	490
450	>			>	370
		v	^		
		100	110		

NEW PROJECTED VOLUMES: 2035

		120	51			
		v	^			
921	<	IN =	1650	<	740	
660	>	OUT =	1650	>	567	
		v	^	*		
		111	130			

PM

EXISTING COUNT YEAR:
2012

		23	47		
		v	^		
202	<	IN =	564	<	174
352	>	OUT =	564	>	298
		v	^		
		17	15		

MIN = Minimum Count Growth Approach
ADD = Additive (Growth Increment) Approach
MUL = Multiplicative (Ratio) Approach

		MUL	MUL		
		v	^		
ADD	<			<	ADD
ADD	>			>	ADD
		v	^		
		MUL	MUL		

		0%	0%		
		v	^		
0%	<			<	0%
0%	>			>	0%
		v	^		
		0%	0%		

ADJUSTED GROWTH: 2008 TO 2035

		37	73		
		v	^		
810	<			<	660
710	>			>	620
		v	^		
		33	165		

PRORATED GROWTH: 2012 TO 2035
23 YEARS

		30	60		
		v	^		
690	<			<	560
600	>			>	530
		v	^		
		30	140		

NEW PROJECTED VOLUMES: 2035

		50	111			
		v	^			
895	<	IN =	1890	<	730	
950	>	OUT =	1890	>	834	
		v	^	*		
		50	160			

* NOTE: Outbound future volume may be factored (increased) to match inbound if inbound is greater than outbound.

U:\UcJobs_08100-08500_08300\08312\Post Processing\Count Based\[7 Union_Cherry Valley.xls] Growth Summary (2)

Project:	I-10 Gateway Job Center TIA	Job #:	08312
Scenario:	2035 Without Project	Analyst:	PT
		Date:	1/16/13

LOCATION: Union Street / Cherry Valley Boulevard
FORECAST YEAR: 2035

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	17	100	83	488%	12	131	119	992%
	Through	4	14	10	250%	0	0	0	#DIV/0!
	Right	3	16	13	433%	3	30	27	900%
	NB Total	24	130	106	442%	15	161	146	973%
SOUTH BOUND	Left	2	3	1	50%	2	4	2	100%
	Through	3	16	13	433%	1	2	1	100%
	Right	62	101	39	63%	20	44	24	120%
	SB Total	67	120	53	79%	23	50	27	117%
EAST BOUND	Left	18	35	17	94%	45	104	59	131%
	Through	183	548	365	199%	293	801	508	173%
	Right	7	76	69	986%	14	40	26	186%
	EB Total	208	659	451	217%	352	945	593	168%
WEST BOUND	Left	2	19	17	850%	2	8	6	300%
	Through	248	720	472	190%	170	720	550	324%
	Right	1	2	1	100%	2	7	5	250%
	WB Total	251	741	490	195%	174	735	561	322%
TOTAL ENTERING VOLUME		550	1,650	1100	200%	564	1,891	1327	235%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	120	50			
North Leg	Outbound	51	111			
North Leg	**TOTAL**	**171**	**161**	**5%**	**5%**	**3,200**
South Leg	Inbound	130	161			
South Leg	Outbound	111	50			
South Leg	**TOTAL**	**241**	**211**	**6%**	**5%**	**3,856**
East Leg	Inbound	741	735			
East Leg	Outbound	567	835			
East Leg	**TOTAL**	**1,308**	**1,570**	**9%**	**10%**	**15,234**
West Leg	Inbound	659	945			
West Leg	Outbound	921	895			
West Leg	**TOTAL**	**1,580**	**1,840**	**9%**	**10%**	**18,208**
OVERALL TOTAL		***3,300***	***3,782***	**8%**	***9%***	***40,498***

U:\UcJobs_08100-08500_08300\08312\Post Processing\Count Based\[7 Union_Cherry Valley.xls]Output (3)

Project:	==========>	I-10 Gateway Job Center TIA	<===	Job #:	08312
Scenario:	==========>	2035 Without Project	<===	Analyst:	PT
Existing Conditions Model Run ID:	==>	2008 RivTAM	<===	Date:	1/16/13
Future Conditions Model Run ID:	==>	2035 RivTAM	<===		

LOCATION: **Nancy Street / Cherry Valley Boulevard**

AM PEAK HOUR	PM PEAK HOUR
EXISTING TURNING MOVEMENT VOLUMES: **2012** **29 35 18** < v > **16** ^ ^ **13** **148** > < **218** **17** v v **47** < ^ > 680 **25 21 93**	EXISTING TURNING MOVEMENT VOLUMES: 2012 **19 15 9** < v > **33** ^ ^ **8** **249** > < **147** **22** v v **20** < ^ > 571 **12 18 19**
EXISTING MODEL YEAR: **2008** **56 32** v ^ **152** < IN = 275 < **125** **94** > OUT = 276 > **92** v ^ **0 0**	EXISTING MODEL YEAR: 2008 **58 77** v ^ **127** < IN = 344 < **108** **174** > OUT = 344 > **140** v ^ **0 4**
FUTURE MODEL YEAR: **2035** **66 52** v ^ **771** < IN = 1362 < **713** **582** > OUT = 1361 > **513** v ^ **25 1**	FUTURE MODEL YEAR: 2035 **18 32** v ^ **812** < IN = 1685 < **803** **856** > OUT = 1683 > **835** v ^ **4 8**
EXISTING (COUNTED) ADTs BY LEG: 2012 **1,206** N **5,772** W **LEG** E **5,406** S **1,260**	EXISTING (COUNTED) ADTs BY LEG: 2012 1,206 N 5,772 W + E 5,406 S 1,260
REFINED FUTURE ADT'S BY LEG: 2035 **1,501** N **16,476** W **LEG** E **14,956** S **291**	REFINED FUTURE ADT'S BY LEG: 2035 1,501 N 16,476 W + E 14,956 S 291

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Project: I-10 Gateway Job Center TIA
Scenario: 2035 Without Project

Job #: 08312
Analyst: PT
Date: 1/16/13

LOCATION: Nancy Street / Cherry Valley Boulevard

EXISTING COUNTED INBOUND AND OUTBOUND VOLUME CALCULATION

AM

EXISTING COUNT YEAR:
2012

		82	50		
		v	^		
272	<	IN =	680	<	278
181	>	OUT =	680	>	259
		v	^		
		99	139		

GROWTH CALCULATION DECISION RULE
MIN = Minimum Count Growth Approach
ADD = Additive (Growth Increment) Approach
MUL = Multiplicative (Ratio) Approach

		56	32		
		ADD	ADD		
		v	^		125
ADD	<			<	92
ADD	>			>	ADD
		v	^		
		ADD	ADD		

MINIMUM GROWTH %s 2008 TO 2035

		0%	0%		
		v	^		
0%	<			<	0%
0%	>			>	0%
		v	^		
		-77%	-77%		

REFINED GROWTH: 2008 TO 2035

		10	20		
		v	^		
620	<			<	590
490	>			>	420
		v	^		
		30	0		

PRORATED GROWTH: 2012 TO 2035
23 YEARS

		10	20		
		v	^		
530	<			<	500
420	>			>	360
		v	^		
		30	0		

NEW PROJECTED VOLUMES: 2035

		90	70		
		v	^		
800	<	IN =	1610	<	780
600	>	OUT =	1620	>	620
		v	^	*	
		130	140		

PM

EXISTING COUNT YEAR:
2012

		43	59		
		v	^		
178	<	IN =	571	<	175
304	>	OUT =	571	>	277
		v	^		
		57	49		

MIN = Minimum Count Growth Approach
ADD = Additive (Growth Increment) Approach
MUL = Multiplicative (Ratio) Approach

		MIN	MIN		
		v	^		
ADD	<			<	ADD
ADD	>			>	ADD
		v	^		
		ADD	ADD		

		0%	0%		
		v	^		
0%	<			<	0%
0%	>			>	0%
		v	^		
		-77%	-77%		

ADJUSTED GROWTH: 2008 TO 2035

		0	0		
		v	^		
690	<			<	700
680	>			>	700
		v	^		
		0	0		

PRORATED GROWTH: 2012 TO 2035
23 YEARS

		0	0		
		v	^		
590	<			<	600
580	>			>	600
		v	^		
		0	0		

NEW PROJECTED VOLUMES: 2035

		40	60		
		v	^		
770	<	IN =	1750	<	780
880	>	OUT =	1770	>	880
		v	^	*	
		60	50		

* NOTE: Outbound future volume may be factored (increased) to match inbound if inbound is greater than outbound.

U:\UcJobs_08100-08500_08300\08312\Post Processing\Count Based\[8 Nancy_Cherry Valley.xls] Growth Summary (2)

Project:	I-10 Gateway Job Center TIA	Job #:	08312
Scenario:	2035 Without Project	Analyst:	PT
		Date:	1/16/13

LOCATION: Nancy Street / Cherry Valley Boulevard
FORECAST YEAR: 2035

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	25	39	14	56%	12	15	3	25%
	Through	21	14	-7	-33%	18	8	-10	-56%
	Right	93	87	-6	-6%	19	28	9	47%
	NB Total	139	140	1	1%	49	51	2	4%
SOUTH BOUND	Left	18	18	0	0%	9	12	3	33%
	Through	35	24	-11	-31%	15	6	-9	-60%
	Right	29	48	19	66%	19	22	56	3200%
	SB Total	82	90	8	10%	43	40	-3	-7%
EAST BOUND	Left	16	39	23	144%	33	36	3	9%
	Through	148	515	367	248%	249	840	591	237%
	Right	17	41	24	141%	22	21	-1	-5%
	EB Total	181	595	414	229%	304	897	593	195%
WEST BOUND	Left	47	64	17	36%	20	33	13	65%
	Through	218	713	495	227%	147	733	586	399%
	Right	13	18	5	38%	8	15	7	88%
	WB Total	278	795	517	186%	175	781	606	346%
TOTAL ENTERING VOLUME		680	1,620	940	138%	571	1,769	1198	210%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	90	40			
North Leg	Outbound	71	59			
North Leg	**TOTAL**	**161**	**99**	**11%**	**7%**	**1,501**
South Leg	Inbound	140	51			
South Leg	Outbound	129	60			
South Leg	**TOTAL**	**269**	**111**	**92%**	**38%**	**291**
East Leg	Inbound	795	781			
East Leg	Outbound	620	880			
East Leg	**TOTAL**	**1,415**	**1,661**	**9%**	**11%**	**14,956**
West Leg	Inbound	595	897			
West Leg	Outbound	800	770			
West Leg	**TOTAL**	**1,395**	**1,667**	**8%**	**10%**	**16,476**
OVERALL TOTAL		***3,240***	***3,538***	**10%**	***11%***	***33,224***

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Project:	==========>	I-10 Gateway Job Center TIA	<===	Job #:	08312
Scenario:	==========>	2035 Without Project	<===	Analyst:	PT
Existing Conditions Model Run ID:	==>	2008 RivTAM	<===	Date:	1/16/13
Future Conditions Model Run ID:	==>	2035 RivTAM	<===		

LOCATION: **Beaumont Avenue / Cherry Valley Boulevard**

AM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2012			**73**	**199**	**18**			
			<	v	>			
	52	^				^	**16**	
	115	>				<	**211**	
	215	v				v	**17**	
			<	^	>			
1352			**268**	**158**	**10**			

EXISTING MODEL YEAR:

2008				**232**	**159**			
				v	^			
	115	<	IN =	505	<	**22**		
	103	>	OUT =	507	>	**10**		
				v	^			
				223	**148**			

FUTURE MODEL YEAR:

2035				**454**	**255**			
				v	^			
	720	<	IN =	1859	<	**424**		
	529	>	OUT =	1858	>	**260**		
				v	^			
				623	**452**			

EXISTING (COUNTED) ADTs BY LEG:

2012				**7,200**				
				N				
	7,026	W	**LEG**	E	**2,526**			
			S					
			9,876					

REFINED FUTURE ADT'S BY LEG:

2035				**9,439**				
				N				
	15,314	W	**LEG**	E	**9,105**			
			S					
			14,284					

PM PEAK HOUR

EXISTING TURNING MOVEMENT VOLUMES:

2012			**51**	**217**	**18**			
			<	v	>			
	56	^				^	**7**	
	106	>				<	**51**	
	196	v				v	**10**	
			<	^	>			
1113			**128**	**253**	**20**			

EXISTING MODEL YEAR:

2008				**211**	**257**			
				v	^			
	115	<	IN =	629	<	**16**		
	138	>	OUT =	629	>	**26**		
				v	^			
				231	**264**			

FUTURE MODEL YEAR:

2035				**360**	**539**			
				v	^			
	819	<	IN =	2465	<	**455**		
	850	>	OUT =	2465	>	**515**		
				v	^			
				592	**800**			

EXISTING (COUNTED) ADTs BY LEG:

2012				7,200				
				N				
	7,026	W	+	E	2,526			
			S					
			9,876					

REFINED FUTURE ADT'S BY LEG:

2035				9,439				
				N				
	15,314	W	+	E	9,105			
			S					
			14,284					

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Project: I-10 Gateway Job Center TIA
Scenario: 2035 Without Project

Job #: 08312
Analyst: PT
Date: 1/16/13

LOCATION: Beaumont Avenue / Cherry Valley Boulevard

EXISTING COUNTED INBOUND AND OUTBOUND VOLUME CALCULATION

AM

EXISTING COUNT YEAR: 2012

			290	226		
			v	^		
	552	< IN =	1352	<	244	
	382	> OUT =	1352	>	143	
			v	^		
			431	436		

GROWTH CALCULATION DECISION RULE
MIN = Minimum Count Growth Approach
ADD = Additive (Growth Increment) Approach
MUL = Multiplicative (Ratio) Approach

			ADD	ADD		
			v	^		
	ADD	<		<	ADD	
	ADD	>		>	ADD	
			v	^		
			ADD	ADD		

MINIMUM GROWTH %s 2008 TO 2035

			0%	0%		
			v	^		
	0%	<		<	0%	
	0%	>		>	0%	
			v	^		
			0%	0%		

REFINED GROWTH: 2008 TO 2035

			220	100		
			v	^		
	610	<		<	400	
	430	>		>	250	
			v	^		
			400	300		

PRORATED GROWTH: 2012 TO 2035
23 YEARS

			190	90		
			v	^		
	520	<		<	340	
	370	>		>	210	
			v	^		
			340	260		

NEW PROJECTED VOLUMES: 2035

			480	320		
			v	^		
	1070	< IN =	2510	<	580	
	750	> OUT =	2510	>	350	
			v	^ *		
			770	700		

PM

EXISTING COUNT YEAR: 2012

			286	316		
			v	^		
	230	< IN =	1113	<	68	
	358	> OUT =	1113	>	144	
			v	^		
			423	401		

MIN = Minimum Count Growth Approach			211	257		
ADD = Additive (Growth Increment) Approach			ADD	ADD		
MUL = Multiplicative (Ratio) Approach			v	^		16
	ADD	<		<		26
	ADD	>		>	ADD	
			v	^		
			ADD	ADD		

			0%	0%		
			v	^		
	0%	<		<	0%	
	0%	>		>	0%	
			v	^		
			0%	0%		

ADJUSTED GROWTH: 2008 TO 2035

			150	280		
			v	^		
	700	<		<	440	
	710	>		>	490	
			v	^		
			360	540		

PRORATED GROWTH: 2012 TO 2035
23 YEARS

			130	240		
			v	^		
	600	<		<	370	
	600	>		>	420	
			v	^		
			310	460		

NEW PROJECTED VOLUMES: 2035

			420	560		
			v	^		
	830	< IN =	2680	<	440	
	960	> OUT =	2680	>	560	
			v	^ *		
			730	860		

* NOTE: Outbound future volume may be factored (increased) to match inbound if inbound is greater than outbound.

U:\UcJobs_08100-08500_08300\08312\Post Processing\Count Based\[9 Beaumont_Cherry Valley.xls] Growth Summary (2)

Project:	I-10 Gateway Job Center TIA	Job #:	08312
Scenario:	2035 Without Project	Analyst:	PT
		Date:	1/16/13

LOCATION: Beaumont Avenue / Cherry Valley Boulevard
FORECAST YEAR: 2035

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	268	456	188	70%	128	364	236	184%
	Through	158	218	60	38%	253	423	170	67%
	Right	10	25	15	150%	20	73	53	265%
	NB Total	436	699	263	60%	401	860	459	114%
SOUTH BOUND	Left	18	40	22	122%	18	45	27	150%
	Through	199	330	131	66%	217	274	57	26%
	Right	73	111	38	52%	51	101	50	98%
	SB Total	290	481	191	66%	286	420	134	47%
EAST BOUND	Left	52	71	19	37%	56	108	52	93%
	Through	115	285	170	148%	106	442	336	317%
	Right	215	396	181	84%	196	410	214	109%
	EB Total	382	752	370	97%	358	960	602	168%
WEST BOUND	Left	17	44	27	159%	10	46	36	360%
	Through	211	503	292	138%	51	365	314	616%
	Right	16	31	15	94%	7	29	22	314%
	WB Total	244	578	334	137%	68	440	372	547%
TOTAL ENTERING VOLUME		1,352	2,510	1158	86%	1,113	2,680	1567	141%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	481	420			
North Leg	Outbound	320	560			
North Leg	**TOTAL**	**801**	**980**	**8%**	**10%**	**9,439**
South Leg	Inbound	699	860			
South Leg	Outbound	770	730			
South Leg	**TOTAL**	**1,469**	**1,590**	**10%**	**11%**	**14,284**
East Leg	Inbound	578	440			
East Leg	Outbound	350	560			
East Leg	**TOTAL**	**928**	**1,000**	**10%**	**11%**	**9,105**
West Leg	Inbound	752	960			
West Leg	Outbound	1,070	830			
West Leg	**TOTAL**	**1,822**	**1,790**	**12%**	**12%**	**15,314**
OVERALL TOTAL		***5,020***	***5,360***	**10%**	***11%***	***48,142***

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APPENDIX 5.1:

EXISTING PLUS PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Intersection	
Int Delay, s/veh	17.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	555	67	55	84	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	624	75	62	94	0	0	0	0

Major/Minor	Major1			Major2		
Conflicting Flow All	94	0	0	699	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	1513	-	-	907	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	1513	-	-	907	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB
HCM Control Delay, s	0	3.7
HCM LOS		

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1513	-	-	907	-	-	370
HCM Lane V/C Ratio	-	-	-	0.068	-	-	0.914
HCM Control Delay (s)	0	-	-	9.3	0	-	61.5
HCM Lane LOS	A	-	-	A	A	-	F
HCM 95th %tile Q(veh)	0	-	-	0.2	-	-	9.4

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	216	1	84
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	89	89	89
Heavy Vehicles, %	0	0	0
Mvmt Flow	243	1	94

Major/Minor	Minor2		
Conflicting Flow All	879	917	94
Stage 1	218	218	-
Stage 2	661	699	-
Critical Hdwy	6.4	6.5	6.2
Critical Hdwy Stg 1	5.4	5.5	-
Critical Hdwy Stg 2	5.4	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	321	274	968
Stage 1	823	726	-
Stage 2	517	445	-
Platoon blocked, %			
Mov Cap-1 Maneuver	298	0	968
Mov Cap-2 Maneuver	298	0	-
Stage 1	764	0	-
Stage 2	517	0	-

Approach	SB
HCM Control Delay, s	61.5
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	27.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	480	291	0	0	113	423	26	0	87
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	558	338	0	0	131	492	30	0	101

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	623	0	0	338	0	0	1832	2078	338
Stage 1	-	-	-	-	-	-	1455	1455	-
Stage 2	-	-	-	-	-	-	377	623	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	968	-	-	1232	-	-	85	54	709
Stage 1	-	-	-	-	-	-	217	197	-
Stage 2	-	-	-	-	-	-	698	481	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	968	-	-	1232	-	-	~ 25	0	709
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 25	0	-
Stage 1	-	-	-	-	-	-	63	0	-
Stage 2	-	-	-	-	-	-	698	0	-

Approach	EB	WB	NB
HCM Control Delay, s	8.5	0	292.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	97	968	-	-	1232	-	-
HCM Lane V/C Ratio	1.355	0.577	-	-	-	-	-
HCM Control Delay (s)	292.2	13.7	0	-	0	-	-
HCM Lane LOS	F	B	A	-	A	-	-
HCM 95th %tile Q(veh)	9.5	3.8	-	-	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	86	86	86
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	0

Major/Minor	
Conflicting Flow All	
Stage 1	
Stage 2	
Critical Hdwy	
Critical Hdwy Stg 1	
Critical Hdwy Stg 2	
Follow-up Hdwy	
Pot Cap-1 Maneuver	
Stage 1	
Stage 2	
Platoon blocked, %	
Mov Cap-1 Maneuver	
Mov Cap-2 Maneuver	
Stage 1	
Stage 2	

Approach	
HCM Control Delay, s	
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	17	361	516	10	18	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	20	415	593	11	21	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	605	0	-	0	1053	599
Stage 1	-	-	-	-	599	-
Stage 2	-	-	-	-	454	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	983	-	-	-	253	505
Stage 1	-	-	-	-	553	-
Stage 2	-	-	-	-	644	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	983	-	-	-	246	505
Mov Cap-2 Maneuver	-	-	-	-	246	-
Stage 1	-	-	-	-	553	-
Stage 2	-	-	-	-	627	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	17.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	983	-	-	-	334
HCM Lane V/C Ratio	0.02	-	-	-	0.127
HCM Control Delay (s)	8.7	0	-	-	17.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

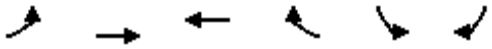
Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	379	511	5	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	412	555	5	0	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	561	0	-	0	970	558
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	412	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1020	-	-	-	283	533
Stage 1	-	-	-	-	577	-
Stage 2	-	-	-	-	673	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1020	-	-	-	283	533
Mov Cap-2 Maneuver	-	-	-	-	283	-
Stage 1	-	-	-	-	577	-
Stage 2	-	-	-	-	673	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1020	-	-	-	533
HCM Lane V/C Ratio	-	-	-	-	0.031
HCM Control Delay (s)	0	-	-	-	12
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	178	201	456	5	9	60
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.99	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	193	218	496	5	10	0
Adj No. of Lanes	1	1	1	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	249	1199	729	7	205	183
Arrive On Green	0.14	0.63	0.39	0.39	0.11	0.00
Sat Flow, veh/h	1810	1900	1878	19	1810	1615
Grp Volume(v), veh/h	193	218	0	501	10	0
Grp Sat Flow(s),veh/h/ln	1810	1900	0	1897	1810	1615
Q Serve(g_s), s	3.6	1.7	0.0	7.7	0.2	0.0
Cycle Q Clear(g_c), s	3.6	1.7	0.0	7.7	0.2	0.0
Prop In Lane	1.00			0.01	1.00	1.00
Lane Grp Cap(c), veh/h	249	1199	0	737	205	183
V/C Ratio(X)	0.77	0.18	0.00	0.68	0.05	0.00
Avail Cap(c_a), veh/h	478	1763	0	1060	940	839
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	14.7	2.7	0.0	9.0	13.9	0.0
Incr Delay (d2), s/veh	2.0	0.1	0.0	1.6	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.9	0.0	4.2	0.1	0.0
LnGrp Delay(d),s/veh	16.6	2.8	0.0	10.5	14.4	0.0
LnGrp LOS	B	A		B	B	
Approach Vol, veh/h		411	501		10	
Approach Delay, s/veh		9.3	10.5		14.4	
Approach LOS		A	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				27.5		32.5	8.6	19.0
Change Period (Y+Rc), s				5.3		3.7	3.7	5.3
Max Green Setting (Gmax), s				32.7		18.3	9.3	19.7
Max Q Clear Time (g_c+I1), s				3.7		2.2	5.6	9.7
Green Ext Time (p_c), s				6.5		0.0	0.1	3.9

Intersection Summary	
HCM 2010 Ctrl Delay	10.0
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	210	456	10	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	228	496	11	0	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	507	0	-	0	729	501
Stage 1	-	-	-	-	501	-
Stage 2	-	-	-	-	228	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1068	-	-	-	393	574
Stage 1	-	-	-	-	613	-
Stage 2	-	-	-	-	815	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1068	-	-	-	393	574
Mov Cap-2 Maneuver	-	-	-	-	393	-
Stage 1	-	-	-	-	613	-
Stage 2	-	-	-	-	815	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1068	-	-	-	574
HCM Lane V/C Ratio	-	-	-	-	0.009
HCM Control Delay (s)	0	-	-	-	11.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	16	174	5	3	318	1	17	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	20	215	6	4	393	1	21	0	4

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	394	0	0	221	0	0	700	658	218
Stage 1	-	-	-	-	-	-	257	257	-
Stage 2	-	-	-	-	-	-	443	401	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1176	-	-	1360	-	-	357	387	827
Stage 1	-	-	-	-	-	-	752	699	-
Stage 2	-	-	-	-	-	-	598	604	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1176	-	-	1360	-	-	305	378	827
Mov Cap-2 Maneuver	-	-	-	-	-	-	305	378	-
Stage 1	-	-	-	-	-	-	738	686	-
Stage 2	-	-	-	-	-	-	519	602	-

Approach	EB	WB	NB
HCM Control Delay, s	0.7	0.1	16.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	337	1176	-	-	1360	-	-	646
HCM Lane V/C Ratio	0.073	0.017	-	-	0.003	-	-	0.134
HCM Control Delay (s)	16.5	8.1	0	-	7.7	0	-	11.4
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.5

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	1	1	68
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	81	81	81
Heavy Vehicles, %	0	0	0
Mvmt Flow	1	1	84

Major/Minor	Minor2		
Conflicting Flow All	660	661	393
Stage 1	401	401	-
Stage 2	259	260	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	379	385	660
Stage 1	630	604	-
Stage 2	750	697	-
Platoon blocked, %			
Mov Cap-1 Maneuver	371	376	660
Mov Cap-2 Maneuver	371	376	-
Stage 1	618	602	-
Stage 2	732	684	-

Approach	SB
HCM Control Delay, s	11.4
HCM LOS	B

Minor Lane/Major Mvmt

Intersection	
Intersection Delay, s/veh	13.6
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	12	134	35	0	47	223	4	0	34	22	122
Peak Hour Factor	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	16	179	47	0	63	297	5	0	45	29	163
Number of Lanes	0	0	1	1	0	0	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	2
HCM Control Delay	11.3	17.5	11.8
HCM LOS	B	C	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	19%	8%	0%	17%	0%	14%
Vol Thru, %	12%	92%	0%	83%	0%	27%
Vol Right, %	69%	0%	100%	0%	100%	59%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	178	146	35	270	4	102
LT Vol	22	134	0	223	0	28
Through Vol	122	0	35	0	4	60
RT Vol	34	12	0	47	0	14
Lane Flow Rate	237	195	47	360	5	136
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.364	0.334	0.07	0.603	0.008	0.218
Departure Headway (Hd)	5.525	6.176	5.422	6.025	5.226	5.782
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	648	580	658	598	682	616
Service Time	3.595	3.937	3.182	3.776	2.977	3.862
HCM Lane V/C Ratio	0.366	0.336	0.071	0.602	0.007	0.221
HCM Control Delay	11.8	12	8.6	17.6	8	10.5
HCM Lane LOS	B	B	A	C	A	B
HCM 95th-tile Q	1.7	1.5	0.2	4	0	0.8

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	14	28	60
Peak Hour Factor	0.92	0.75	0.75	0.75
Heavy Vehicles, %	0	0	0	0
Mvmt Flow	0	19	37	80
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	10.5
HCM LOS	B

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	104	245	15	236	8	267	101	4	5	181	69
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	51	151	172	22	342	9	387	146	3	7	262	75
Adj No. of Lanes	1	1	1	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	65	533	445	36	480	13	429	837	703	13	400	332
Arrive On Green	0.04	0.28	0.28	0.02	0.26	0.26	0.24	0.44	0.44	0.01	0.21	0.21
Sat Flow, veh/h	1810	1900	1586	1810	1842	48	1810	1900	1597	1810	1900	1577
Grp Volume(v), veh/h	51	151	172	22	0	351	387	146	3	7	262	75
Grp Sat Flow(s),veh/h/ln	1810	1900	1586	1810	0	1890	1810	1900	1597	1810	1900	1577
Q Serve(g_s), s	2.0	4.5	6.4	0.9	0.0	12.3	15.2	3.4	0.1	0.3	9.2	2.9
Cycle Q Clear(g_c), s	2.0	4.5	6.4	0.9	0.0	12.3	15.2	3.4	0.1	0.3	9.2	2.9
Prop In Lane	1.00		1.00	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	65	533	445	36	0	493	429	837	703	13	400	332
V/C Ratio(X)	0.79	0.28	0.39	0.62	0.00	0.71	0.90	0.17	0.00	0.53	0.65	0.23
Avail Cap(c_a), veh/h	99	703	586	99	0	691	478	1082	910	99	684	568
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.9	20.5	21.2	35.5	0.0	24.5	27.0	12.4	11.5	36.1	26.4	23.9
Incr Delay (d2), s/veh	20.6	0.4	0.8	6.3	0.0	2.8	17.9	0.5	0.0	11.9	8.1	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	2.5	2.9	0.5	0.0	6.8	9.7	1.9	0.0	0.2	5.7	1.4
LnGrp Delay(d),s/veh	55.5	20.9	22.0	41.8	0.0	27.3	44.9	12.8	11.5	48.0	34.5	25.5
LnGrp LOS	E	C	C	D		C	D	B	B	D	C	C
Approach Vol, veh/h		374			373			536			344	
Approach Delay, s/veh		26.1			28.2			36.0			32.8	
Approach LOS		C			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.2	59.8	5.1	25.8	21.0	43.1	6.6	24.3
Change Period (Y+Rc), s	3.7	5.7	3.7	5.3	3.7	* 5.7	4.0	* 5.3
Max Green Setting (Gmax), s	4.0	41.6	4.0	27.0	19.3	* 26	4.0	* 27
Max Q Clear Time (g_c+I1), s	2.3	5.4	2.9	8.4	17.2	11.2	4.0	14.3
Green Ext Time (p_c), s	0.0	3.0	0.0	4.6	0.2	2.4	0.0	3.8

Intersection Summary	
HCM 2010 Ctrl Delay	31.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	160.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	227	49	107	119	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	241	52	114	127	0	0	0	0

Major/Minor	Major1			Major2		
Conflicting Flow All	127	0	0	294	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	1472	-	-	1279	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	1472	-	-	1279	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB
HCM Control Delay, s	0	3.8
HCM LOS		

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1472	-	-	1279	-	-	578
HCM Lane V/C Ratio	-	-	-	0.089	-	-	1.509
HCM Control Delay (s)	0	-	-	8.1	0	-	257.6
HCM Lane LOS	A	-	-	A	A	-	F
HCM 95th %tile Q(veh)	0	-	-	0.3	-	-	44.2

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	393	1	426
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	94	94	94
Heavy Vehicles, %	0	0	0
Mvmt Flow	418	1	453

Major/Minor	Minor2		
Conflicting Flow All	622	648	127
Stage 1	354	354	-
Stage 2	268	294	-
Critical Hdwy	6.4	6.5	6.2
Critical Hdwy Stg 1	5.4	5.5	-
Critical Hdwy Stg 2	5.4	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	454	392	929
Stage 1	715	634	-
Stage 2	782	673	-
Platoon blocked, %			
Mov Cap-1 Maneuver	~ 410	0	929
Mov Cap-2 Maneuver	~ 410	0	-
Stage 1	646	0	-
Stage 2	782	0	-

Approach	SB
HCM Control Delay, s	257.6
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	7.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	193	427	0	0	144	287	82	0	66
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	210	464	0	0	157	312	89	0	72

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	468	0	0	464	0	0	1197	1352	464
Stage 1	-	-	-	-	-	-	884	884	-
Stage 2	-	-	-	-	-	-	313	468	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1104	-	-	1108	-	-	207	151	602
Stage 1	-	-	-	-	-	-	407	366	-
Stage 2	-	-	-	-	-	-	746	565	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1104	-	-	1108	-	-	154	0	602
Mov Cap-2 Maneuver	-	-	-	-	-	-	154	0	-
Stage 1	-	-	-	-	-	-	303	0	-
Stage 2	-	-	-	-	-	-	746	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2.8	0	50.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	230	1104	-	-	1108	-	-
HCM Lane V/C Ratio	0.699	0.19	-	-	-	-	-
HCM Control Delay (s)	50.5	9	0	-	0	-	-
HCM Lane LOS	F	A	A	-	A	-	-
HCM 95th %tile Q(veh)	4.6	0.7	-	-	0	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	0

Major/Minor
Conflicting Flow All
Stage 1
Stage 2
Critical Hdwy
Critical Hdwy Stg 1
Critical Hdwy Stg 2
Follow-up Hdwy
Pot Cap-1 Maneuver
Stage 1
Stage 2
Platoon blocked, %
Mov Cap-1 Maneuver
Mov Cap-2 Maneuver
Stage 1
Stage 2

Approach
HCM Control Delay, s
HCM LOS

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	21	472	410	14	26	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	24	536	466	16	30	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	482	0	-	0	1058	474
Stage 1	-	-	-	-	474	-
Stage 2	-	-	-	-	584	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1091	-	-	-	251	595
Stage 1	-	-	-	-	630	-
Stage 2	-	-	-	-	561	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1091	-	-	-	243	595
Mov Cap-2 Maneuver	-	-	-	-	243	-
Stage 1	-	-	-	-	630	-
Stage 2	-	-	-	-	544	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	18.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1091	-	-	-	327
HCM Lane V/C Ratio	0.022	-	-	-	0.16
HCM Control Delay (s)	8.4	0	-	-	18.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

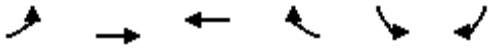
Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	498	382	2	0	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	541	415	2	0	46

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	417	0	-	0	957	416
Stage 1	-	-	-	-	416	-
Stage 2	-	-	-	-	541	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1153	-	-	-	288	641
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	588	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1153	-	-	-	288	641
Mov Cap-2 Maneuver	-	-	-	-	288	-
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	588	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1153	-	-	-	641
HCM Lane V/C Ratio	-	-	-	-	0.071
HCM Control Delay (s)	0	-	-	-	11
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	94	404	227	2	20	158
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.99	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	102	439	247	2	22	121
Adj No. of Lanes	1	1	1	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	141	1024	624	5	263	235
Arrive On Green	0.08	0.54	0.33	0.33	0.15	0.15
Sat Flow, veh/h	1810	1900	1882	15	1810	1615
Grp Volume(v), veh/h	102	439	0	249	22	121
Grp Sat Flow(s),veh/h/ln	1810	1900	0	1897	1810	1615
Q Serve(g_s), s	1.6	4.0	0.0	2.9	0.3	2.0
Cycle Q Clear(g_c), s	1.6	4.0	0.0	2.9	0.3	2.0
Prop In Lane	1.00			0.01	1.00	1.00
Lane Grp Cap(c), veh/h	141	1024	0	629	263	235
V/C Ratio(X)	0.73	0.43	0.00	0.40	0.08	0.51
Avail Cap(c_a), veh/h	590	2111	0	1243	1224	1092
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.9	3.9	0.0	7.3	10.5	11.3
Incr Delay (d2), s/veh	2.7	0.4	0.0	0.6	0.6	7.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.1	0.0	1.6	0.2	2.3
LnGrp Delay(d),s/veh	15.5	4.3	0.0	7.9	11.2	19.1
LnGrp LOS	B	A		A	B	B
Approach Vol, veh/h		541	249		143	
Approach Delay, s/veh		6.5	7.9		17.9	
Approach LOS		A	A		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				20.7		39.3	5.9	14.8
Change Period (Y+Rc), s				5.3		3.7	3.7	5.3
Max Green Setting (Gmax), s				31.7		19.3	9.3	18.7
Max Q Clear Time (g_c+I1), s				6.0		4.0	3.6	4.9
Green Ext Time (p_c), s				5.8		0.2	0.0	4.5

Intersection Summary	
HCM 2010 Ctrl Delay	8.6
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	424	219	5	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	461	238	5	0	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	243	0	-	0	702	241
Stage 1	-	-	-	-	241	-
Stage 2	-	-	-	-	461	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1335	-	-	-	407	803
Stage 1	-	-	-	-	804	-
Stage 2	-	-	-	-	639	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1335	-	-	-	407	803
Mov Cap-2 Maneuver	-	-	-	-	407	-
Stage 1	-	-	-	-	804	-
Stage 2	-	-	-	-	639	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1335	-	-	-	803
HCM Lane V/C Ratio	-	-	-	-	0.014
HCM Control Delay (s)	0	-	-	-	9.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	38	318	17	5	190	0	11	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	40	331	18	5	198	0	11	1	2

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	198	0	0	349	0	0	640	627	340
Stage 1	-	-	-	-	-	-	419	419	-
Stage 2	-	-	-	-	-	-	221	208	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1387	-	-	1221	-	-	391	403	707
Stage 1	-	-	-	-	-	-	616	593	-
Stage 2	-	-	-	-	-	-	786	734	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1387	-	-	1221	-	-	367	387	707
Mov Cap-2 Maneuver	-	-	-	-	-	-	367	387	-
Stage 1	-	-	-	-	-	-	594	572	-
Stage 2	-	-	-	-	-	-	758	730	-

Approach	EB	WB	NB
HCM Control Delay, s	0.8	0.2	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	396	1387	-	-	1221	-	-	848
HCM Lane V/C Ratio	0.037	0.029	-	-	0.004	-	-	0.031
HCM Control Delay (s)	14.4	7.7	0	-	8	0	-	9.4
HCM Lane LOS	B	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	25
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	96	96	96
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	26

Major/Minor	Minor2		
Conflicting Flow All	629	636	198
Stage 1	208	208	-
Stage 2	421	428	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	398	398	848
Stage 1	799	734	-
Stage 2	614	588	-
Platoon blocked, %			
Mov Cap-1 Maneuver	384	382	848
Mov Cap-2 Maneuver	384	382	-
Stage 1	770	730	-
Stage 2	589	567	-

Approach	SB
HCM Control Delay, s	9.4
HCM LOS	A

Minor Lane/Major Mvmt

Intersection	
Intersection Delay, s/veh	10.6
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	36	254	34	0	13	164	4	0	18	26	29
Peak Hour Factor	0.92	0.88	0.88	0.88	0.92	0.88	0.88	0.88	0.92	0.88	0.88	0.88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	41	289	39	0	15	186	5	0	20	30	33
Number of Lanes	0	0	1	1	0	0	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	2
HCM Control Delay	11.6	10	8.9
HCM LOS	B	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	25%	12%	0%	7%	0%	25%
Vol Thru, %	36%	88%	0%	93%	0%	53%
Vol Right, %	40%	0%	100%	0%	100%	22%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	73	290	34	177	4	36
LT Vol	26	254	0	164	0	19
Through Vol	29	0	34	0	4	8
RT Vol	18	36	0	13	0	9
Lane Flow Rate	83	330	39	201	5	41
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.118	0.464	0.046	0.29	0.006	0.06
Departure Headway (Hd)	5.139	5.065	4.299	5.182	4.441	5.315
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	694	709	830	692	802	670
Service Time	3.197	2.806	2.04	2.929	2.187	3.381
HCM Lane V/C Ratio	0.12	0.465	0.047	0.29	0.006	0.061
HCM Control Delay	8.9	12.1	7.2	10.1	7.2	8.7
HCM Lane LOS	A	B	A	B	A	A
HCM 95th-tile Q	0.4	2.5	0.1	1.2	0	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	9	19	8
Peak Hour Factor	0.92	0.88	0.88	0.88
Heavy Vehicles, %	0	0	0	0
Mvmt Flow	0	10	22	9
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	8.7
HCM LOS	A

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	61	111	201	7	47	14	148	275	20	20	203	37
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	65	118	140	7	50	4	157	293	18	21	216	7
Adj No. of Lanes	1	1	1	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	89	425	354	13	304	24	202	650	545	37	477	398
Arrive On Green	0.05	0.22	0.22	0.01	0.18	0.18	0.11	0.34	0.34	0.02	0.25	0.25
Sat Flow, veh/h	1810	1900	1579	1810	1732	139	1810	1900	1591	1810	1900	1583
Grp Volume(v), veh/h	65	118	140	7	0	54	157	293	18	21	216	7
Grp Sat Flow(s),veh/h/ln	1810	1900	1579	1810	0	1871	1810	1900	1591	1810	1900	1583
Q Serve(g_s), s	1.6	2.3	3.4	0.2	0.0	1.1	3.8	5.4	0.3	0.5	4.4	0.2
Cycle Q Clear(g_c), s	1.6	2.3	3.4	0.2	0.0	1.1	3.8	5.4	0.3	0.5	4.4	0.2
Prop In Lane	1.00		1.00	1.00		0.07	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	89	425	354	13	0	328	202	650	545	37	477	398
V/C Ratio(X)	0.73	0.28	0.40	0.52	0.00	0.16	0.78	0.45	0.03	0.57	0.45	0.02
Avail Cap(c_a), veh/h	160	1131	940	160	0	1102	331	1324	1109	160	1144	953
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	14.6	15.0	22.4	0.0	15.9	19.6	11.6	9.9	22.0	14.3	12.8
Incr Delay (d2), s/veh	10.7	0.5	1.0	11.0	0.0	0.3	2.4	2.2	0.1	5.0	3.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	1.3	1.6	0.1	0.0	0.6	2.1	3.3	0.2	0.3	2.7	0.1
LnGrp Delay(d),s/veh	32.0	15.1	16.0	33.5	0.0	16.2	22.0	13.8	10.0	27.0	17.4	12.8
LnGrp LOS	C	B	B	C		B	C	B	B	C	B	B
Approach Vol, veh/h		323			61			468			244	
Approach Delay, s/veh		18.9			18.2			16.4			18.1	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.6	60.9	4.0	15.5	8.8	56.8	6.2	13.3
Change Period (Y+Rc), s	3.7	5.7	3.7	5.3	3.7	* 5.7	4.0	* 5.3
Max Green Setting (Gmax), s	4.0	31.6	4.0	27.0	8.3	* 27	4.0	* 27
Max Q Clear Time (g_c+I1), s	2.5	7.4	2.2	5.4	5.8	6.4	3.6	3.1
Green Ext Time (p_c), s	0.0	3.6	0.0	1.9	0.0	3.4	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	17.6
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX 5.2:

EXISTING PLUS PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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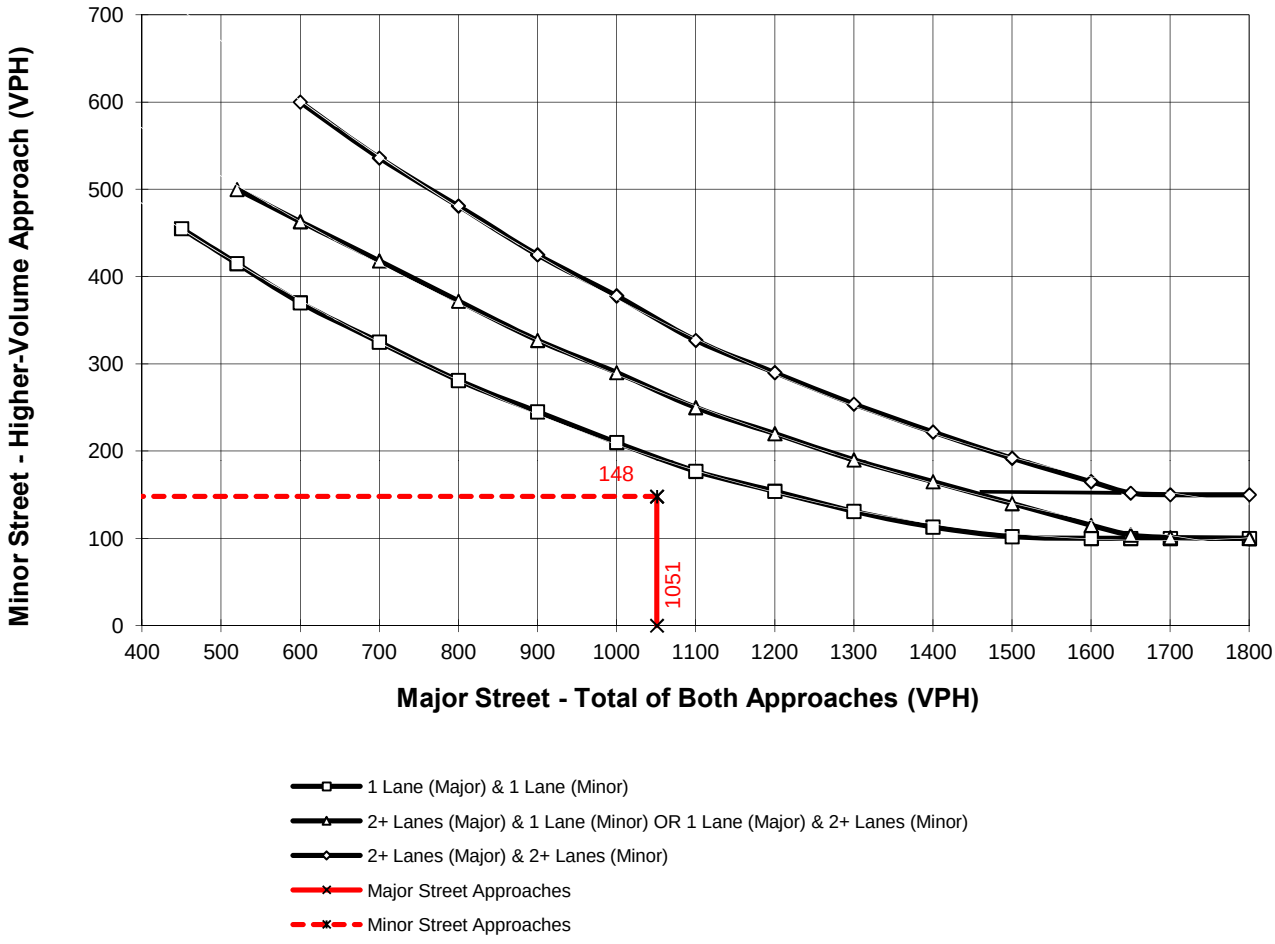
Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **Existing plus Project Conditions - Weekday PM Peak Hour**

Major Street Name = **Cherry Valley Boulevard** Total of Both Approaches (VPH) = **1051**
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **I-10 WB Ramps** High Volume Approach (VPH) = **148**
Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS		E+P
				CALC DL	DATE	09/08/14
				CHK DL	DATE	09/08/14

Jurisdiction: **County of Riverside**
Major Street: **Cherry Valley Boulevard** — Critical Approach Speed (Major) 35 mph
Minor Street: **I-10 WB Ramps** — Critical Approach Speed (Minor) 35 mph

Major Street Approach Lanes = **1** lane — Minor Street Approach Lanes **1** lane

Major Street Future ADT = **11,293** vpd — Minor Street Future ADT = **2,807** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); ……..

or

In built up area of isolated community of < 10,000 population ……..

URBAN (U)

(Based on Estimated Average Daily Traffic - See Note)

URBAN	RURAL	Minimum Requirements EADT			
XX					
CONDITION A - Minimum Vehicular Volume		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied	Not Satisfied				
XX					
Number of lanes for moving traffic on each approach					
Major Street	Minor Street	Urban	Rural	Urban	Rural
1 **11,293**	*1* **2,807**	8,000 *	5,600	2,400 *	1,680
2 +	*1*	9,600	6,720	2,400	1,680
2 +	*2* +	9,600	6,720	3,200	2,240
1	*2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied	Not Satisfied				
	XX				
Number of lanes for moving traffic on each approach					
Major Street	Minor Street	Urban	Rural	Urban	Rural
1 **11,293**	*1* **2,807**	12,000	8,400	1,200 *	850
2 +	*1*	14,400	10,080	1,200	850
2 +	*2* +	14,400	10,080	1,600	1,120
1	*2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B					
Satisfied	Not Satisfied				
XX		2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more …..	**A** 100% **B** 94%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

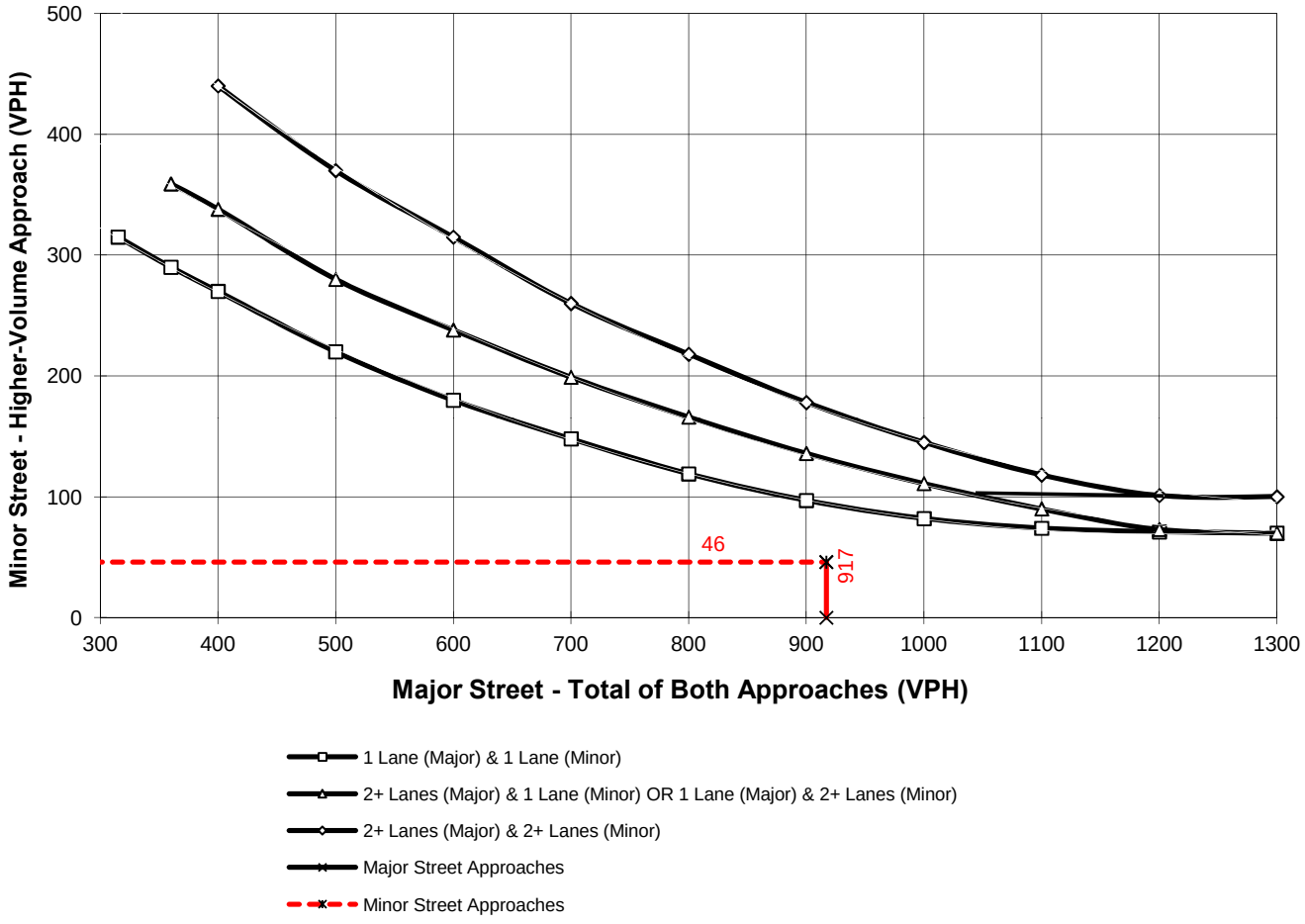
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing plus Project Conditions - Weekday PM Peak Hour**

Major Street Name = **Cherry Valley Boulevard** Total of Both Approaches (VPH) = **917**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Calimesa Boulevard** High Volume Approach (VPH) = **46**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS	E+P
				CALC DL	DATE 09/08/14
Jurisdiction: **County of Riverside**				CHK DL	DATE 09/08/14
Major Street: **Cherry Valley Boulevard**				Critical Approach Speed (Major)	55 mph
Minor Street: **Street 2**				Critical Approach Speed (Minor)	35 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **9,652** vpd Minor Street Future ADT = **2,097** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); ……... [√]

or

In built up area of isolated community of < 10,000 population …….. [ ]

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN	RURAL	Minimum Requirements EADT			
	XX				
CONDITION A - Minimum Vehicular Volume		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied	Not Satisfied				
XX					
Number of lanes for moving traffic on each approach					
Major Street	Minor Street	Urban	Rural	Urban	Rural
1 **9,652**	1 **2,097**	8,000	5,600 *	2,400	1,680 *
2 +	1	9,600	6,720	2,400	1,680
2 +	2 +	9,600	6,720	3,200	2,240
1	2 +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied	Not Satisfied				
XX					
Number of lanes for moving traffic on each approach					
Major Street	Minor Street	Urban	Rural	Urban	Rural
1 **9,652**	1 **2,097**	12,000	8,400 *	1,200	850 *
2 +	1	14,400	10,080	1,200	850
2 +	2 +	14,400	10,080	1,600	1,120
1	2 +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B					
Satisfied	Not Satisfied				
XX					
No one condition satisfied, but following conditions fulfilled 80% of more ….. A 100% B 100%		2 CONDITIONS 80%		2 CONDITIONS 80%	

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

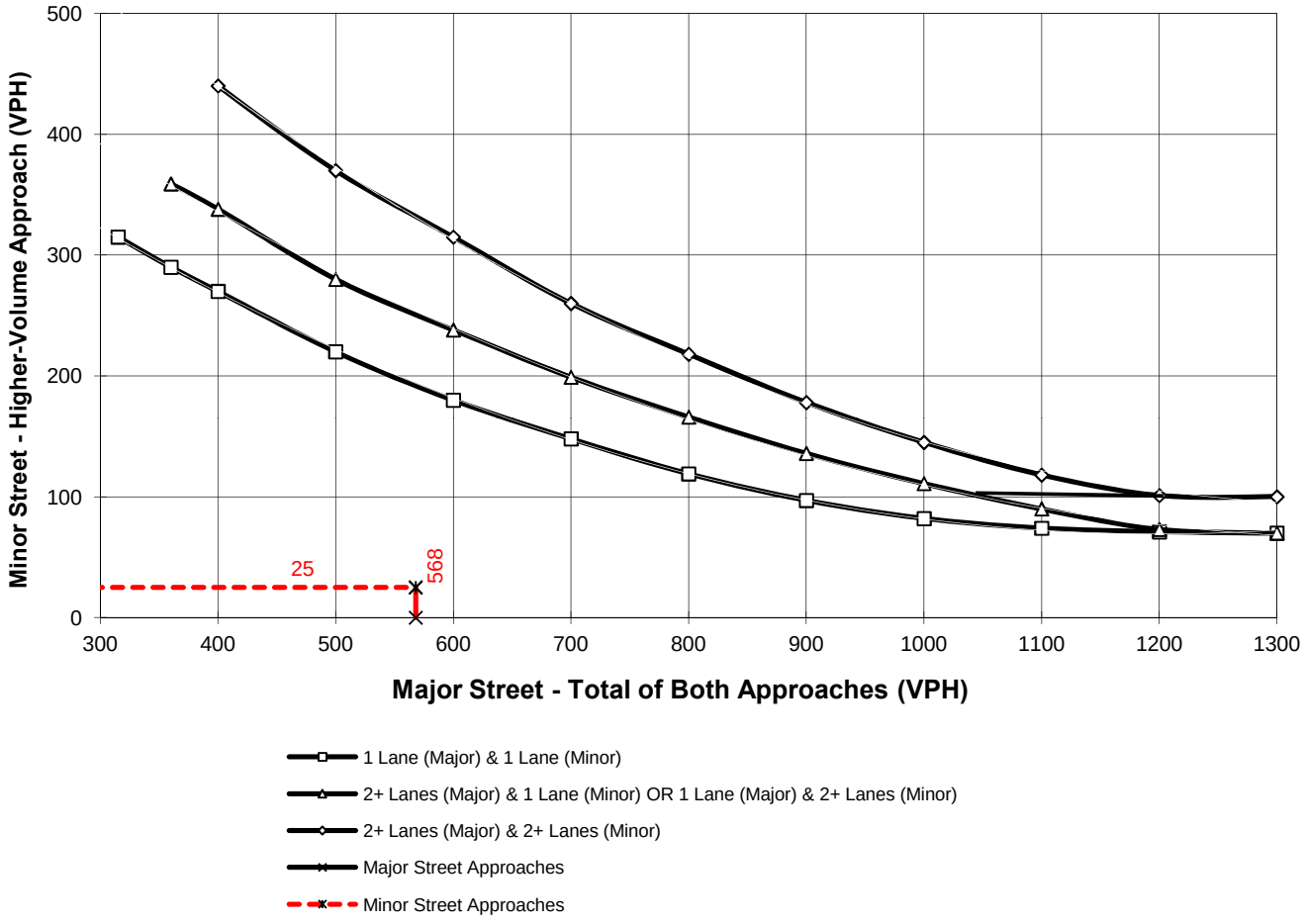
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing plus Project Conditions - Weekday PM Peak Hour**

Major Street Name = **Cherry Valley Boulevard** Total of Both Approaches (VPH) = **568**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Union Street** High Volume Approach (VPH) = **25**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

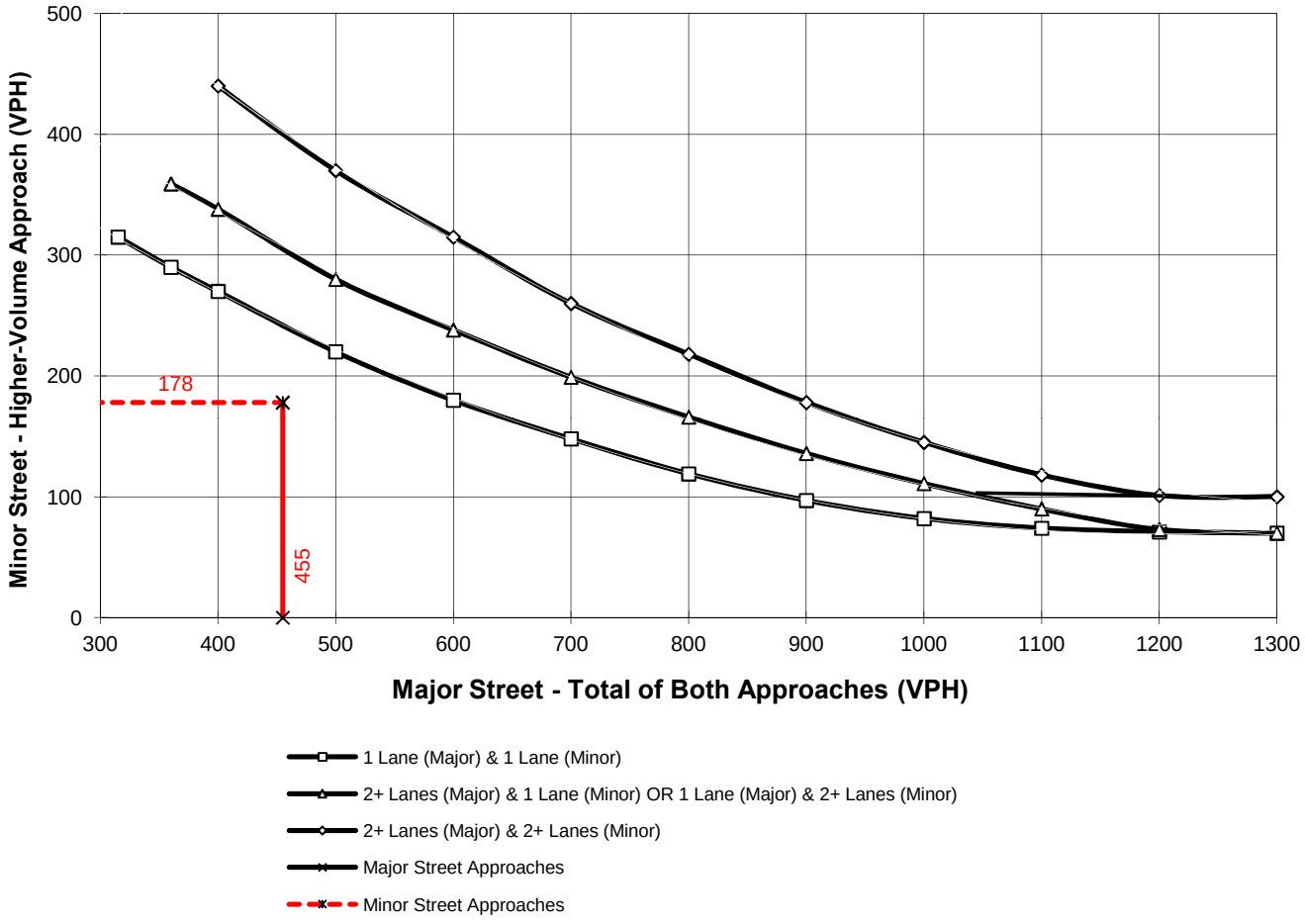
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing plus Project Conditions - Weekday AM Peak Hour**

Major Street Name = **Cherry Valley Boulevard** Total of Both Approaches (VPH) = **455**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Nancy Street** High Volume Approach (VPH) = **178**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

APPENDIX 5.3:

EXISTING PLUS PROJECT CONDITIONS BASIC FREEWAY SEGMENT ANALYSIS WORKSHEETS

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*North of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*Existing plus Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2262*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*873*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*13.4*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*DL*	Highway/Direction of Travel	*I-10 Eastbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*South of Cherry Valley*
Date Performed	*09/10/14*	Jurisdiction	*Caltrans*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Existing plus Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2050*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*791*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*12.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*DL*	Highway/Direction of Travel	*I-10 Westbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*North of Cherry Valley*
Date Performed	*09/10/14*	Jurisdiction	*Caltrans*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Existing plus Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4169*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*3*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1594*	pc/h/ln	Design LOS		
S	*64.5*	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
D = v_p / S	*24.7*	pc/mi/ln	S		mph
LOS	*C*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*South of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*Existing plus Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3435*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1325*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*20.4*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*North of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*Existing plus Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3281*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1248*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*19.2*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*DL*	Highway/Direction of Travel	*I-10 Eastbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*South of Cherry Valley*
Date Performed	*09/10/14*	Jurisdiction	*Caltrans*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Existing plus Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2651*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1028*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*15.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*DL*	Highway/Direction of Travel	*I-10 Westbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*North of Cherry Valley*
Date Performed	*09/10/14*	Jurisdiction	*Caltrans*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Existing plus Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3590*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1385*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*21.3*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*South of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*Existing plus Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3272*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1263*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*19.4*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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APPENDIX 5.4:

EXISTING PLUS PROJECT CONDITIONS FREEWAY RAMP JUNCTION ANALYSIS WORKSHEETS

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	Existing plus Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off; L_{up} = ft; V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	565
Freeway Volume, V_F	2262
Ramp Volume, V_R	318
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp: ☑ Yes ☑ On ☐ No ☐ Off; L_{down} = 1660 ft; V_D = 106 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2262	0.92	Level	13	0	0.939	1.00	2619
Ramp	318	0.92	Level	8	0	0.962	1.00	359
UpStream								
DownStream	106	0.92	Level	8	0	0.962	1.00	120

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R= mph (Exhibit 13-11)

S_0= mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.678 using Equation (Exhibit 13-7)

V_{12} = 1891 pc/h

V_3 or V_{av34} 728 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	2619	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	2260	Exhibit 13-8	7050	No
V_R	359	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	1891	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 15.4 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

D_s = 0.330 (Exhibit 13-12)

S_R= 57.4 mph (Exhibit 13-12)

S_0= 71.3 mph (Exhibit 13-12)

S = 60.7 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	Existing plus Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	3	Downstream Adj Ramp	
☑ Yes	☐ On	Ramp Number of Lanes, N	1	☐ Yes	☐ On
☐ No	☑ Off	Acceleration Lane Length, L_A	410	☑ No	☐ Off
L_{up} =	1660 ft	Deceleration Lane Length L_D		L_{down} =	ft
V_u =	318 veh/h	Freeway Volume, V_F	1944	V_D =	veh/h
		Ramp Volume, V_R	106		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	45.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	1944	0.92	Level	14	0	0.935	1.00	2261
Ramp	106	0.92	Level	8	0	0.962	1.00	120
UpStream	318	0.92	Level	8	0	0.962	1.00	359
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 642.97 (Equation 13-6 or 13-7)

P_{FM} = 0.589 using Equation (Exhibit 13-6)

V_{12} = 1332 pc/h

V_3 or V_{av34} 929 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 1332 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	2381	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	1452	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 14.2 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

M_S = 0.301 (Exibit 13-11)

S_R= 58.1 mph (Exhibit 13-11)

S_0= 63.5 mph (Exhibit 13-11)

S = 60.1 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R= mph (Exhibit 13-12)

S_0= mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	Existing plus Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	3	Downstream Adj Ramp	
☑ Yes	☐ On	Ramp Number of Lanes, N	1	☐ Yes	☐ On
☐ No	☑ Off	Acceleration Lane Length, L_A	500	☑ No	☐ Off
L_{up} =	1745 ft	Deceleration Lane Length L_D		L_{down} =	ft
V_u =	87 veh/h	Freeway Volume, V_F	3348	V_D =	veh/h
		Ramp Volume, V_R	821		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	45.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3348	0.92	Level	13	0	0.939	1.00	3876
Ramp	821	0.92	Level	2	0	0.990	1.00	901
UpStream	87	0.92	Level	22	0	0.901	1.00	105
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1195.68 (Equation 13-6 or 13-7)

P_{FM} = 0.591 using Equation (Exhibit 13-6)

V_{12} = 2293 pc/h

V_3 or V_{av34} 1583 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 2293 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	4777	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	3194	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 26.8 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

M_S = 0.371 (Exibit 13-11)

S_R= 56.5 mph (Exhibit 13-11)

S_0= 61.1 mph (Exhibit 13-11)

S = 57.9 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R= mph (Exhibit 13-12)

S_0= mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	Existing plus Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	535
Freeway Volume, V_F	3435
Ramp Volume, V_R	87
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1745 ft
V_D = 821 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3435	0.92	Level	13	0	0.939	1.00	3976
Ramp	87	0.92	Level	22	0	0.901	1.00	105
UpStream								
DownStream	821	0.92	Level	2	0	0.990	1.00	901

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = using Equation (Exhibit 13-6)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)
S_R= mph (Exhibit 13-11)
S_0= mph (Exhibit 13-11)
S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = 0.656 using Equation (Exhibit 13-7)
V_{12} = 2643 pc/h
V_3 or V_{av34} 1333 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3976	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	3871	Exhibit 13-8	7050	No
V_R	105	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2643	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$
D_R = 22.2 (pc/mi/ln)
LOS = C (Exhibit 13-2)

Speed Determination

D_s = 0.307 (Exhibit 13-12)
S_R= 57.9 mph (Exhibit 13-12)
S_0= 70.0 mph (Exhibit 13-12)
S = 61.5 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	Existing plus Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	565
Freeway Volume, V_F	3281
Ramp Volume, V_R	761
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1660 ft
V_D = 131 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3281	0.92	Level	10	0	0.952	1.00	3745
Ramp	761	0.92	Level	2	0	0.990	1.00	835
UpStream								
DownStream	131	0.92	Level	18	0	0.917	1.00	155

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = using Equation (Exhibit 13-6)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)
S_R= mph (Exhibit 13-11)
S_0= mph (Exhibit 13-11)
S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = 0.628 using Equation (Exhibit 13-7)
V_{12} = 2662 pc/h
V_3 or V_{av34} 1083 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3745	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	2910	Exhibit 13-8	7050	No
V_R	835	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2662	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$
D_R = 22.1 (pc/mi/ln)
LOS = C (Exhibit 13-2)

Speed Determination

D_s = 0.373 (Exhibit 13-12)
S_R= 56.4 mph (Exhibit 13-12)
S_0= 71.0 mph (Exhibit 13-12)
S = 60.0 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	Existing plus Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	3	Downstream Adj Ramp	
☑ Yes	☐ On	Ramp Number of Lanes, N	1	☐ Yes	☐ On
☐ No	☑ Off	Acceleration Lane Length, L_A	410	☑ No	☐ Off
L_{up} =	1660 ft	Deceleration Lane Length L_D		L_{down} =	ft
V_u =	761 veh/h	Freeway Volume, V_F	2520	V_D =	veh/h
		Ramp Volume, V_R	131		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	45.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2520	0.92	Level	13	0	0.939	1.00	2917
Ramp	131	0.92	Level	18	0	0.917	1.00	155
UpStream	761	0.92	Level	2	0	0.990	1.00	835
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 790.85 (Equation 13-6 or 13-7)

P_{FM} = 0.589 using Equation (Exhibit 13-6)

V_{12} = 1718 pc/h

V_3 or V_{av34} 1199 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 1718 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	3072	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	1873	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 17.4 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

M_S = 0.309 (Exibit 13-11)

S_R= 57.9 mph (Exhibit 13-11)

S_0= 62.5 mph (Exhibit 13-11)

S = 59.6 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R= mph (Exhibit 13-12)

S_0= mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	Existing plus Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	3	Downstream Adj Ramp	
☑ Yes	☐ On	Ramp Number of Lanes, N	1	☐ Yes	☐ On
☐ No	☑ Off	Acceleration Lane Length, L_A	500	☑ No	☐ Off
L_{up} =	1745 ft	Deceleration Lane Length L_D		L_{down} =	ft
V_u =	129 veh/h	Freeway Volume, V_F	3143	V_D =	veh/h
		Ramp Volume, V_R	447		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	45.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3143	0.92	Level	13	0	0.939	1.00	3638
Ramp	447	0.92	Level	7	0	0.966	1.00	503
UpStream	129	0.92	Level	9	0	0.957	1.00	147
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1059.57 (Equation 13-6 or 13-7)

P_{FM} = 0.591 using Equation (Exhibit 13-6)

V_{12} = 2152 pc/h

V_3 or V_{av34} 1486 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 2152 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	4141	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2655	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 22.8 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

M_S = 0.331 (Exibit 13-11)

S_R= 57.4 mph (Exhibit 13-11)

S_0= 61.5 mph (Exhibit 13-11)

S = 58.8 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R= mph (Exhibit 13-12)

S_0= mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	Existing plus Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Downstream Adj Ramp	
☐ Yes	☐ On	☑ Yes	☑ On
☑ No	☐ Off	☐ No	☐ Off
L_{up} =	ft	L_{down} =	1745 ft
V_u =	veh/h	V_D =	447 veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	535
Freeway Volume, V_F	3272
Ramp Volume, V_R	129
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3272	0.92	Level	13	0	0.939	1.00	3788
Ramp	129	0.92	Level	9	0	0.957	1.00	147
UpStream								
DownStream	447	0.92	Level	7	0	0.966	1.00	503

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R= mph (Exhibit 13-11)

S_0= mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.659 using Equation (Exhibit 13-7)

V_{12} = 2545 pc/h

V_3 or V_{av34} 1243 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3788	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	3641	Exhibit 13-8	7050	No
V_R	147	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2545	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 21.3 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

D_s = 0.311 (Exhibit 13-12)

S_R= 57.8 mph (Exhibit 13-12)

S_0= 70.4 mph (Exhibit 13-12)

S = 61.4 mph (Exhibit 13-13)

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APPENDIX 6.1:

EAP (2017) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Intersection	
Int Delay, s/veh	24.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	588	70	56	89	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	661	79	63	100	0	0	0	0

Major/Minor	Major1			Major2		
Conflicting Flow All	100	0	0	739	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	1505	-	-	876	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	1505	-	-	876	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB
HCM Control Delay, s	0	3.6
HCM LOS		

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1505	-	-	876	-	-	349
HCM Lane V/C Ratio	-	-	-	0.072	-	-	1.004
HCM Control Delay (s)	0	-	-	9.4	0	-	84.6
HCM Lane LOS	A	-	-	A	A	-	F
HCM 95th %tile Q(veh)	0	-	-	0.2	-	-	11.6

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	222	1	89
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	89	89	89
Heavy Vehicles, %	0	0	0
Mvmt Flow	249	1	100

Major/Minor	Minor2		
Conflicting Flow All	926	965	100
Stage 1	226	226	-
Stage 2	700	739	-
Critical Hdwy	6.4	6.5	6.2
Critical Hdwy Stg 1	5.4	5.5	-
Critical Hdwy Stg 2	5.4	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	301	257	961
Stage 1	816	721	-
Stage 2	496	427	-
Platoon blocked, %			
Mov Cap-1 Maneuver	278	0	961
Mov Cap-2 Maneuver	278	0	-
Stage 1	754	0	-
Stage 2	496	0	-

Approach	SB
HCM Control Delay, s	84.6
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	58.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	508	303	0	0	117	445	28	0	87
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	591	352	0	0	136	517	33	0	101

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	653	0	0	352	0	0	1929	2187	352
Stage 1	-	-	-	-	-	-	1534	1534	-
Stage 2	-	-	-	-	-	-	395	653	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	943	-	-	1218	-	-	74	46	696
Stage 1	-	-	-	-	-	-	198	180	-
Stage 2	-	-	-	-	-	-	685	467	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	943	-	-	1218	-	-	~ 16	0	696
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 16	0	-
Stage 1	-	-	-	-	-	-	44	0	-
Stage 2	-	-	-	-	-	-	685	0	-

Approach	EB	WB	NB
HCM Control Delay, s	9.4	0	$ 693
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	61	943	-	-	1218	-	-
HCM Lane V/C Ratio	2.192	0.626	-	-	-	-	-
HCM Control Delay (s)	$ 693	15	0	-	0	-	-
HCM Lane LOS	F	B	A	-	A	-	-
HCM 95th %tile Q(veh)	13	4.6	-	-	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	86	86	86
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	0

Major/Minor	
Conflicting Flow All	
Stage 1	
Stage 2	
Critical Hdwy	
Critical Hdwy Stg 1	
Critical Hdwy Stg 2	
Follow-up Hdwy	
Pot Cap-1 Maneuver	
Stage 1	
Stage 2	
Platoon blocked, %	
Mov Cap-1 Maneuver	
Mov Cap-2 Maneuver	
Stage 1	
Stage 2	

Approach	
HCM Control Delay, s	
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	18	372	542	11	19	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	21	428	623	13	22	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	636	0	-	0	1098	629
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	469	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	957	-	-	-	238	486
Stage 1	-	-	-	-	535	-
Stage 2	-	-	-	-	634	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	957	-	-	-	231	486
Mov Cap-2 Maneuver	-	-	-	-	231	-
Stage 1	-	-	-	-	535	-
Stage 2	-	-	-	-	616	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	18.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	957	-	-	-	316
HCM Lane V/C Ratio	0.022	-	-	-	0.142
HCM Control Delay (s)	8.8	0	-	-	18.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

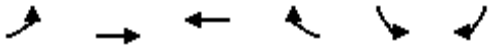
Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	391	538	5	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	425	585	5	0	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	590	0	-	0	1013	588
Stage 1	-	-	-	-	588	-
Stage 2	-	-	-	-	425	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	995	-	-	-	267	513
Stage 1	-	-	-	-	559	-
Stage 2	-	-	-	-	664	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	995	-	-	-	267	513
Mov Cap-2 Maneuver	-	-	-	-	267	-
Stage 1	-	-	-	-	559	-
Stage 2	-	-	-	-	664	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	995	-	-	-	513
HCM Lane V/C Ratio	-	-	-	-	0.032
HCM Control Delay (s)	0	-	-	-	12.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	178	213	483	5	9	60
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.99	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	193	232	525	5	10	0
Adj No. of Lanes	1	1	1	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	249	1215	750	7	201	179
Arrive On Green	0.14	0.64	0.40	0.40	0.11	0.00
Sat Flow, veh/h	1810	1900	1879	18	1810	1615
Grp Volume(v), veh/h	193	232	0	530	10	0
Grp Sat Flow(s),veh/h/ln	1810	1900	0	1897	1810	1615
Q Serve(g_s), s	3.7	1.8	0.0	8.4	0.2	0.0
Cycle Q Clear(g_c), s	3.7	1.8	0.0	8.4	0.2	0.0
Prop In Lane	1.00			0.01	1.00	1.00
Lane Grp Cap(c), veh/h	249	1215	0	757	201	179
V/C Ratio(X)	0.78	0.19	0.00	0.70	0.05	0.00
Avail Cap(c_a), veh/h	467	1723	0	1036	918	820
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	15.0	2.7	0.0	9.0	14.3	0.0
Incr Delay (d2), s/veh	2.0	0.1	0.0	1.8	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.9	0.0	4.6	0.1	0.0
LnGrp Delay(d),s/veh	17.0	2.8	0.0	10.8	14.8	0.0
LnGrp LOS	B	A		B	B	
Approach Vol, veh/h		425	530		10	
Approach Delay, s/veh		9.2	10.8		14.8	
Approach LOS		A	B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				28.4		31.6	8.7	19.7
Change Period (Y+Rc), s				5.3		3.7	3.7	5.3
Max Green Setting (Gmax), s				32.7		18.3	9.3	19.7
Max Q Clear Time (g_c+I1), s				3.8		2.2	5.7	10.4
Green Ext Time (p_c), s				7.0		0.0	0.1	3.9

Intersection Summary	
HCM 2010 Ctrl Delay	10.1
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	222	483	10	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	241	525	11	0	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	536	0	-	0	771	530
Stage 1	-	-	-	-	530	-
Stage 2	-	-	-	-	241	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1042	-	-	-	371	553
Stage 1	-	-	-	-	594	-
Stage 2	-	-	-	-	804	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1042	-	-	-	371	553
Mov Cap-2 Maneuver	-	-	-	-	371	-
Stage 1	-	-	-	-	594	-
Stage 2	-	-	-	-	804	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1042	-	-	-	553
HCM Lane V/C Ratio	-	-	-	-	0.01
HCM Control Delay (s)	0	-	-	-	11.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	16	184	5	3	336	1	18	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	20	227	6	4	415	1	22	0	4

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	416	0	0	233	0	0	738	693	230
Stage 1	-	-	-	-	-	-	270	270	-
Stage 2	-	-	-	-	-	-	468	423	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1154	-	-	1346	-	-	336	369	814
Stage 1	-	-	-	-	-	-	740	690	-
Stage 2	-	-	-	-	-	-	579	591	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1154	-	-	1346	-	-	283	360	814
Mov Cap-2 Maneuver	-	-	-	-	-	-	283	360	-
Stage 1	-	-	-	-	-	-	725	676	-
Stage 2	-	-	-	-	-	-	496	589	-

Approach	EB	WB	NB
HCM Control Delay, s	0.6	0.1	17.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	312	1154	-	-	1346	-	-	628
HCM Lane V/C Ratio	0.083	0.017	-	-	0.003	-	-	0.145
HCM Control Delay (s)	17.6	8.2	0	-	7.7	0	-	11.7
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	0.5

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	1	1	72
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	81	81	81
Heavy Vehicles, %	0	0	0
Mvmt Flow	1	1	89

Major/Minor	Minor2		
Conflicting Flow All	695	696	415
Stage 1	423	423	-
Stage 2	272	273	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	359	368	642
Stage 1	613	591	-
Stage 2	738	688	-
Platoon blocked, %			
Mov Cap-1 Maneuver	351	359	642
Mov Cap-2 Maneuver	351	359	-
Stage 1	601	589	-
Stage 2	720	674	-

Approach	SB
HCM Control Delay, s	11.7
HCM LOS	B

Minor Lane/Major Mvmt

Intersection	
Intersection Delay, s/veh	14.7
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	13	142	37	0	49	235	4	0	36	23	129
Peak Hour Factor	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	17	189	49	0	65	313	5	0	48	31	172
Number of Lanes	0	0	1	1	0	0	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	2
HCM Control Delay	11.9	19.4	12.5
HCM LOS	B	C	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	19%	8%	0%	17%	0%	14%
Vol Thru, %	12%	92%	0%	83%	0%	27%
Vol Right, %	69%	0%	100%	0%	100%	59%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	188	155	37	284	4	108
LT Vol	23	142	0	235	0	29
Through Vol	129	0	37	0	4	64
RT Vol	36	13	0	49	0	15
Lane Flow Rate	251	207	49	379	5	144
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.395	0.363	0.076	0.647	0.008	0.238
Departure Headway (Hd)	5.673	6.319	5.563	6.148	5.348	5.954
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	629	566	639	583	665	598
Service Time	3.76	4.098	3.341	3.915	3.115	4.053
HCM Lane V/C Ratio	0.399	0.366	0.077	0.65	0.008	0.241
HCM Control Delay	12.5	12.7	8.8	19.6	8.2	10.9
HCM Lane LOS	B	B	A	C	A	B
HCM 95th-tile Q	1.9	1.6	0.2	4.7	0	0.9

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	15	29	64
Peak Hour Factor	0.92	0.75	0.75	0.75
Heavy Vehicles, %	0	0	0	0
Mvmt Flow	0	20	39	85
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	10.9
HCM LOS	B

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	37	110	259	16	250	8	282	107	4	5	192	73
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	54	159	192	23	362	9	409	155	3	7	278	81
Adj No. of Lanes	1	1	1	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	69	540	451	36	484	12	445	859	722	13	405	336
Arrive On Green	0.04	0.28	0.28	0.02	0.26	0.26	0.25	0.45	0.45	0.01	0.21	0.21
Sat Flow, veh/h	1810	1900	1587	1810	1845	46	1810	1900	1597	1810	1900	1577
Grp Volume(v), veh/h	54	159	192	23	0	371	409	155	3	7	278	81
Grp Sat Flow(s),veh/h/ln	1810	1900	1587	1810	0	1891	1810	1900	1597	1810	1900	1577
Q Serve(g_s), s	2.3	5.1	7.7	1.0	0.0	14.0	17.1	3.8	0.1	0.3	10.5	3.3
Cycle Q Clear(g_c), s	2.3	5.1	7.7	1.0	0.0	14.0	17.1	3.8	0.1	0.3	10.5	3.3
Prop In Lane	1.00		1.00	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	69	540	451	36	0	496	445	859	722	13	405	336
V/C Ratio(X)	0.78	0.29	0.43	0.63	0.00	0.75	0.92	0.18	0.00	0.54	0.69	0.24
Avail Cap(c_a), veh/h	93	660	551	93	0	649	449	1017	855	93	643	534
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.1	21.7	22.7	37.8	0.0	26.3	28.5	12.7	11.7	38.5	28.2	25.4
Incr Delay (d2), s/veh	25.6	0.4	0.9	6.5	0.0	4.2	23.3	0.5	0.0	12.1	9.2	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	2.7	3.5	0.6	0.0	7.9	11.4	2.1	0.0	0.2	6.5	1.6
LnGrp Delay(d),s/veh	62.7	22.2	23.6	44.3	0.0	30.5	51.8	13.2	11.7	50.5	37.3	27.1
LnGrp LOS	E	C	C	D		C	D	B	B	D	D	C
Approach Vol, veh/h		405			394			567			366	
Approach Delay, s/veh		28.2			31.4			41.0			35.3	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.3	58.1	5.3	27.4	22.8	39.5	7.0	25.7
Change Period (Y+Rc), s	3.7	5.7	3.7	5.3	3.7	* 5.7	4.0	* 5.3
Max Green Setting (Gmax), s	4.0	41.6	4.0	27.0	19.3	* 26	4.0	* 27
Max Q Clear Time (g_c+I1), s	2.3	5.8	3.0	9.7	19.1	12.5	4.3	16.0
Green Ext Time (p_c), s	0.0	3.2	0.0	4.8	0.0	2.5	0.0	3.7

Intersection Summary	
HCM 2010 Ctrl Delay	34.6
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	195.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	241	52	108	126	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	256	55	115	134	0	0	0	0

Major/Minor	Major1			Major2		
Conflicting Flow All	134	0	0	312	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	1463	-	-	1260	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	1463	-	-	1260	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB
HCM Control Delay, s	0	3.8
HCM LOS		

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1463	-	-	1260	-	-	563
HCM Lane V/C Ratio	-	-	-	0.091	-	-	1.636
HCM Control Delay (s)	0	-	-	8.1	0	-	$ 313.4
HCM Lane LOS	A	-	-	A	A	-	F
HCM 95th %tile Q(veh)	0	-	-	0.3	-	-	51.5

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	413	1	452
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	94	94	94
Heavy Vehicles, %	0	0	0
Mvmt Flow	439	1	481

Major/Minor	Minor2		
Conflicting Flow All	648	676	134
Stage 1	364	364	-
Stage 2	284	312	-
Critical Hdwy	6.4	6.5	6.2
Critical Hdwy Stg 1	5.4	5.5	-
Critical Hdwy Stg 2	5.4	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	~ 438	378	920
Stage 1	707	627	-
Stage 2	769	661	-
Platoon blocked, %			
Mov Cap-1 Maneuver	~ 395	0	920
Mov Cap-2 Maneuver	~ 395	0	-
Stage 1	637	0	-
Stage 2	769	0	-

Approach	SB
HCM Control Delay, s	$ 313.4
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	10.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	205	449	0	0	146	297	87	0	67
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	223	488	0	0	159	323	95	0	73

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	482	0	0	488	0	0	1254	1416	488
Stage 1	-	-	-	-	-	-	934	934	-
Stage 2	-	-	-	-	-	-	320	482	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1091	-	-	1086	-	-	192	139	584
Stage 1	-	-	-	-	-	-	386	347	-
Stage 2	-	-	-	-	-	-	741	557	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1091	-	-	1086	-	-	138	0	584
Mov Cap-2 Maneuver	-	-	-	-	-	-	138	0	-
Stage 1	-	-	-	-	-	-	278	0	-
Stage 2	-	-	-	-	-	-	741	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2.9	0	69.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	207	1091	-	-	1086	-	-
HCM Lane V/C Ratio	0.809	0.204	-	-	-	-	-
HCM Control Delay (s)	69.8	9.1	0	-	0	-	-
HCM Lane LOS	F	A	A	-	A	-	-
HCM 95th %tile Q(veh)	5.8	0.8	-	-	0	-	-

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	0

Major/Minor	
Conflicting Flow All	
Stage 1	
Stage 2	
Critical Hdwy	
Critical Hdwy Stg 1	
Critical Hdwy Stg 2	
Follow-up Hdwy	
Pot Cap-1 Maneuver	
Stage 1	
Stage 2	
Platoon blocked, %	
Mov Cap-1 Maneuver	
Mov Cap-2 Maneuver	
Stage 1	
Stage 2	

Approach	
HCM Control Delay, s	
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	22	494	422	15	28	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	25	561	480	17	32	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	497	0	-	0	1099	488
Stage 1	-	-	-	-	488	-
Stage 2	-	-	-	-	611	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1077	-	-	-	237	584
Stage 1	-	-	-	-	621	-
Stage 2	-	-	-	-	546	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1077	-	-	-	229	584
Mov Cap-2 Maneuver	-	-	-	-	229	-
Stage 1	-	-	-	-	621	-
Stage 2	-	-	-	-	527	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	19.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1077	-	-	-	310
HCM Lane V/C Ratio	0.023	-	-	-	0.18
HCM Control Delay (s)	8.4	0	-	-	19.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

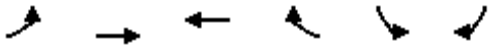
Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	522	395	2	0	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	567	429	2	0	46

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	432	0	-	0	997	430
Stage 1	-	-	-	-	430	-
Stage 2	-	-	-	-	567	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1138	-	-	-	273	629
Stage 1	-	-	-	-	660	-
Stage 2	-	-	-	-	572	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1138	-	-	-	273	629
Mov Cap-2 Maneuver	-	-	-	-	273	-
Stage 1	-	-	-	-	660	-
Stage 2	-	-	-	-	572	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1138	-	-	-	629
HCM Lane V/C Ratio	-	-	-	-	0.073
HCM Control Delay (s)	0	-	-	-	11.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	94	428	240	2	20	158
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.99	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	102	465	261	2	22	121
Adj No. of Lanes	1	1	1	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	140	1037	643	5	261	233
Arrive On Green	0.08	0.55	0.34	0.34	0.14	0.14
Sat Flow, veh/h	1810	1900	1883	14	1810	1615
Grp Volume(v), veh/h	102	465	0	263	22	121
Grp Sat Flow(s),veh/h/ln	1810	1900	0	1897	1810	1615
Q Serve(g_s), s	1.6	4.3	0.0	3.1	0.3	2.0
Cycle Q Clear(g_c), s	1.6	4.3	0.0	3.1	0.3	2.0
Prop In Lane	1.00			0.01	1.00	1.00
Lane Grp Cap(c), veh/h	140	1037	0	648	261	233
V/C Ratio(X)	0.73	0.45	0.00	0.41	0.08	0.52
Avail Cap(c_a), veh/h	579	2073	0	1221	1202	1073
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.1	4.0	0.0	7.3	10.8	11.5
Incr Delay (d2), s/veh	2.7	0.4	0.0	0.6	0.6	8.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.3	0.0	1.7	0.2	2.3
LnGrp Delay(d),s/veh	15.8	4.4	0.0	7.9	11.4	19.5
LnGrp LOS	B	A		A	B	B
Approach Vol, veh/h		567	263		143	
Approach Delay, s/veh		6.5	7.9		18.3	
Approach LOS		A	A		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				21.2		38.8	5.9	15.2
Change Period (Y+Rc), s				5.3		3.7	3.7	5.3
Max Green Setting (Gmax), s				31.7		19.3	9.3	18.7
Max Q Clear Time (g_c+I1), s				6.3		4.0	3.6	5.1
Green Ext Time (p_c), s				6.2		0.2	0.0	4.7

Intersection Summary	
HCM 2010 Ctrl Delay	8.6
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	448	232	5	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	487	252	5	0	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	258	0	-	0	742	255
Stage 1	-	-	-	-	255	-
Stage 2	-	-	-	-	487	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1318	-	-	-	386	789
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	622	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1318	-	-	-	386	789
Mov Cap-2 Maneuver	-	-	-	-	386	-
Stage 1	-	-	-	-	792	-
Stage 2	-	-	-	-	622	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1318	-	-	-	789
HCM Lane V/C Ratio	-	-	-	-	0.014
HCM Control Delay (s)	0	-	-	-	9.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	40	336	18	5	200	0	12	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	42	350	19	5	208	0	12	1	2

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	208	0	0	369	0	0	676	662	359
Stage 1	-	-	-	-	-	-	443	443	-
Stage 2	-	-	-	-	-	-	233	219	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1375	-	-	1201	-	-	370	385	690
Stage 1	-	-	-	-	-	-	598	579	-
Stage 2	-	-	-	-	-	-	775	726	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1375	-	-	1201	-	-	346	368	690
Mov Cap-2 Maneuver	-	-	-	-	-	-	346	368	-
Stage 1	-	-	-	-	-	-	575	556	-
Stage 2	-	-	-	-	-	-	745	722	-

Approach	EB	WB	NB
HCM Control Delay, s	0.8	0.2	15.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	372	1375	-	-	1201	-	-	837
HCM Lane V/C Ratio	0.042	0.03	-	-	0.004	-	-	0.034
HCM Control Delay (s)	15.1	7.7	0	-	8	0	-	9.5
HCM Lane LOS	C	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	27
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	96	96	96
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	28

Major/Minor	Minor2		
Conflicting Flow All	663	671	208
Stage 1	219	219	-
Stage 2	444	452	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	377	380	837
Stage 1	788	726	-
Stage 2	597	574	-
Platoon blocked, %			
Mov Cap-1 Maneuver	363	363	837
Mov Cap-2 Maneuver	363	363	-
Stage 1	757	722	-
Stage 2	571	552	-

Approach	SB
HCM Control Delay, s	9.5
HCM LOS	A

Minor Lane/Major Mvmt

Intersection	
Intersection Delay, s/veh	11
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	38	268	36	0	14	173	4	0	19	28	31
Peak Hour Factor	0.92	0.88	0.88	0.88	0.92	0.88	0.88	0.88	0.92	0.88	0.88	0.88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	43	305	41	0	16	197	5	0	22	32	35
Number of Lanes	0	0	1	1	0	0	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	2
HCM Control Delay	12.2	10.2	9.1
HCM LOS	B	B	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	24%	12%	0%	7%	0%	26%
Vol Thru, %	36%	88%	0%	93%	0%	53%
Vol Right, %	40%	0%	100%	0%	100%	21%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	78	306	36	187	4	38
LT Vol	28	268	0	173	0	20
Through Vol	31	0	36	0	4	8
RT Vol	19	38	0	14	0	10
Lane Flow Rate	89	348	41	212	5	43
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.128	0.493	0.049	0.309	0.006	0.065
Departure Headway (Hd)	5.218	5.102	4.335	5.231	4.488	5.412
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	683	702	821	684	793	656
Service Time	3.286	2.852	2.085	2.987	2.243	3.49
HCM Lane V/C Ratio	0.13	0.496	0.05	0.31	0.006	0.066
HCM Control Delay	9.1	12.8	7.3	10.3	7.3	8.9
HCM Lane LOS	A	B	A	B	A	A
HCM 95th-tile Q	0.4	2.7	0.2	1.3	0	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	10	20	8
Peak Hour Factor	0.92	0.88	0.88	0.88
Heavy Vehicles, %	0	0	0	0
Mvmt Flow	0	11	23	9
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	8.9
HCM LOS	A

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	65	118	212	7	50	15	156	292	21	21	215	39
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	69	126	152	7	53	5	166	311	19	22	229	9
Adj No. of Lanes	1	1	1	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	92	423	351	13	295	28	213	671	563	39	489	407
Arrive On Green	0.05	0.22	0.22	0.01	0.17	0.17	0.12	0.35	0.35	0.02	0.26	0.26
Sat Flow, veh/h	1810	1900	1579	1810	1705	161	1810	1900	1592	1810	1900	1584
Grp Volume(v), veh/h	69	126	152	7	0	58	166	311	19	22	229	9
Grp Sat Flow(s),veh/h/ln	1810	1900	1579	1810	0	1866	1810	1900	1592	1810	1900	1584
Q Serve(g_s), s	1.8	2.6	3.9	0.2	0.0	1.2	4.1	5.9	0.4	0.6	4.7	0.2
Cycle Q Clear(g_c), s	1.8	2.6	3.9	0.2	0.0	1.2	4.1	5.9	0.4	0.6	4.7	0.2
Prop In Lane	1.00		1.00	1.00		0.09	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	92	423	351	13	0	322	213	671	563	39	489	407
V/C Ratio(X)	0.75	0.30	0.43	0.52	0.00	0.18	0.78	0.46	0.03	0.57	0.47	0.02
Avail Cap(c_a), veh/h	156	1103	916	156	0	1071	323	1290	1081	156	1115	929
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.8	15.1	15.6	23.0	0.0	16.4	19.9	11.6	9.8	22.6	14.6	12.9
Incr Delay (d2), s/veh	11.6	0.6	1.2	11.1	0.0	0.4	3.1	2.3	0.1	4.9	3.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	1.4	1.8	0.1	0.0	0.7	2.3	3.5	0.2	0.3	2.9	0.1
LnGrp Delay(d),s/veh	33.4	15.6	16.8	34.1	0.0	16.8	23.1	13.9	10.0	27.4	17.8	13.0
LnGrp LOS	C	B	B	C		B	C	B	A	C	B	B
Approach Vol, veh/h		347			65			496			260	
Approach Delay, s/veh		19.7			18.7			16.8			18.5	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.7	60.6	4.0	15.7	9.2	56.1	6.4	13.3
Change Period (Y+Rc), s	3.7	5.7	3.7	5.3	3.7	* 5.7	4.0	* 5.3
Max Green Setting (Gmax), s	4.0	31.6	4.0	27.0	8.3	* 27	4.0	* 27
Max Q Clear Time (g_c+I1), s	2.6	7.9	2.2	5.9	6.1	6.7	3.8	3.2
Green Ext Time (p_c), s	0.0	3.8	0.0	2.0	0.0	3.7	0.0	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	18.1
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX 6.2:

EAPC (2017) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Intersection	
Int Delay, s/veh	314

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	780	89	142	120	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	876	100	160	135	0	0	0	0

Major/Minor	Major1			Major2		
Conflicting Flow All	135	0	0	976	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	1462	-	-	715	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	1462	-	-	715	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB
HCM Control Delay, s	0	6.2
HCM LOS		

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1462	-	-	715	-	-	163
HCM Lane V/C Ratio	-	-	-	0.223	-	-	3.24
HCM Control Delay (s)	0	-	-	11.5	0	-	$ 1066
HCM Lane LOS	A	-	-	B	A	-	F
HCM 95th %tile Q(veh)	0	-	-	0.9	-	-	49.6

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	332	1	137
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	89	89	89
Heavy Vehicles, %	0	0	0
Mvmt Flow	373	1	154

Major/Minor	Minor2		
Conflicting Flow All	1380	1430	135
Stage 1	454	454	-
Stage 2	926	976	-
Critical Hdwy	6.4	6.5	6.2
Critical Hdwy Stg 1	5.4	5.5	-
Critical Hdwy Stg 2	5.4	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	~ 161	136	919
Stage 1	644	573	-
Stage 2	389	332	-
Platoon blocked, %			
Mov Cap-1 Maneuver	~ 122	0	919
Mov Cap-2 Maneuver	~ 122	0	-
Stage 1	488	0	-
Stage 2	389	0	-

Approach	SB
HCM Control Delay, s	$ 1066
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	75

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	651	462	0	0	228	703	34	0	133
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	757	537	0	0	265	817	40	0	155

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	1083	0	0	537	0	0	2725	3134	537
Stage 1	-	-	-	-	-	-	2051	2051	-
Stage 2	-	-	-	-	-	-	674	1083	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	~ 652	-	-	1041	-	-	~ 23	11	548
Stage 1	-	-	-	-	-	-	110	100	-
Stage 2	-	-	-	-	-	-	510	296	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	~ 652	-	-	1041	-	-	~ 23	0	548
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 23	0	-
Stage 1	-	-	-	-	-	-	110	0	-
Stage 2	-	-	-	-	-	-	510	0	-

Approach	EB	WB	NB
HCM Control Delay, s	65.2	0	$ 557.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	97	~ 652	-	-	1041	-	-
HCM Lane V/C Ratio	2.002	1.161	-	-	-	-	-
HCM Control Delay (s)	$ 557.8	111.5	0	-	0	-	-
HCM Lane LOS	F	F	A	-	A	-	-
HCM 95th %tile Q(veh)	16.5	24.6	-	-	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	86	86	86
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	0

Major/Minor	
Conflicting Flow All	
Stage 1	
Stage 2	
Critical Hdwy	
Critical Hdwy Stg 1	
Critical Hdwy Stg 2	
Follow-up Hdwy	
Pot Cap-1 Maneuver	
Stage 1	
Stage 2	
Platoon blocked, %	
Mov Cap-1 Maneuver	
Mov Cap-2 Maneuver	
Stage 1	
Stage 2	

Approach	
HCM Control Delay, s	
HCM LOS	

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	12.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	55	541	811	43	43	120
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	63	622	932	49	49	138

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	982	0	-	0	1705	957
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	748	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	711	-	-	-	102	315
Stage 1	-	-	-	-	376	-
Stage 2	-	-	-	-	471	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	711	-	-	-	88	315
Mov Cap-2 Maneuver	-	-	-	-	88	-
Stage 1	-	-	-	-	376	-
Stage 2	-	-	-	-	407	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	117.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	711	-	-	-	187
HCM Lane V/C Ratio	0.089	-	-	-	1.002
HCM Control Delay (s)	10.6	0	-	-	117.8
HCM Lane LOS	B	A	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	-	8.4

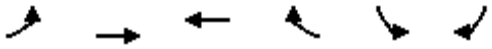
Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	583	836	8	0	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	634	909	9	0	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	917	0	-	0	1547	913
Stage 1	-	-	-	-	913	-
Stage 2	-	-	-	-	634	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	752	-	-	-	127	334
Stage 1	-	-	-	-	395	-
Stage 2	-	-	-	-	532	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	752	-	-	-	127	334
Mov Cap-2 Maneuver	-	-	-	-	127	-
Stage 1	-	-	-	-	395	-
Stage 2	-	-	-	-	532	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	752	-	-	-	334
HCM Lane V/C Ratio	-	-	-	-	0.059
HCM Control Delay (s)	0	-	-	-	16.4
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	234	349	739	9	17	104
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.99	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	254	379	803	10	18	48
Adj No. of Lanes	1	1	1	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	314	1339	838	10	164	147
Arrive On Green	0.17	0.70	0.45	0.45	0.09	0.09
Sat Flow, veh/h	1810	1900	1872	23	1810	1615
Grp Volume(v), veh/h	254	379	0	813	18	48
Grp Sat Flow(s),veh/h/ln	1810	1900	0	1896	1810	1615
Q Serve(g_s), s	5.9	3.2	0.0	18.3	0.4	1.2
Cycle Q Clear(g_c), s	5.9	3.2	0.0	18.3	0.4	1.2
Prop In Lane	1.00			0.01	1.00	1.00
Lane Grp Cap(c), veh/h	314	1339	0	848	164	147
V/C Ratio(X)	0.81	0.28	0.00	0.96	0.11	0.33
Avail Cap(c_a), veh/h	382	1411	0	848	752	671
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.5	2.4	0.0	11.8	18.4	18.8
Incr Delay (d2), s/veh	8.5	0.2	0.0	21.5	1.3	5.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	1.6	0.0	14.3	0.3	1.4
LnGrp Delay(d),s/veh	26.0	2.6	0.0	33.3	19.7	24.6
LnGrp LOS	C	A		C	B	C
Approach Vol, veh/h		633	813		66	
Approach Delay, s/veh		12.0	33.3		23.3	
Approach LOS		B	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				36.3		23.7	11.3	25.0
Change Period (Y+Rc), s				5.3		3.7	3.7	5.3
Max Green Setting (Gmax), s				32.7		18.3	9.3	19.7
Max Q Clear Time (g_c+I1), s				5.2		3.2	7.9	20.3
Green Ext Time (p_c), s				12.5		0.1	0.1	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	23.9
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	366	742	16	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	398	807	17	0	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	824	0	-	0	1213	815
Stage 1	-	-	-	-	815	-
Stage 2	-	-	-	-	398	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	815	-	-	-	203	381
Stage 1	-	-	-	-	439	-
Stage 2	-	-	-	-	683	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	815	-	-	-	203	381
Mov Cap-2 Maneuver	-	-	-	-	203	-
Stage 1	-	-	-	-	439	-
Stage 2	-	-	-	-	683	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	815	-	-	-	381
HCM Lane V/C Ratio	-	-	-	-	0.02
HCM Control Delay (s)	0	-	-	-	14.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	16	277	27	4	394	1	28	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	20	342	33	5	486	1	35	0	4

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	488	0	0	375	0	0	940	896	359
Stage 1	-	-	-	-	-	-	398	398	-
Stage 2	-	-	-	-	-	-	542	498	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1086	-	-	1195	-	-	246	282	690
Stage 1	-	-	-	-	-	-	632	606	-
Stage 2	-	-	-	-	-	-	528	548	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1086	-	-	1195	-	-	203	274	690
Mov Cap-2 Maneuver	-	-	-	-	-	-	203	274	-
Stage 1	-	-	-	-	-	-	617	592	-
Stage 2	-	-	-	-	-	-	444	545	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	0.1	25
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	218	1086	-	-	1195	-	-	566
HCM Lane V/C Ratio	0.176	0.018	-	-	0.004	-	-	0.161
HCM Control Delay (s)	25	8.4	0	-	8	0	-	12.6
HCM Lane LOS	D	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0	-	-	0.6

Intersection			
Int Delay, s/veh			

Movement	SBL	SBT	SBR
Vol, veh/h	1	1	72
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	81	81	81
Heavy Vehicles, %	0	0	0
Mvmt Flow	1	1	89

Major/Minor	Minor2		
Conflicting Flow All	897	912	487
Stage 1	497	497	-
Stage 2	400	415	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	263	276	585
Stage 1	559	548	-
Stage 2	630	596	-
Platoon blocked, %			
Mov Cap-1 Maneuver	256	268	585
Mov Cap-2 Maneuver	256	268	-
Stage 1	546	545	-
Stage 2	612	582	-

Approach	SB
HCM Control Delay, s	12.6
HCM LOS	B

Minor Lane/Major Mvmt

Intersection	
Intersection Delay, s/veh	20.2
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	13	200	71	0	49	275	4	0	47	23	129
Peak Hour Factor	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75	0.92	0.75	0.75	0.75
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	17	267	95	0	65	367	5	0	63	31	172
Number of Lanes	0	0	1	1	0	0	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	2
HCM Control Delay	15.2	30.3	15.1
HCM LOS	C	D	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	24%	6%	0%	15%	0%	14%
Vol Thru, %	12%	94%	0%	85%	0%	27%
Vol Right, %	65%	0%	100%	0%	100%	59%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	199	213	71	324	4	108
LT Vol	23	200	0	275	0	29
Through Vol	129	0	71	0	4	64
RT Vol	47	13	0	49	0	15
Lane Flow Rate	265	284	95	432	5	144
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.472	0.532	0.158	0.796	0.009	0.272
Departure Headway (Hd)	6.406	6.746	5.998	6.63	5.837	6.793
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	560	534	595	544	611	527
Service Time	4.465	4.506	3.757	4.382	3.589	4.865
HCM Lane V/C Ratio	0.473	0.532	0.16	0.794	0.008	0.273
HCM Control Delay	15.1	17	9.9	30.6	8.6	12.4
HCM Lane LOS	C	C	A	D	A	B
HCM 95th-tile Q	2.5	3.1	0.6	7.6	0	1.1

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	15	29	64
Peak Hour Factor	0.92	0.75	0.75	0.75
Heavy Vehicles, %	0	0	0	0
Mvmt Flow	0	20	39	85
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	12.4
HCM LOS	B

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	37	110	313	18	250	8	319	111	9	5	193	73
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	54	159	271	26	362	9	462	161	10	7	280	81
Adj No. of Lanes	1	1	1	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	69	539	450	40	487	12	445	860	723	13	406	337
Arrive On Green	0.04	0.28	0.28	0.02	0.26	0.26	0.25	0.45	0.45	0.01	0.21	0.21
Sat Flow, veh/h	1810	1900	1587	1810	1845	46	1810	1900	1597	1810	1900	1577
Grp Volume(v), veh/h	54	159	271	26	0	371	462	161	10	7	280	81
Grp Sat Flow(s),veh/h/ln	1810	1900	1587	1810	0	1891	1810	1900	1597	1810	1900	1577
Q Serve(g_s), s	2.3	5.1	11.6	1.1	0.0	14.1	19.3	4.0	0.3	0.3	10.7	3.3
Cycle Q Clear(g_c), s	2.3	5.1	11.6	1.1	0.0	14.1	19.3	4.0	0.3	0.3	10.7	3.3
Prop In Lane	1.00		1.00	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	69	539	450	40	0	499	445	860	723	13	406	337
V/C Ratio(X)	0.78	0.29	0.60	0.65	0.00	0.74	1.04	0.19	0.01	0.54	0.69	0.24
Avail Cap(c_a), veh/h	92	654	546	92	0	643	445	1007	847	92	637	529
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.4	22.0	24.3	38.1	0.0	26.4	29.6	12.9	11.8	38.8	28.5	25.6
Incr Delay (d2), s/veh	26.1	0.4	1.8	6.5	0.0	4.2	52.9	0.5	0.0	12.1	9.2	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	2.8	5.3	0.6	0.0	7.9	16.1	2.2	0.1	0.2	6.6	1.6
LnGrp Delay(d),s/veh	63.5	22.4	26.1	44.6	0.0	30.6	82.5	13.3	11.9	50.9	37.7	27.3
LnGrp LOS	E	C	C	D		C	F	B	B	D	D	C
Approach Vol, veh/h		484			397			633			368	
Approach Delay, s/veh		29.1			31.5			63.8			35.6	
Approach LOS		C			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.3	57.7	5.4	27.6	23.0	39.0	7.0	26.0
Change Period (Y+Rc), s	3.7	5.7	3.7	5.3	3.7	* 5.7	4.0	* 5.3
Max Green Setting (Gmax), s	4.0	41.6	4.0	27.0	19.3	* 26	4.0	* 27
Max Q Clear Time (g_c+I1), s	2.3	6.0	3.1	13.6	21.3	12.7	4.3	16.1
Green Ext Time (p_c), s	0.0	3.3	0.0	4.7	0.0	2.6	0.0	4.0

Intersection Summary	
HCM 2010 Ctrl Delay	42.6
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	929.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	377	64	174	205	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	401	68	185	218	0	0	0	0

Major/Minor	Major1			Major2		
Conflicting Flow All	218	0	0	469	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	1364	-	-	1103	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	1364	-	-	1103	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB
HCM Control Delay, s	0	4.1
HCM LOS		

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1364	-	-	1103	-	-	326
HCM Lane V/C Ratio	-	-	-	0.168	-	-	4.285
HCM Control Delay (s)	0	-	-	8.9	0	-	$ 1508.4
HCM Lane LOS	A	-	-	A	A	-	F
HCM 95th %tile Q(veh)	0	-	-	0.6	-	-	137.7

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	699	1	613
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	94	94	94
Heavy Vehicles, %	0	0	0
Mvmt Flow	744	1	652

Major/Minor	Minor2		
Conflicting Flow All	1023	1057	218
Stage 1	588	588	-
Stage 2	435	469	-
Critical Hdwy	6.4	6.5	6.2
Critical Hdwy Stg 1	5.4	5.5	-
Critical Hdwy Stg 2	5.4	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	~ 263	227	827
Stage 1	~ 559	499	-
Stage 2	~ 657	564	-
Platoon blocked, %			
Mov Cap-1 Maneuver	~ 213	0	827
Mov Cap-2 Maneuver	~ 213	0	-
Stage 1	~ 452	0	-
Stage 2	~ 657	0	-

Approach	SB
HCM Control Delay, s	$ 1508.4
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	411.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	299	776	0	0	272	480	107	0	161
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	325	843	0	0	296	522	116	0	175

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	817	0	0	843	0	0	2050	2310	843
Stage 1	-	-	-	-	-	-	1493	1493	-
Stage 2	-	-	-	-	-	-	557	817	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	820	-	-	802	-	-	~ 62	39	367
Stage 1	-	-	-	-	-	-	208	188	-
Stage 2	-	-	-	-	-	-	578	393	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	820	-	-	802	-	-	~ 16	0	367
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 16	0	-
Stage 1	-	-	-	-	-	-	~ 53	0	-
Stage 2	-	-	-	-	-	-	578	0	-

Approach	EB	WB	NB
HCM Control Delay, s	3.4	0	$ 3204.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	38	820	-	-	802	-	-
HCM Lane V/C Ratio	7.666	0.396	-	-	-	-	-
HCM Control Delay (s)	$ 3204.6	12.2	0	-	0	-	-
HCM Lane LOS	F	B	A	-	A	-	-
HCM 95th %tile Q(veh)	34.8	1.9	-	-	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	0

Major/Minor
Conflicting Flow All
Stage 1
Stage 2
Critical Hdwy
Critical Hdwy Stg 1
Critical Hdwy Stg 2
Follow-up Hdwy
Pot Cap-1 Maneuver
Stage 1
Stage 2
Platoon blocked, %
Mov Cap-1 Maneuver
Mov Cap-2 Maneuver
Stage 1
Stage 2

Approach
HCM Control Delay, s
HCM LOS

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	53.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	135	803	661	48	68	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	153	912	751	55	77	102

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	806	0	-	0	1997	778
Stage 1	-	-	-	-	778	-
Stage 2	-	-	-	-	1219	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	828	-	-	-	~ 67	400
Stage 1	-	-	-	-	456	-
Stage 2	-	-	-	-	282	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	828	-	-	-	~ 42	400
Mov Cap-2 Maneuver	-	-	-	-	~ 42	-
Stage 1	-	-	-	-	456	-
Stage 2	-	-	-	-	176	-

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	$ 606.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	828	-	-	-	86
HCM Lane V/C Ratio	0.185	-	-	-	2.088
HCM Control Delay (s)	10.3	0	-	-	$ 606.6
HCM Lane LOS	B	A	-	-	F
HCM 95th %tile Q(veh)	0.7	-	-	-	15.9

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

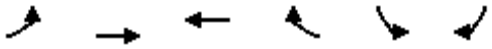
Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	870	665	4	0	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	946	723	4	0	48

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	727	0	-	0	1671	725
Stage 1	-	-	-	-	725	-
Stage 2	-	-	-	-	946	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	886	-	-	-	107	428
Stage 1	-	-	-	-	483	-
Stage 2	-	-	-	-	381	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	886	-	-	-	107	428
Mov Cap-2 Maneuver	-	-	-	-	107	-
Stage 1	-	-	-	-	483	-
Stage 2	-	-	-	-	381	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	886	-	-	-	428
HCM Lane V/C Ratio	-	-	-	-	0.112
HCM Control Delay (s)	0	-	-	-	14.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.4



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	142	727	467	8	36	202
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.99	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	154	790	508	9	39	169
Adj No. of Lanes	1	1	1	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	199	1173	771	14	282	252
Arrive On Green	0.11	0.62	0.41	0.41	0.16	0.16
Sat Flow, veh/h	1810	1900	1861	33	1810	1615
Grp Volume(v), veh/h	154	790	0	517	39	169
Grp Sat Flow(s),veh/h/ln	1810	1900	0	1894	1810	1615
Q Serve(g_s), s	3.3	10.8	0.0	8.7	0.7	3.9
Cycle Q Clear(g_c), s	3.3	10.8	0.0	8.7	0.7	3.9
Prop In Lane	1.00			0.02	1.00	1.00
Lane Grp Cap(c), veh/h	199	1173	0	784	282	252
V/C Ratio(X)	0.77	0.67	0.00	0.66	0.14	0.67
Avail Cap(c_a), veh/h	424	1517	0	892	880	785
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.2	5.0	0.0	9.4	14.5	15.8
Incr Delay (d2), s/veh	2.4	1.1	0.0	1.8	1.0	13.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	5.8	0.0	4.9	0.4	4.3
LnGrp Delay(d),s/veh	19.6	6.0	0.0	11.2	15.5	29.2
LnGrp LOS	B	A		B	B	C
Approach Vol, veh/h		944	517		208	
Approach Delay, s/veh		8.2	11.2		26.6	
Approach LOS		A	B		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				29.8		30.2	8.1	21.7
Change Period (Y+Rc), s				5.3		3.7	3.7	5.3
Max Green Setting (Gmax), s				31.7		19.3	9.3	18.7
Max Q Clear Time (g_c+I1), s				12.8		5.9	5.3	10.7
Green Ext Time (p_c), s				11.0		0.3	0.1	5.7

Intersection Summary	
HCM 2010 Ctrl Delay	11.5
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	763	458	8	0	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	829	498	9	0	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	507	0	-	0	1331	502
Stage 1	-	-	-	-	502	-
Stage 2	-	-	-	-	829	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1068	-	-	-	172	573
Stage 1	-	-	-	-	612	-
Stage 2	-	-	-	-	432	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1068	-	-	-	172	573
Mov Cap-2 Maneuver	-	-	-	-	172	-
Stage 1	-	-	-	-	612	-
Stage 2	-	-	-	-	432	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1068	-	-	-	573
HCM Lane V/C Ratio	-	-	-	-	0.032
HCM Control Delay (s)	0	-	-	-	11.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	40	428	35	6	312	0	38	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	42	446	36	6	325	0	40	1	3

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	325	0	0	482	0	0	899	885	464
Stage 1	-	-	-	-	-	-	547	547	-
Stage 2	-	-	-	-	-	-	352	338	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	1246	-	-	1091	-	-	262	286	602
Stage 1	-	-	-	-	-	-	525	521	-
Stage 2	-	-	-	-	-	-	669	644	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1246	-	-	1091	-	-	242	271	602
Mov Cap-2 Maneuver	-	-	-	-	-	-	242	271	-
Stage 1	-	-	-	-	-	-	501	497	-
Stage 2	-	-	-	-	-	-	638	639	-

Approach	EB	WB	NB
HCM Control Delay, s	0.6	0.2	22.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	253	1246	-	-	1091	-	-	721
HCM Lane V/C Ratio	0.173	0.033	-	-	0.006	-	-	0.039
HCM Control Delay (s)	22.2	8	0	-	8.3	0	-	10.2
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	27
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	96	96	96
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	28

Major/Minor	Minor2		
Conflicting Flow All	887	904	325
Stage 1	338	338	-
Stage 2	549	566	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	267	279	721
Stage 1	681	644	-
Stage 2	524	511	-
Platoon blocked, %			
Mov Cap-1 Maneuver	254	264	721
Mov Cap-2 Maneuver	254	264	-
Stage 1	650	639	-
Stage 2	496	487	-

Approach	SB
HCM Control Delay, s	10.2
HCM LOS	B

Minor Lane/Major Mvmt

Intersection	
Intersection Delay, s/veh	13.7
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	38	330	58	0	14	244	4	0	56	28	31
Peak Hour Factor	0.92	0.88	0.88	0.88	0.92	0.88	0.88	0.88	0.92	0.88	0.88	0.88
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	43	375	66	0	16	277	5	0	64	32	35
Number of Lanes	0	0	1	1	0	0	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	2
HCM Control Delay	15.4	12.8	10.5
HCM LOS	C	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	49%	10%	0%	5%	0%	26%
Vol Thru, %	24%	90%	0%	95%	0%	53%
Vol Right, %	27%	0%	100%	0%	100%	21%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	115	368	58	258	4	38
LT Vol	28	330	0	244	0	20
Through Vol	31	0	58	0	4	8
RT Vol	56	38	0	14	0	10
Lane Flow Rate	131	418	66	293	5	43
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.213	0.62	0.084	0.456	0.006	0.073
Departure Headway (Hd)	5.877	5.452	4.693	5.602	4.867	6.091
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	613	665	768	645	738	589
Service Time	3.894	3.152	2.393	3.316	2.581	4.113
HCM Lane V/C Ratio	0.214	0.629	0.086	0.454	0.007	0.073
HCM Control Delay	10.5	16.6	7.8	12.9	7.6	9.6
HCM Lane LOS	B	C	A	B	A	A
HCM 95th-tile Q	0.8	4.3	0.3	2.4	0	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	10	20	8
Peak Hour Factor	0.92	0.88	0.88	0.88
Heavy Vehicles, %	0	0	0	0
Mvmt Flow	0	11	23	9
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	9.6
HCM LOS	A

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	65	118	268	13	50	15	222	294	25	21	219	39
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	69	126	211	14	53	5	236	313	24	22	233	9
Adj No. of Lanes	1	1	1	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	87	442	368	25	329	31	286	726	609	38	465	387
Arrive On Green	0.05	0.23	0.23	0.01	0.19	0.19	0.16	0.38	0.38	0.02	0.24	0.24
Sat Flow, veh/h	1810	1900	1580	1810	1706	161	1810	1900	1594	1810	1900	1582
Grp Volume(v), veh/h	69	126	211	14	0	58	236	313	24	22	233	9
Grp Sat Flow(s),veh/h/ln	1810	1900	1580	1810	0	1867	1810	1900	1594	1810	1900	1582
Q Serve(g_s), s	2.0	2.9	6.2	0.4	0.0	1.4	6.6	6.4	0.5	0.6	5.5	0.2
Cycle Q Clear(g_c), s	2.0	2.9	6.2	0.4	0.0	1.4	6.6	6.4	0.5	0.6	5.5	0.2
Prop In Lane	1.00		1.00	1.00		0.09	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	87	442	368	25	0	360	286	726	609	38	465	387
V/C Ratio(X)	0.79	0.29	0.57	0.55	0.00	0.16	0.83	0.43	0.04	0.58	0.50	0.02
Avail Cap(c_a), veh/h	138	977	812	138	0	949	286	1143	959	138	988	822
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.7	16.6	17.8	25.7	0.0	17.7	21.4	12.0	10.2	25.5	17.1	15.1
Incr Delay (d2), s/veh	14.5	0.5	2.0	6.7	0.0	0.3	16.6	1.9	0.1	5.2	3.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	1.6	2.9	0.2	0.0	0.7	4.6	3.7	0.2	0.4	3.4	0.1
LnGrp Delay(d),s/veh	39.2	17.1	19.9	32.4	0.0	18.0	38.0	13.9	10.3	30.6	20.9	15.2
LnGrp LOS	D	B	B	C		B	D	B	B	C	C	B
Approach Vol, veh/h		406			72			573			264	
Approach Delay, s/veh		22.3			20.8			23.7			21.5	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.8	58.2	4.4	17.5	12.0	51.0	6.5	15.4
Change Period (Y+Rc), s	3.7	5.7	3.7	5.3	3.7	* 5.7	4.0	* 5.3
Max Green Setting (Gmax), s	4.0	31.6	4.0	27.0	8.3	* 27	4.0	* 27
Max Q Clear Time (g_c+I1), s	2.6	8.4	2.4	8.2	8.6	7.5	4.0	3.4
Green Ext Time (p_c), s	0.0	3.9	0.0	2.3	0.0	3.7	0.0	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	22.7
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX 6.3:

EAP (2017) CONDITIONS TRAFFIC SIGNAL WARRANTS ANALYSIS WORKSHEETS

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Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

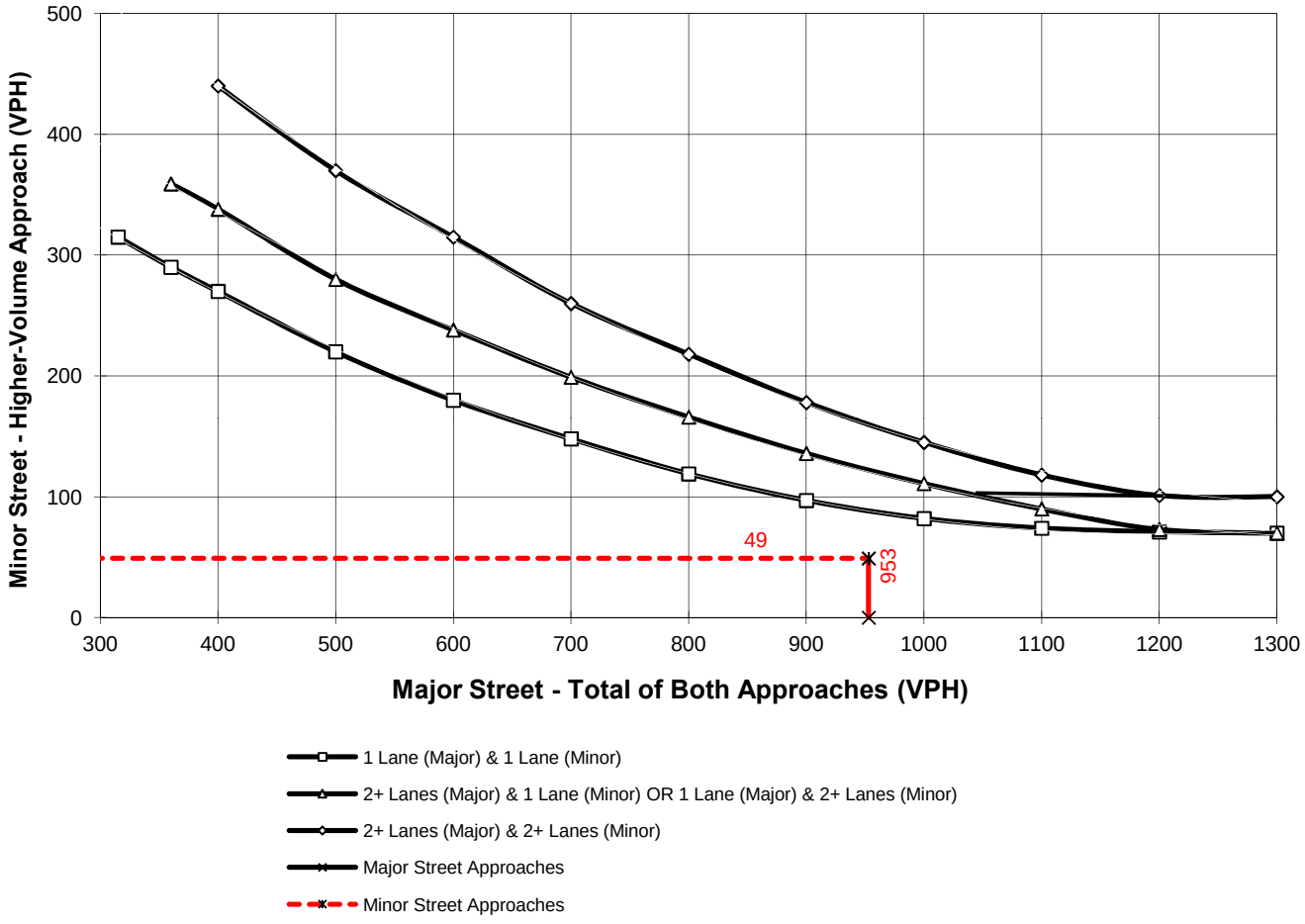
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **EAP (2017) Conditions - Weekday PM Peak Hour**

Major Street Name = **Cherry Valley Boulevard** Total of Both Approaches (VPH) = **953**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Calimesa Boulevard** High Volume Approach (VPH) = **49**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

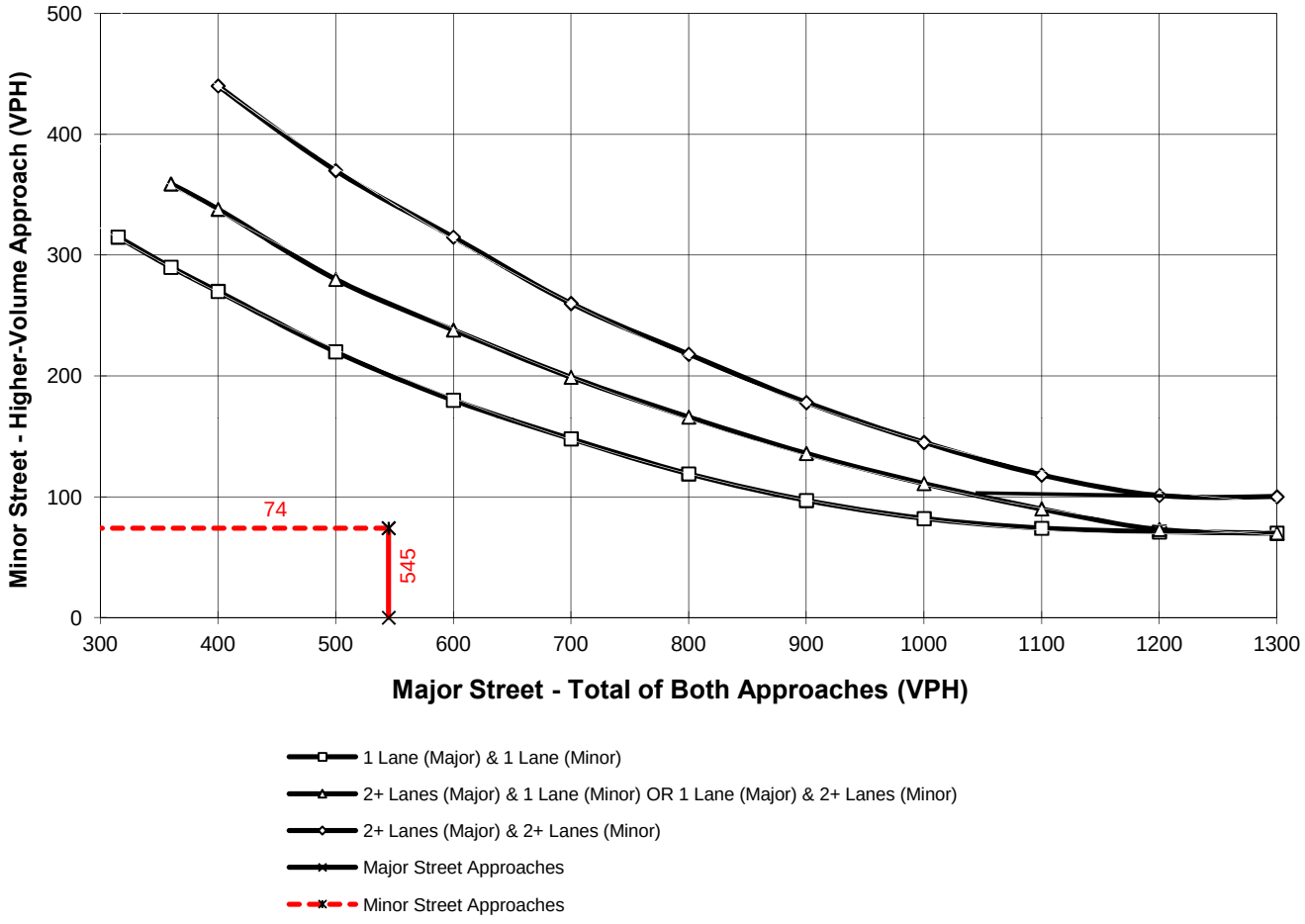
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **EAP (2017) Conditions - Weekday AM Peak Hour**

Major Street Name = **Cherry Valley Boulevard** Total of Both Approaches (VPH) = **545**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Union Street** High Volume Approach (VPH) = **74**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

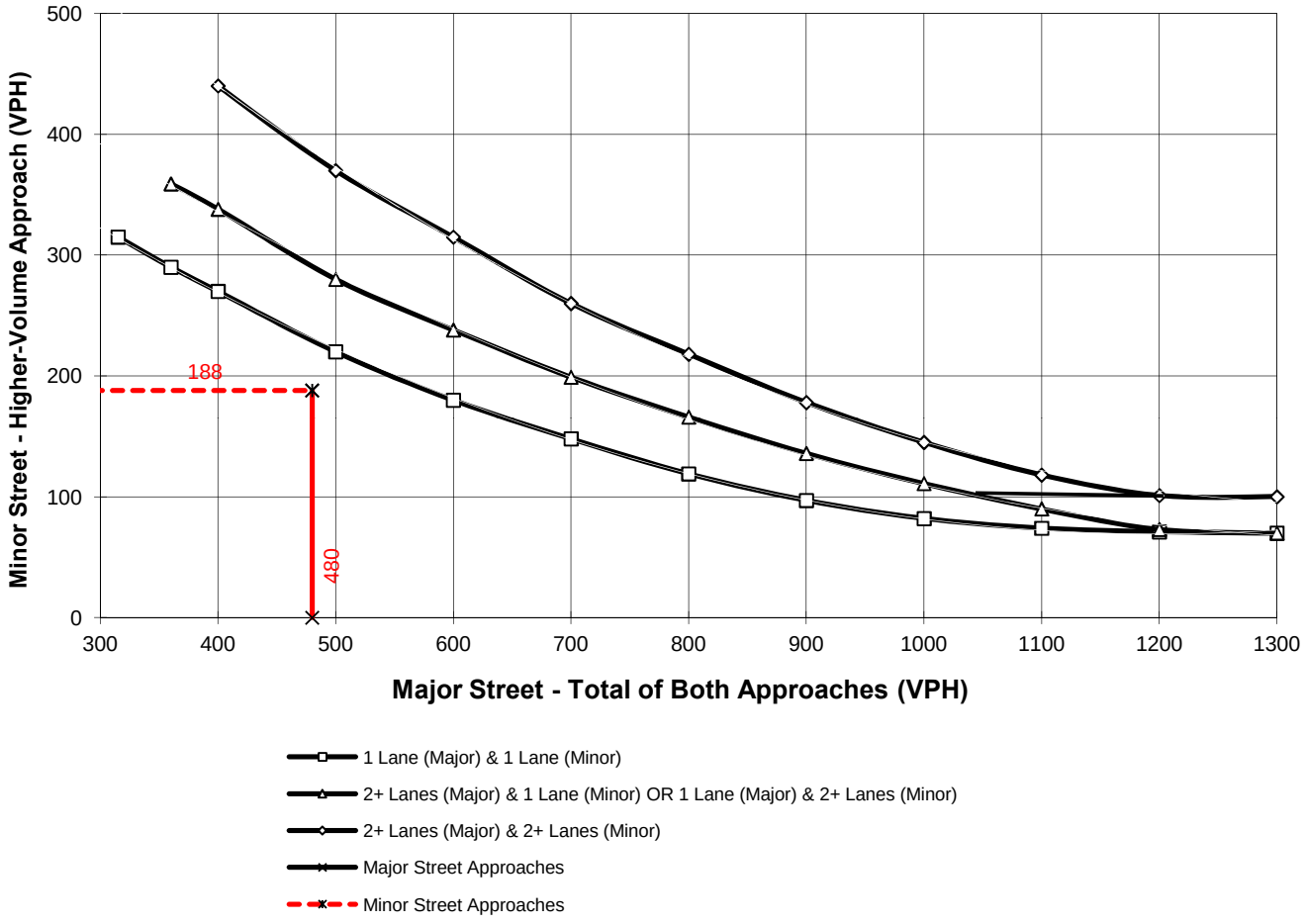
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **EAP (2017) Conditions - Weekday AM Peak Hour**

Major Street Name = **Cherry Valley Boulevard** Total of Both Approaches (VPH) = **480**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Nancy Street** High Volume Approach (VPH) = **188**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

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APPENDIX 6.4:

EAPC (2017) CONDITIONS TRAFFIC SIGNAL WARRANTS ANALYSIS WORKSHEETS

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Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

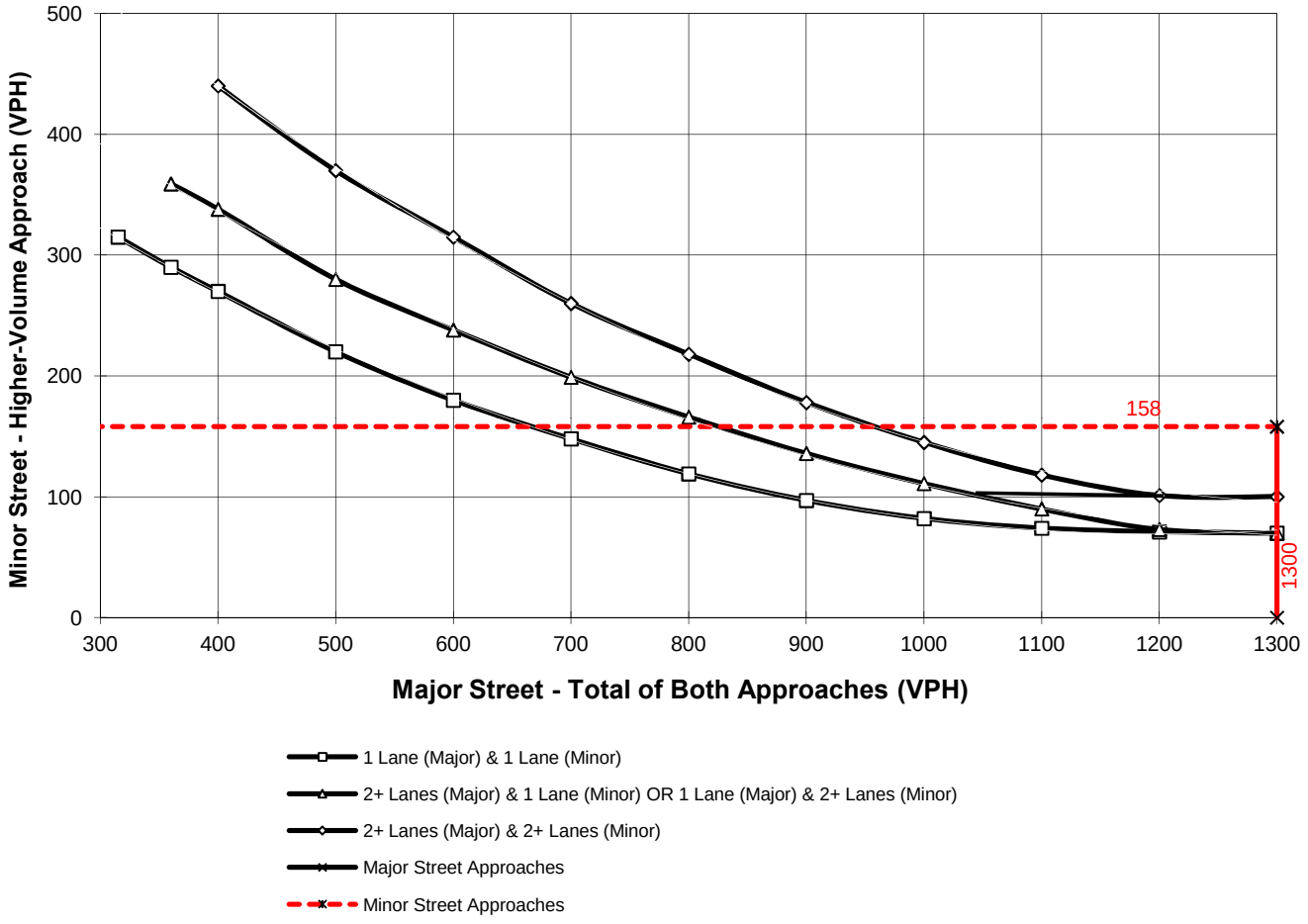
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **EAPC (2017) Conditions - Weekday PM Peak Hour**

Major Street Name = **Cherry Valley Boulevard** Total of Both Approaches (VPH) = **1647**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Calimesa Boulevard** High Volume Approach (VPH) = **158**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

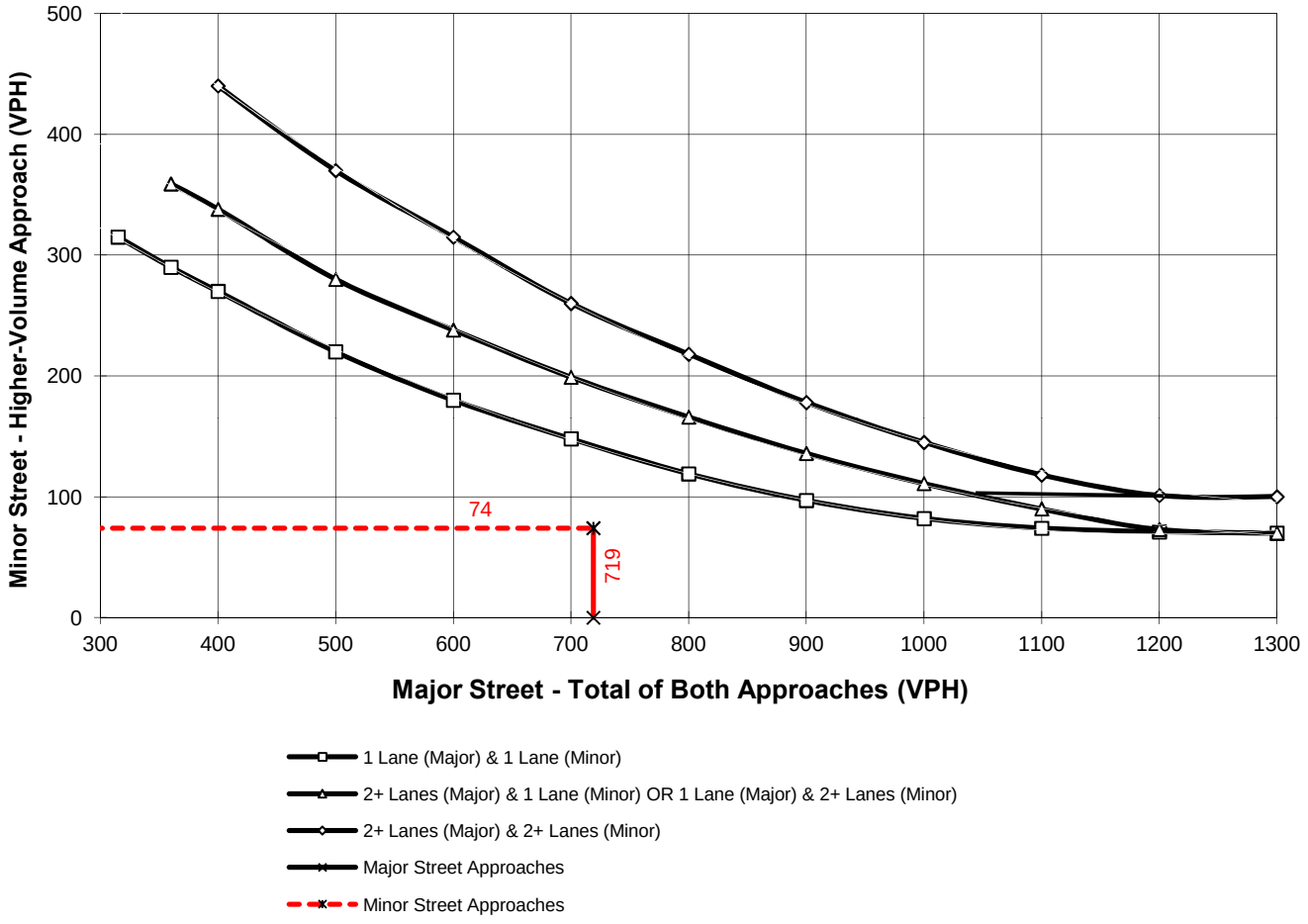
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **EAPC (2017) Conditions - Weekday AM Peak Hour**

Major Street Name = **Cherry Valley Boulevard** Total of Both Approaches (VPH) = **719**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Union Street** High Volume Approach (VPH) = **74**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

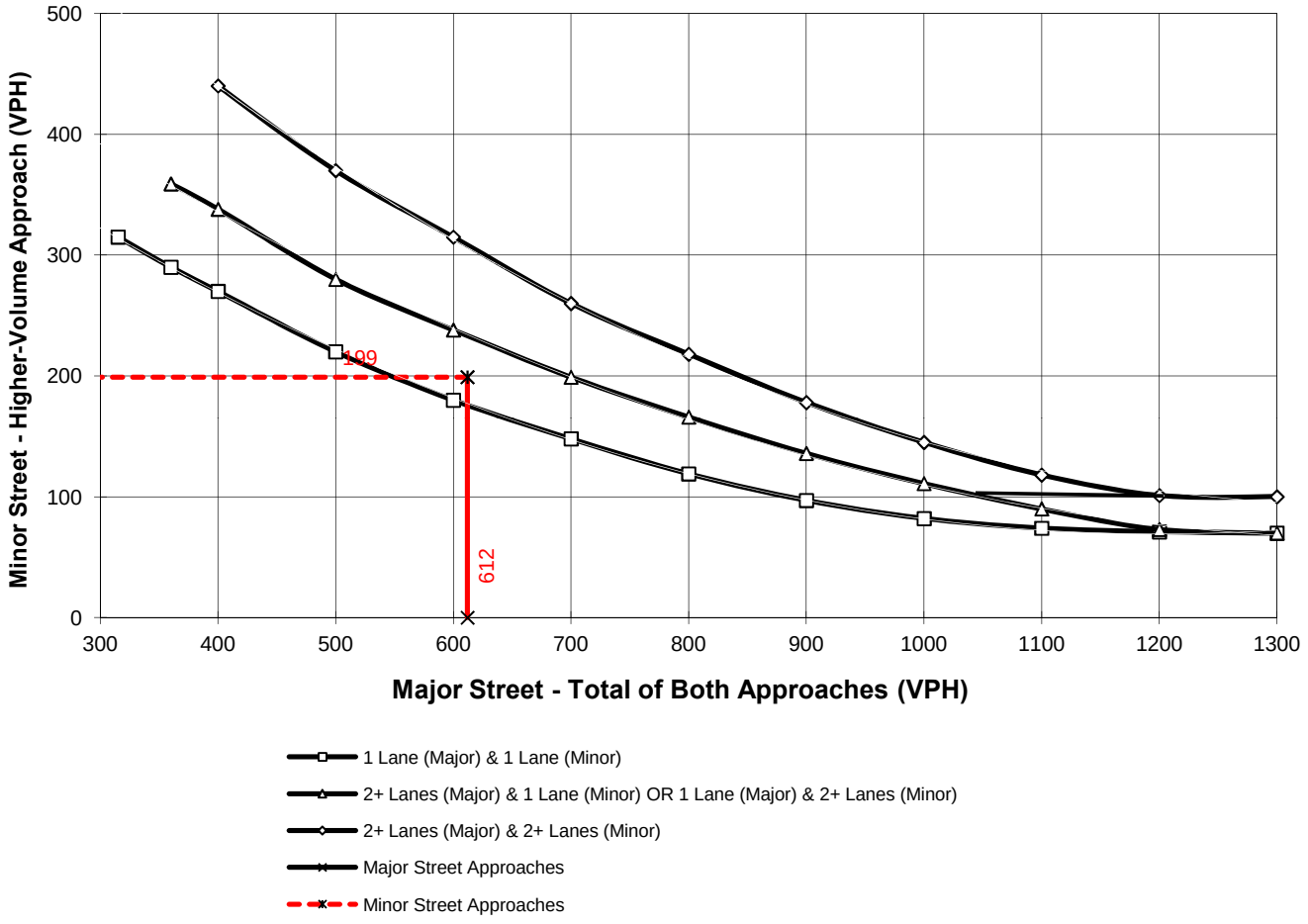
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **EAPC (2017) Conditions - Weekday AM Peak Hour**

Major Street Name = **Cherry Valley Boulevard** Total of Both Approaches (VPH) = **612**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Nancy Street** High Volume Approach (VPH) = **199**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

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APPENDIX 6.5:

EAP (2017) CONDITIONS BASIC FREEWAY SEGMENT ANALYSIS WORKSHEETS

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*North of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*EAP (2017)*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2396*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*925*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*14.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*South of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*EAP (2017)*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2174*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*839*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*12.9*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*North of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*EAP (2017)*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4423*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1691*	pc/h/ln
S	*63.8*	mph
D = v_p / S	*26.5*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*South of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*EAP (2017)*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3642*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1405*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*21.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*North of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*EAP (2017)*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3479*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1324*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*20.4*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*South of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*EAP (2017)*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2809*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1089*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*16.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*North of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*EAP (2017)*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3805*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1468*	pc/h/ln
S	*64.9*	mph
D = v_p / S	*22.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*South of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*EAP (2017)*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3471*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1339*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*20.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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APPENDIX 6.6:

EAPC (2017) CONDITIONS BASIC FREEWAY SEGMENT ANALYSIS WORKSHEETS

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*North of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*EAPC (2017)*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2643*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1015*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*15.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*South of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*EAPC (2017)*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2385*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*920*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*14.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*North of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*EAPC (2017)*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5097*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1939*	pc/h/ln
S	*60.9*	mph
D = v_p / S	*31.8*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*South of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*EAPC (2017)*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3961*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1521*	pc/h/ln
S	*64.8*	mph
D = v_p / S	*23.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*North of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*EAPC (2017)*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4307*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1631*	pc/h/ln
S	*64.2*	mph
D = v_p / S	*25.4*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*South of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*EAPC (2017)*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3264*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1254*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*19.3*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*North of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*EAPC (2017)*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4344*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1660*	pc/h/ln
S	*64.0*	mph
D = v_p / S	*25.9*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*South of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*EAPC (2017)*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3859*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1482*	pc/h/ln
S	*64.9*	mph
D = v_p / S	*22.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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APPENDIX 6.7:

EAP (2017) CONDITIONS FREEWAY RAMP JUNCTION ANALYSIS WORKSHEETS

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	EAP (2017)

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	3	Downstream Adj Ramp	
☐ Yes	☐ On	Ramp Number of Lanes, N	1	☑ Yes	☑ On
☑ No	☐ Off	Acceleration Lane Length, L_A		☐ No	☐ Off
L_{up} =	ft	Deceleration Lane Length L_D	565	L_{down} =	1660 ft
V_u =	veh/h	Freeway Volume, V_F	2396	V_D =	111 veh/h
		Ramp Volume, V_R	333		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	45.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2396	0.92	Level	13	0	0.939	1.00	2774
Ramp	333	0.92	Level	7	0	0.966	1.00	375
UpStream								
DownStream	111	0.92	Level	8	0	0.962	1.00	125

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R= mph (Exhibit 13-11)

S_0= mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.673 using Equation (Exhibit 13-7)

V_{12} = 1990 pc/h

V_3 or V_{av34} 784 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	2774	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	2399	Exhibit 13-8	7050	No
V_R	375	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	1990	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 16.3 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

D_s = 0.332 (Exhibit 13-12)

S_R= 57.4 mph (Exhibit 13-12)

S_0= 71.3 mph (Exhibit 13-12)

S = 60.7 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	EAP (2017)

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 3	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 1660 ft	Acceleration Lane Length, L_A: 410	L_{down} = ft
V_u = 333 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 2063	
	Ramp Volume, V_R: 111	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 45.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2063	0.92	Level	14	0	0.935	1.00	2399
Ramp	111	0.92	Level	8	0	0.962	1.00	125
UpStream	333	0.92	Level	7	0	0.966	1.00	375
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 673.58 (Equation 13-6 or 13-7)

P_{FM} = 0.589 using Equation (Exhibit 13-6)

V_{12} = 1413 pc/h

V_3 or V_{av34} 986 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes, V_{12a} = 1413 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	2524	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	1538	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 14.8 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

M_S = 0.302 (Exibit 13-11)

S_R = 58.0 mph (Exhibit 13-11)

S_0 = 63.3 mph (Exhibit 13-11)

S = 60.0 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	EAP (2017)

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1745 ft
V_u = 89 veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	500
Deceleration Lane Length L_D	
Freeway Volume, V_F	3553
Ramp Volume, V_R	869
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3553	0.92	Level	13	0	0.939	1.00	4113
Ramp	869	0.92	Level	2	0	0.990	1.00	954
UpStream	89	0.92	Level	21	0	0.905	1.00	107
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1257.74 (Equation 13-6 or 13-7)
P_{FM} = 0.591 using Equation (Exhibit 13-6)
V_{12} = 2433 pc/h
V_3 or V_{av34} 1680 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 2433 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	5067	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	3387	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 28.3 (pc/mi/ln)
LOS = D (Exhibit 13-2)

Speed Determination

M_S = 0.391 (Exibit 13-11)
S_R= 56.0 mph (Exhibit 13-11)
S_0= 60.8 mph (Exhibit 13-11)
S = 57.5 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = using Equation (Exhibit 13-7)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)
S_R= mph (Exhibit 13-12)
S_0= mph (Exhibit 13-12)
S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	EAP (2017)

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Downstream Adj Ramp	
☐ Yes	☐ On	☑ Yes	☑ On
☑ No	☐ Off	☐ No	☐ Off
L_{up} =	ft	L_{down} =	1745 ft
V_u =	veh/h	V_D =	869 veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	535
Freeway Volume, V_F	3642
Ramp Volume, V_R	89
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3642	0.92	Level	13	0	0.939	1.00	4216
Ramp	89	0.92	Level	21	0	0.905	1.00	107
UpStream								
DownStream	869	0.92	Level	2	0	0.990	1.00	954

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R= mph (Exhibit 13-11)

S_0= mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.650 using Equation (Exhibit 13-7)

V_{12} = 2777 pc/h

V_3 or V_{av34} 1439 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	4216	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	4109	Exhibit 13-8	7050	No
V_R	107	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2777	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 23.3 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

D_s = 0.308 (Exhibit 13-12)

S_R= 57.9 mph (Exhibit 13-12)

S_0= 69.6 mph (Exhibit 13-12)

S = 61.4 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	EAP (2017)

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	565
Freeway Volume, V_F	3479
Ramp Volume, V_R	806
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1660 ft
V_D = 135 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3479	0.92	Level	10	0	0.952	1.00	3971
Ramp	806	0.92	Level	2	0	0.990	1.00	885
UpStream								
DownStream	135	0.92	Level	18	0	0.917	1.00	160

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = using Equation (Exhibit 13-6)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)
S_R= mph (Exhibit 13-11)
S_0= mph (Exhibit 13-11)
S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = 0.620 using Equation (Exhibit 13-7)
V_{12} = 2798 pc/h
V_3 or V_{av34} 1173 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3971	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	3086	Exhibit 13-8	7050	No
V_R	885	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2798	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$
D_R = 23.2 (pc/mi/ln)
LOS = C (Exhibit 13-2)

Speed Determination

D_s = 0.378 (Exhibit 13-12)
S_R= 56.3 mph (Exhibit 13-12)
S_0= 70.6 mph (Exhibit 13-12)
S = 59.9 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	EAP (2017)

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	3	Downstream Adj Ramp	
☑ Yes	☐ On	Ramp Number of Lanes, N	1	☐ Yes	☐ On
☐ No	☑ Off	Acceleration Lane Length, L_A	410	☑ No	☐ Off
L_{up} =	1660 ft	Deceleration Lane Length L_D		L_{down} =	ft
V_u =	806 veh/h	Freeway Volume, V_F	2674	V_D =	veh/h
		Ramp Volume, V_R	135		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	45.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2674	0.92	Level	13	0	0.939	1.00	3095
Ramp	135	0.92	Level	18	0	0.917	1.00	160
UpStream	806	0.92	Level	2	0	0.990	1.00	885
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 830.01 (Equation 13-6 or 13-7)

P_{FM} = 0.589 using Equation (Exhibit 13-6)

V_{12} = 1823 pc/h

V_3 or V_{av34} 1272 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 1823 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	3255	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	1983	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 18.3 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

M_S = 0.312 (Exibit 13-11)

S_R= 57.8 mph (Exhibit 13-11)

S_0= 62.2 mph (Exhibit 13-11)

S = 59.5 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R= mph (Exhibit 13-12)

S_0= mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	EAP (2017)

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	3	Downstream Adj Ramp	
☑ Yes	☐ On	Ramp Number of Lanes, N	1	☐ Yes	☐ On
☐ No	☑ Off	Acceleration Lane Length, L_A	500	☑ No	☐ Off
L_{up} =	1745 ft	Deceleration Lane Length L_D		L_{down} =	ft
V_u =	135 veh/h	Freeway Volume, V_F	3335	V_D =	veh/h
		Ramp Volume, V_R	470		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	45.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3335	0.92	Level	13	0	0.939	1.00	3861
Ramp	470	0.92	Level	7	0	0.966	1.00	529
UpStream	135	0.92	Level	8	0	0.962	1.00	153
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1112.86 (Equation 13-6 or 13-7)

P_{FM} = 0.591 using Equation (Exhibit 13-6)

V_{12} = 2284 pc/h

V_3 or V_{av34} 1577 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 2284 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	4390	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2813	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 24.0 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

M_S = 0.341 (Exibit 13-11)

S_R= 57.2 mph (Exhibit 13-11)

S_0= 61.1 mph (Exhibit 13-11)

S = 58.5 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R= mph (Exhibit 13-12)

S_0= mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	EAP (2017)

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	3	Downstream Adj Ramp	
☐ Yes	☐ On	Ramp Number of Lanes, N	1	☑ Yes	☑ On
☑ No	☐ Off	Acceleration Lane Length, L_A		☐ No	☐ Off
L_{up} =	ft	Deceleration Lane Length L_D	535	L_{down} =	1745 ft
V_u =	veh/h	Freeway Volume, V_F	3471	V_D =	470 veh/h
		Ramp Volume, V_R	135		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	45.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3471	0.92	Level	13	0	0.939	1.00	4018
Ramp	135	0.92	Level	8	0	0.962	1.00	153
UpStream								
DownStream	470	0.92	Level	7	0	0.966	1.00	529

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R= mph (Exhibit 13-11)

S_0= mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.653 using Equation (Exhibit 13-7)

V_{12} = 2675 pc/h

V_3 or V_{av34} 1343 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	4018	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	3865	Exhibit 13-8	7050	No
V_R	153	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2675	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 22.4 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

D_s = 0.312 (Exhibit 13-12)

S_R= 57.8 mph (Exhibit 13-12)

S_0= 70.0 mph (Exhibit 13-12)

S = 61.4 mph (Exhibit 13-13)

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APPENDIX 6.8:

EAPC (2017) CONDITIONS FREEWAY RAMP JUNCTION ANALYSIS WORKSHEETS

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	EAPC (2017)

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	565
Freeway Volume, V_F	2643
Ramp Volume, V_R	464
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1660 ft
V_D = 206 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2643	0.92	Level	12	0	0.943	1.00	3045
Ramp	464	0.92	Level	5	0	0.976	1.00	517
UpStream								
DownStream	206	0.92	Level	5	0	0.976	1.00	230

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = using Equation (Exhibit 13-6)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)
S_R= mph (Exhibit 13-11)
S_0= mph (Exhibit 13-11)
S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = 0.660 using Equation (Exhibit 13-7)
V_{12} = 2186 pc/h
V_3 or V_{av34} 859 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3045	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	2528	Exhibit 13-8	7050	No
V_R	517	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2186	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$
D_R = 18.0 (pc/mi/ln)
LOS = B (Exhibit 13-2)

Speed Determination

D_s = 0.345 (Exhibit 13-12)
S_R= 57.1 mph (Exhibit 13-12)
S_0= 71.3 mph (Exhibit 13-12)
S = 60.5 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	EAPC (2017)

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	3	Downstream Adj Ramp	
☑ Yes	☐ On	Ramp Number of Lanes, N	1	☐ Yes	☐ On
☐ No	☑ Off	Acceleration Lane Length, L_A	410	☑ No	☐ Off
L_{up} =	1660 ft	Deceleration Lane Length L_D		L_{down} =	ft
V_u =	464 veh/h	Freeway Volume, V_F	2180	V_D =	veh/h
		Ramp Volume, V_R	206		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	45.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2180	0.92	Level	13	0	0.939	1.00	2524
Ramp	206	0.92	Level	5	0	0.976	1.00	230
UpStream	464	0.92	Level	5	0	0.976	1.00	517
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 722.80 (Equation 13-6 or 13-7)

P_{FM} = 0.589 using Equation (Exhibit 13-6)

V_{12} = 1487 pc/h

V_3 or V_{av34} 1037 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 1487 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	2754	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	1717	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 16.2 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

M_S = 0.306 (Exibit 13-11)

S_R= 58.0 mph (Exhibit 13-11)

S_0= 63.1 mph (Exhibit 13-11)

S = 59.8 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R= mph (Exhibit 13-12)

S_0= mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	EAPC (2017)

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp

☑ Yes ☐ On

☐ No ☑ Off

L_{up} = 1745 ft

V_u = 122 veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	500
Deceleration Lane Length L_D	
Freeway Volume, V_F	3840
Ramp Volume, V_R	1257
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3840	0.92	Level	12	0	0.943	1.00	4424
Ramp	1257	0.92	Level	1	0	0.995	1.00	1373
UpStream	122	0.92	Level	16	0	0.926	1.00	143
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1413.96 (Equation 13-6 or 13-7)

P_{FM} = 0.591 using Equation (Exhibit 13-6)

V_{12} = 2617 pc/h

V_3 or V_{av34} 1807 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 2617 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	5797	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	3990	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 32.8 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

M_S = 0.487 (Exibit 13-11)

S_R= 53.8 mph (Exhibit 13-11)

S_0= 60.3 mph (Exhibit 13-11)

S = 55.7 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R= mph (Exhibit 13-12)

S_0= mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	EAPC (2017)

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N: 3	☑ Yes ☑ On
☑ No ☐ Off	Ramp Number of Lanes, N: 1	☐ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A:	L_{down} = 1745 ft
V_u = veh/h	Deceleration Lane Length L_D: 535	V_D = 1257 veh/h
	Freeway Volume, V_F: 3961	
	Ramp Volume, V_R: 122	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 45.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3961	0.92	Level	12	0	0.943	1.00	4564
Ramp	122	0.92	Level	16	0	0.926	1.00	143
UpStream								
DownStream	1257	0.92	Level	1	0	0.995	1.00	1373

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R= mph (Exhibit 13-11)

S_0= mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.639 using Equation (Exhibit 13-7)

V_{12} = 2969 pc/h

V_3 or V_{av34} 1595 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	4564	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	4421	Exhibit 13-8	7050	No
V_R	143	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2969	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 25.0 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

D_s = 0.311 (Exhibit 13-12)

S_R= 57.8 mph (Exhibit 13-12)

S_0= 69.0 mph (Exhibit 13-12)

S = 61.3 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	EAPC (2017)

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	565
Freeway Volume, V_F	4307
Ramp Volume, V_R	1243
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1660 ft
V_D = 199 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	4307	0.92	Level	9	0	0.957	1.00	4892
Ramp	1243	0.92	Level	2	0	0.990	1.00	1365
UpStream								
DownStream	199	0.92	Level	13	0	0.939	1.00	230

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = using Equation (Exhibit 13-6)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)
S_R= mph (Exhibit 13-11)
S_0= mph (Exhibit 13-11)
S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = 0.575 using Equation (Exhibit 13-7)
V_{12} = 3393 pc/h
V_3 or V_{av34} 1499 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	4892	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	3527	Exhibit 13-8	7050	No
V_R	1365	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3393	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$
D_R = 28.3 (pc/mi/ln)
LOS = D (Exhibit 13-2)

Speed Determination

D_s = 0.421 (Exhibit 13-12)
S_R= 55.3 mph (Exhibit 13-12)
S_0= 69.4 mph (Exhibit 13-12)
S = 59.0 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	EAPC (2017)

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	3	Downstream Adj Ramp	
☑ Yes	☐ On	Ramp Number of Lanes, N	1	☐ Yes	☐ On
☐ No	☑ Off	Acceleration Lane Length, L_A	410	☑ No	☐ Off
L_{up} =	1660 ft	Deceleration Lane Length L_D		L_{down} =	ft
V_u =	1243 veh/h	Freeway Volume, V_F	3065	V_D =	veh/h
		Ramp Volume, V_R	199		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	45.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3065	0.92	Level	11	0	0.948	1.00	3515
Ramp	199	0.92	Level	13	0	0.939	1.00	230
UpStream	1243	0.92	Level	2	0	0.990	1.00	1365
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 934.87 (Equation 13-6 or 13-7)

P_{FM} = 0.589 using Equation (Exhibit 13-6)

V_{12} = 2070 pc/h

V_3 or V_{av34} 1445 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 2070 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	3745	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2300	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 20.7 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

M_S = 0.323 (Exibit 13-11)

S_R= 57.6 mph (Exhibit 13-11)

S_0= 61.6 mph (Exhibit 13-11)

S = 59.1 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R= mph (Exhibit 13-12)

S_0= mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	EAPC (2017)

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 3	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 1745 ft	Acceleration Lane Length, L_A: 500	L_{down} = ft
V_u = 241 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 3618	
	Ramp Volume, V_R: 726	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 45.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3618	0.92	Level	13	0	0.939	1.00	4188
Ramp	726	0.92	Level	5	0	0.976	1.00	809
UpStream	241	0.92	Level	5	0	0.976	1.00	269
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1242.76 (Equation 13-6 or 13-7)

P_{FM} = 0.591 using Equation (Exhibit 13-6)

V_{12} = 2477 pc/h

V_3 or V_{av34} 1711 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 2477 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	4997	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	3286	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 27.6 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

M_S = 0.380 (Exibit 13-11)

S_R= 56.3 mph (Exhibit 13-11)

S_0= 60.6 mph (Exhibit 13-11)

S = 57.7 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R= mph (Exhibit 13-12)

S_0= mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	EAPC (2017)

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N: 3	☑ Yes ☑ On
☑ No ☐ Off	Ramp Number of Lanes, N: 1	☐ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A	L_{down} = 1745 ft
V_u = veh/h	Deceleration Lane Length L_D: 535	V_D = 726 veh/h
	Freeway Volume, V_F: 3859	
	Ramp Volume, V_R: 241	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 45.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3859	0.92	Level	12	0	0.943	1.00	4446
Ramp	241	0.92	Level	5	0	0.976	1.00	269
UpStream								
DownStream	726	0.92	Level	5	0	0.976	1.00	809

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R= mph (Exhibit 13-11)

S_0= mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.636 using Equation (Exhibit 13-7)

V_{12} = 2928 pc/h

V_3 or V_{av34} 1518 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	4446	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	4177	Exhibit 13-8	7050	No
V_R	269	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2928	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 24.6 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

D_s = 0.322 (Exhibit 13-12)

S_R= 57.6 mph (Exhibit 13-12)

S_0= 69.3 mph (Exhibit 13-12)

S = 61.1 mph (Exhibit 13-13)

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APPENDIX 6.9:

EAP (2017) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS, WITH RECOMMENDED IMPROVEMENTS

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	588	70	56	89	0	0	0	0	222	1	89
Future Volume (veh/h)	0	588	70	56	89	0	0	0	0	222	1	89
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900	1900	1900	0				1900	1900	1900
Adj Flow Rate, veh/h	0	661	67	63	100	0				249	1	51
Adj No. of Lanes	0	1	0	1	1	0				0	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89				0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Cap, veh/h	0	905	92	101	1246	0				381	2	337
Arrive On Green	0.00	0.53	0.53	0.06	0.66	0.00				0.21	0.21	0.21
Sat Flow, veh/h	0	1697	172	1810	1900	0				1803	7	1596
Grp Volume(v), veh/h	0	0	728	63	100	0				250	0	51
Grp Sat Flow(s),veh/h/ln	0	0	1869	1810	1900	0				1810	0	1596
Q Serve(g_s), s	0.0	0.0	26.8	3.1	1.7	0.0				11.4	0.0	2.3
Cycle Q Clear(g_c), s	0.0	0.0	26.8	3.1	1.7	0.0				11.4	0.0	2.3
Prop In Lane	0.00		0.09	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	0	997	101	1246	0				382	0	337
V/C Ratio(X)	0.00	0.00	0.73	0.63	0.08	0.00				0.65	0.00	0.15
Avail Cap(c_a), veh/h	0	0	997	131	1246	0				382	0	337
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.98	0.98	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	16.1	41.6	5.6	0.0				32.5	0.0	28.9
Incr Delay (d2), s/veh	0.0	0.0	4.7	2.3	0.1	0.0				8.5	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	21.4	2.9	1.7	0.0				10.8	0.0	2.0
LnGrp Delay(d),s/veh	0.0	0.0	20.8	43.9	5.8	0.0				41.0	0.0	29.9
LnGrp LOS			C	D	A					D		C
Approach Vol, veh/h		728			163						301	
Approach Delay, s/veh		20.8			20.5						39.1	
Approach LOS		C			C						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	11.0	54.0		25.0		65.0		
Change Period (Y+Rc), s	6.0	* 6		6.0		6.0		
Max Green Setting (Gmax), s	6.5	* 48		19.0		59.0		
Max Q Clear Time (g_c+I1), s	5.1	28.8		13.4		3.7		
Green Ext Time (p_c), s	0.0	3.2		0.5		0.3		

Intersection Summary	
HCM 2010 Ctrl Delay	25.4
HCM 2010 LOS	C

Notes

LANE SUMMARY

Site: I-10 EB Ramps / Cherry Valley Blvd -EAP AM Peak

I-10 Gateway Job Center TIA (JN:08312)
Existing plus Ambient Growth plus Project (2017)

Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Cherry Valley Blvd													
Lane 1[d]	158	0.0	1686	0.093	100	1.9	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	158	0.0		0.093		1.9	LOS A	0.0	0.0				
North: I-10 SB Off Ramp													
Lane 1[d]	242	0.0	1371	0.177	100	5.7	LOS A	0.9	23.2	Full	500	0.0	0.0
Lane 2	97	0.0	1675	0.058	100	0.4	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	339	0.0		0.177		4.2	LOS A	0.9	23.2				
West: Cherry Valley Blvd													
Lane 1[d]	639	0.0	1235	0.517	100	1.9	LOS A	4.0	99.8	Full	500	0.0	0.0
Lane 2	76	0.0	751	0.101	100	3.3	LOS A	0.5	12.5	Full	500	0.0	0.0
Approach	715	0.0		0.517		2.1	LOS A	4.0	99.8				
Intersection	1212	0.0		0.517		2.6	LOS A	4.0	99.8				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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SIDRA INTERSECTION 6.0.24.4877 www.sidrasolutions.com
Project: U:\UcJobs_08100-08500_08300\08312\SIDRA\I-10 - Cherry Valley Interchange Roundabout-EAP-SIDRA Model.sip6
8003765, 6021005, URBAN CROSSROADS, INC., PLUS / 1PC



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	508	303	0	0	117	445	28	0	87	0	0	0
Future Volume (veh/h)	508	303	0	0	117	445	28	0	87	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.95			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	591	352	0	0	136	261	33	0	65			
Adj No. of Lanes	1	1	0	0	1	1	0	1	0			
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	844	1541	0	0	528	445	30	0	60			
Arrive On Green	0.47	0.81	0.00	0.00	0.28	0.28	0.06	0.00	0.06			
Sat Flow, veh/h	1810	1900	0	0	1900	1600	547	0	1076			
Grp Volume(v), veh/h	591	352	0	0	136	261	98	0	0			
Grp Sat Flow(s),veh/h/ln	1810	1900	0	0	1900	1600	1623	0	0			
Q Serve(g_s), s	23.3	3.9	0.0	0.0	5.0	12.7	5.0	0.0	0.0			
Cycle Q Clear(g_c), s	23.3	3.9	0.0	0.0	5.0	12.7	5.0	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.34		0.66			
Lane Grp Cap(c), veh/h	844	1541	0	0	528	445	90	0	0			
V/C Ratio(X)	0.70	0.23	0.00	0.00	0.26	0.59	1.09	0.00	0.00			
Avail Cap(c_a), veh/h	875	1541	0	0	528	445	90	0	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.64	0.64	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	19.0	2.0	0.0	0.0	25.3	28.0	42.5	0.0	0.0			
Incr Delay (d2), s/veh	1.3	0.2	0.0	0.0	1.2	5.6	120.3	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0			
%ile BackOfQ(95%),veh/ln	6.3	3.7	0.0	0.0	5.0	10.4	9.4	0.0	0.0			
LnGrp Delay(d),s/veh	20.3	2.2	0.0	0.0	26.5	33.6	163.0	0.0	0.0			
LnGrp LOS	C	A			C	C	F					
Approach Vol, veh/h		943			397			98				
Approach Delay, s/veh		13.5			31.2			163.0				
Approach LOS		B			C			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		11.0		79.0			48.0	31.0
Change Period (Y+Rc), s		6.0		6.0			6.0	* 6
Max Green Setting (Gmax), s		5.0		73.0			43.5	* 25
Max Q Clear Time (g_c+I1), s		7.0		5.9			25.3	14.7
Green Ext Time (p_c), s		0.0		2.2			2.1	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	28.6
HCM 2010 LOS	C

Notes

LANE SUMMARY

Site: I-10 WB Ramps / Cherry Valley Blvd -EAP AM Peak

I-10 Gateway Job Center TIA (JN:08312)
Existing plus Ambient Growth plus Project (2017)

Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: I-10 NB Off Ramp													
Lane 1	14	0.0	892	0.016	100	7.4	LOS A	0.1	1.4	Full	500	0.0	0.0
Lane 2[d]	17	0.0	1107	0.016	100	6.5	LOS A	0.1	1.5	Full	500	0.0	0.0
Lane 3	95	0.0	1287	0.073	100	1.8	LOS A	0.3	7.9	Full	500	0.0	0.0
Approach	126	0.0		0.073		3.0	LOS A	0.3	7.9				
East: Cherry Valley Blvd													
Lane 1	127	0.0	507	0.251	100	5.4	LOS A	1.0	26.2	Full	200	0.0	0.0
Lane 2[d]	484	0.0	895	0.540	100	5.5	LOS A	3.8	93.8	Full	200	0.0	0.0
Approach	611	0.0		0.540		5.5	LOS A	3.8	93.8				
West: Cherry Valley Blvd													
Lane 1[d]	552	0.0	1693	0.326	100	5.0	LOS A	0.0	0.0	Short	100	0.0	0.0
Lane 2	329	0.0	1431	0.230	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	882	0.0		0.326		3.1	LOS A	0.0	0.0				
Intersection	1618	0.0		0.540		4.0	LOS A	3.8	93.8				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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SIDRA INTERSECTION 6.0.24.4877 www.sidrasolutions.com
Project: U:\UcJobs_08100-08500_08300\08312\SIDRA\I-10 - Cherry Valley Interchange Roundabout-EAP-SIDRA Model.sip6
8003765, 6021005, URBAN CROSSROADS, INC., PLUS / 1PC

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	18	372	542	11	19	20
Future Vol, veh/h	18	372	542	11	19	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	21	428	623	13	22	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	636	0	-	0	1098	629
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	469	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	957	-	-	-	238	486
Stage 1	-	-	-	-	535	-
Stage 2	-	-	-	-	634	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	957	-	-	-	233	486
Mov Cap-2 Maneuver	-	-	-	-	368	-
Stage 1	-	-	-	-	535	-
Stage 2	-	-	-	-	620	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	957	-	-	-	420
HCM Lane V/C Ratio	0.022	-	-	-	0.107
HCM Control Delay (s)	8.8	-	-	-	14.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	241	52	108	126	0	0	0	0	413	1	452
Future Volume (veh/h)	0	241	52	108	126	0	0	0	0	413	1	452
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900	1900	1900	0				1900	1900	1900
Adj Flow Rate, veh/h	0	256	40	115	134	0				439	1	232
Adj No. of Lanes	0	1	0	1	1	0				0	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Cap, veh/h	0	576	90	143	929	0				682	2	606
Arrive On Green	0.00	0.36	0.36	0.16	0.98	0.00				0.38	0.38	0.38
Sat Flow, veh/h	0	1603	250	1810	1900	0				1806	4	1604
Grp Volume(v), veh/h	0	0	296	115	134	0				440	0	232
Grp Sat Flow(s),veh/h/ln	0	0	1853	1810	1900	0				1810	0	1604
Q Serve(g_s), s	0.0	0.0	11.0	5.5	0.2	0.0				18.0	0.0	9.5
Cycle Q Clear(g_c), s	0.0	0.0	11.0	5.5	0.2	0.0				18.0	0.0	9.5
Prop In Lane	0.00		0.14	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	0	666	143	929	0				684	0	606
V/C Ratio(X)	0.00	0.00	0.44	0.80	0.14	0.00				0.64	0.00	0.38
Avail Cap(c_a), veh/h	0	0	666	251	929	0				684	0	606
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.99	0.99	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	22.0	37.2	0.5	0.0				23.0	0.0	20.4
Incr Delay (d2), s/veh	0.0	0.0	2.1	3.9	0.3	0.0				4.6	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	10.0	5.2	0.3	0.0				14.9	0.0	8.0
LnGrp Delay(d),s/veh	0.0	0.0	24.1	41.0	0.8	0.0				27.6	0.0	22.2
LnGrp LOS			C	D	A					C		C
Approach Vol, veh/h		296			249						672	
Approach Delay, s/veh		24.1			19.4						25.8	
Approach LOS		C			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	11.6	38.4		40.0		50.0		
Change Period (Y+Rc), s	4.5	6.0		6.0		6.0		
Max Green Setting (Gmax), s	12.5	27.0		34.0		44.0		
Max Q Clear Time (g_c+I1), s	7.5	13.0		20.0		2.2		
Green Ext Time (p_c), s	0.0	1.3		2.0		1.5		

Intersection Summary	
HCM 2010 Ctrl Delay	24.1
HCM 2010 LOS	C

LANE SUMMARY

Site: I-10 EB Ramps / Cherry Valley Blvd -EAP PM Peak

I-10 Gateway Job Center TIA (JN:08312)
Existing plus Ambient Growth plus Project (2017)

Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Cherry Valley Blvd													
Lane 1[d]	254	0.0	1686	0.151	100	2.3	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	254	0.0		0.151		2.3	LOS A	0.0	0.0				
North: I-10 SB Off Ramp													
Lane 1[d]	450	0.0	1292	0.348	100	6.4	LOS A	2.2	53.9	Full	500	0.0	0.0
Lane 2	491	0.0	1675	0.293	100	0.4	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	941	0.0		0.348		3.2	LOS A	2.2	53.9				
West: Cherry Valley Blvd													
Lane 1[d]	262	0.0	981	0.267	100	3.0	LOS A	1.7	43.7	Full	500	0.0	0.0
Lane 2	57	0.0	596	0.095	100	5.4	LOS A	0.5	12.2	Full	500	0.0	0.0
Approach	318	0.0		0.267		3.4	LOS A	1.7	43.7				
Intersection	1514	0.0		0.348		3.1	LOS A	2.2	53.9				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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SIDRA INTERSECTION 6



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	205	449	0	0	146	297	87	0	67	0	0	0
Future Volume (veh/h)	205	449	0	0	146	297	87	0	67	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	223	488	0	0	159	183	95	0	47			
Adj No. of Lanes	1	1	0	0	1	1	0	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	402	1372	0	0	823	696	167	0	83			
Arrive On Green	0.22	0.72	0.00	0.00	0.43	0.43	0.14	0.00	0.14			
Sat Flow, veh/h	1810	1900	0	0	1900	1606	1157	0	572			
Grp Volume(v), veh/h	223	488	0	0	159	183	142	0	0			
Grp Sat Flow(s),veh/h/ln	1810	1900	0	0	1900	1606	1729	0	0			
Q Serve(g_s), s	9.8	8.6	0.0	0.0	4.7	6.6	6.9	0.0	0.0			
Cycle Q Clear(g_c), s	9.8	8.6	0.0	0.0	4.7	6.6	6.9	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.67		0.33			
Lane Grp Cap(c), veh/h	402	1372	0	0	823	696	250	0	0			
V/C Ratio(X)	0.55	0.36	0.00	0.00	0.19	0.26	0.57	0.00	0.00			
Avail Cap(c_a), veh/h	432	1372	0	0	823	696	250	0	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.88	0.88	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	31.0	4.7	0.0	0.0	15.8	16.3	35.9	0.0	0.0			
Incr Delay (d2), s/veh	0.5	0.6	0.0	0.0	0.5	0.9	9.1	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	8.4	8.1	0.0	0.0	4.6	5.5	7.0	0.0	0.0			
LnGrp Delay(d),s/veh	31.6	5.3	0.0	0.0	16.3	17.2	45.0	0.0	0.0			
LnGrp LOS	C	A			B	B	D					
Approach Vol, veh/h		711			342			142				
Approach Delay, s/veh		13.5			16.8			45.0				
Approach LOS		B			B			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		19.0		71.0			26.0	45.0
Change Period (Y+Rc), s		6.0		6.0			6.0	* 6
Max Green Setting (Gmax), s		13.0		65.0			21.5	* 39
Max Q Clear Time (g_c+I1), s		8.9		10.6			11.8	8.6
Green Ext Time (p_c), s		0.2		2.2			1.7	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	18.2
HCM 2010 LOS	B

Notes

LANE SUMMARY

Site: I-10 WB Ramps / Cherry Valley Blvd -EAP PM Peak

I-10 Gateway Job Center TIA (JN:08312)
Existing plus Ambient Growth plus Project (2017)

Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: I-10 NB Off Ramp													
Lane 1	43	0.0	955	0.045	100	7.0	LOS A	0.2	4.2	Full	500	0.0	0.0
Lane 2[d]	52	0.0	1151	0.045	100	6.5	LOS A	0.2	4.3	Full	500	0.0	0.0
Lane 3	73	0.0	1185	0.061	100	2.4	LOS A	0.3	7.0	Full	500	0.0	0.0
Approach	168	0.0		0.061		4.9	LOS A	0.3	7.0				
East: Cherry Valley Blvd													
Lane 1	159	0.0	841	0.189	100	1.8	LOS A	0.8	19.8	Full	200	0.0	0.0
Lane 2[d]	323	0.0	1039	0.311	100	2.3	LOS A	1.5	37.2	Full	200	0.0	0.0
Approach	482	0.0		0.311		2.1	LOS A	1.5	37.2				
West: Cherry Valley Blvd													
Lane 1	223	0.0	1370	0.163	100	5.0	LOS A	0.0	0.0	Short	100	0.0	0.0
Lane 2[d]	488	0.0	1693	0.288	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	711	0.0		0.288		1.6	LOS A	0.0	0.0				
Intersection	1361	0.0		0.311		2.2	LOS A	1.5	37.2				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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Project: U:\UcJobs_08100-08500_08300\08312\SIDRA\I-10 - Cherry Valley Interchange Roundabout-EAP-SIDRA Model.sip6
8003765, 6021005, URBAN CROSSROADS, INC., PLUS / 1PC

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	22	494	422	15	28	21
Future Vol, veh/h	22	494	422	15	28	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	25	561	480	17	32	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	497	0	-	0	1099	488
Stage 1	-	-	-	-	488	-
Stage 2	-	-	-	-	611	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1077	-	-	-	237	584
Stage 1	-	-	-	-	621	-
Stage 2	-	-	-	-	546	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1077	-	-	-	231	584
Mov Cap-2 Maneuver	-	-	-	-	366	-
Stage 1	-	-	-	-	621	-
Stage 2	-	-	-	-	533	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	14.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1077	-	-	-	436
HCM Lane V/C Ratio	0.023	-	-	-	0.128
HCM Control Delay (s)	8.4	-	-	-	14.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

APPENDIX 6.10:

EAPC (2017) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS, WITH RECOMMENDED IMPROVEMENTS

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	780	89	142	120	0	0	0	0	332	1	137
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900	1900	1900	0				1900	1900	1900
Adj Flow Rate, veh/h	0	876	88	160	135	0				373	1	112
Adj No. of Lanes	0	1	0	1	1	0				0	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89				0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Cap, veh/h	0	923	93	185	1298	0				391	1	346
Arrive On Green	0.00	0.54	0.54	0.17	1.00	0.00				0.22	0.22	0.22
Sat Flow, veh/h	0	1698	171	1810	1900	0				1805	5	1596
Grp Volume(v), veh/h	0	0	964	160	135	0				374	0	112
Grp Sat Flow(s),veh/h/ln	0	0	1869	1810	1900	0				1810	0	1596
Q Serve(g_s), s	0.0	0.0	58.3	10.3	0.0	0.0				24.5	0.0	7.1
Cycle Q Clear(g_c), s	0.0	0.0	58.3	10.3	0.0	0.0				24.5	0.0	7.1
Prop In Lane	0.00		0.09	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	0	1016	185	1298	0				392	0	346
V/C Ratio(X)	0.00	0.00	0.95	0.86	0.10	0.00				0.95	0.00	0.32
Avail Cap(c_a), veh/h	0	0	1016	188	1298	0				392	0	346
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.90	0.90	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	25.8	49.0	0.0	0.0				46.4	0.0	39.6
Incr Delay (d2), s/veh	0.0	0.0	18.3	27.9	0.1	0.0				33.3	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	35.2	6.5	0.1	0.0				15.9	0.0	3.2
LnGrp Delay(d),s/veh	0.0	0.0	44.1	76.8	0.1	0.0				79.7	0.0	39.8
LnGrp LOS			D	E	A					E		D
Approach Vol, veh/h		964			295						486	
Approach Delay, s/veh		44.1			41.7						70.5	
Approach LOS		D			D						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	16.8	71.2		32.0		88.0		
Change Period (Y+Rc), s	4.5	6.0		6.0		6.0		
Max Green Setting (Gmax), s	12.5	65.0		26.0		82.0		
Max Q Clear Time (g_c+I1), s	12.3	60.3		26.5		2.0		
Green Ext Time (p_c), s	0.0	2.3		0.0		6.4		

Intersection Summary	
HCM 2010 Ctrl Delay	51.1
HCM 2010 LOS	D

LANE SUMMARY

Site: I-10 EB Ramps / Cherry Valley Blvd -2017 WP AM Peak

I-10 Gateway Job Center TIA (JN:08312)
Opening Year Cumulative (2017) With Project

Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Cherry Valley Blvd													
Lane 1[d]	285	0.0	1686	0.169	100	2.7	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	285	0.0		0.169		2.7	LOS A	0.0	0.0				
North: I-10 SB Off Ramp													
Lane 1[d]	362	0.0	1251	0.289	100	6.4	LOS A	1.7	42.4	Full	500	0.0	0.0
Lane 2	149	0.0	1675	0.089	100	0.4	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	511	0.0		0.289		4.7	LOS A	1.7	42.4				
West: Cherry Valley Blvd													
Lane 1[d]	848	0.0	1037	0.818	100	10.6	LOS B	13.8	345.5	Full	500	0.0	0.0
Lane 2	97	0.0	626	0.155	100	5.1	LOS A	0.8	20.2	Full	500	0.0	0.0
Approach	945	0.0		0.818		10.1	LOS B	13.8	345.5				
Intersection	1740	0.0		0.818		7.3	LOS A	13.8	345.5				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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SIDRA INTERSECTION 6.0.24.4877
Project: U:\UcJobs_08100-08500_08300\08312\SIDRA\I-10 - Cherry Valley Interchange Roundabout-2017 WP-SIDRA Model.sip6
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SIDRA INTERSECTION 6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	651	462	0	0	228	703	34	0	133	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	757	537	0	0	265	382	40	0	155			
Adj No. of Lanes	1	1	0	0	1	1	0	1	0			
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	719	1449	0	0	621	524	45	0	176			
Arrive On Green	0.40	0.76	0.00	0.00	0.55	0.55	0.14	0.00	0.14			
Sat Flow, veh/h	1810	1900	0	0	1900	1603	334	0	1293			
Grp Volume(v), veh/h	757	537	0	0	265	382	195	0	0			
Grp Sat Flow(s),veh/h/ln	1810	1900	0	0	1900	1603	1627	0	0			
Q Serve(g_s), s	46.9	11.0	0.0	0.0	9.7	21.2	13.9	0.0	0.0			
Cycle Q Clear(g_c), s	46.9	11.0	0.0	0.0	9.7	21.2	13.9	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.21		0.79			
Lane Grp Cap(c), veh/h	719	1449	0	0	621	524	221	0	0			
V/C Ratio(X)	1.05	0.37	0.00	0.00	0.43	0.73	0.88	0.00	0.00			
Avail Cap(c_a), veh/h	719	1449	0	0	621	524	248	0	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00			
Upstream Filter(I)	0.20	0.20	0.00	0.00	0.77	0.77	1.00	0.00	0.00			
Uniform Delay (d), s/veh	35.6	4.6	0.0	0.0	20.2	22.8	50.1	0.0	0.0			
Incr Delay (d2), s/veh	31.3	0.1	0.0	0.0	1.6	6.7	25.1	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	29.6	5.7	0.0	0.0	5.3	10.3	7.8	0.0	0.0			
LnGrp Delay(d),s/veh	66.9	4.8	0.0	0.0	21.9	29.6	75.2	0.0	0.0			
LnGrp LOS	F	A			C	C	E					
Approach Vol, veh/h		1294			647			195				
Approach Delay, s/veh		41.1			26.4			75.2				
Approach LOS		D			C			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		98.0			51.4	46.6		22.0
Change Period (Y+Rc), s		6.0			4.5	6.0		6.0
Max Green Setting (Gmax), s		90.0			46.9	38.6		18.0
Max Q Clear Time (g_c+I1), s		13.0			48.9	23.2		15.9
Green Ext Time (p_c), s		3.8			0.0	3.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	39.8
HCM 2010 LOS	D

LANE SUMMARY

Site: I-10 WB Ramps / Cherry Valley Blvd -2017 WP AM Peak

I-10 Gateway Job Center TIA (JN:08312)
Opening Year Cumulative (2017) With Project

Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: I-10 NB Off Ramp													
Lane 1	16	0.0	783	0.021	100	8.3	LOS A	0.1	1.9	Full	500	0.0	0.0
Lane 2[d]	22	0.0	1029	0.021	100	7.2	LOS A	0.1	2.0	Full	500	0.0	0.0
Lane 3	145	0.0	1176	0.123	100	2.5	LOS A	0.6	14.7	Full	500	0.0	0.0
Approach	183	0.0		0.123		3.6	LOS A	0.6	14.7				
East: Cherry Valley Blvd													
Lane 1	248	0.0	518	0.479	100	8.7	LOS A	2.8	68.9	Full	200	0.0	0.0
Lane 2[d]	764	0.0	812	0.941	100	25.4	LOS C	19.8	494.5	Full	200	0.0	49.3
Approach	1012	0.0		0.941		21.3	LOS C	19.8	494.5				
West: Cherry Valley Blvd													
Lane 1[d]	708	0.0	1693	0.418	100	5.0	LOS A	0.0	0.0	Short	100	0.0	0.0
Lane 2	502	0.0	1465	0.343	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	1210	0.0		0.418		2.9	LOS A	0.0	0.0				
Intersection	2404	0.0		0.941		10.7	LOS B	19.8	494.5				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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SIDRA INTERSECTION 6.0.24.4877
Project: U:\UcJobs_08100-08500_08300\08312\SIDRA\I-10 - Cherry Valley Interchange Roundabout-2017 WP-SIDRA Model.sip6
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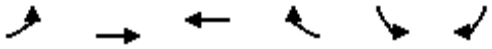

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	55	541	811	43	43	120
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	63	622	932	49	49	138
Adj No. of Lanes	1	1	1	0	0	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	81	1425	1182	62	57	161
Arrive On Green	0.09	1.00	0.66	0.66	0.13	0.13
Sat Flow, veh/h	1810	1900	1789	94	433	1221
Grp Volume(v), veh/h	63	622	0	981	188	0
Grp Sat Flow(s),veh/h/ln	1810	1900	0	1883	1663	0
Q Serve(g_s), s	3.1	0.0	0.0	33.1	9.9	0.0
Cycle Q Clear(g_c), s	3.1	0.0	0.0	33.1	9.9	0.0
Prop In Lane	1.00			0.05	0.26	0.73
Lane Grp Cap(c), veh/h	81	1425	0	1244	219	0
V/C Ratio(X)	0.78	0.44	0.00	0.79	0.86	0.00
Avail Cap(c_a), veh/h	141	1943	0	1695	328	0
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.4	0.0	0.0	10.8	38.1	0.0
Incr Delay (d2), s/veh	5.6	0.9	0.0	5.1	9.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.4	0.0	18.7	5.1	0.0
LnGrp Delay(d),s/veh	46.0	0.9	0.0	15.9	47.4	0.0
LnGrp LOS	D	A		B	D	
Approach Vol, veh/h		685	981		188	
Approach Delay, s/veh		5.1	15.9		47.4	
Approach LOS		A	B		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		103.6		16.4	8.0	95.6		
Change Period (Y+Rc), s		* 6		4.6	4.0	6.0		
Max Green Setting (Gmax), s		* 92		17.7	7.0	80.7		
Max Q Clear Time (g_c+I1), s		2.0		11.9	5.1	35.1		
Green Ext Time (p_c), s		31.3		0.0	0.0	24.2		

Intersection Summary	
HCM 2010 Ctrl Delay	15.1
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	377	64	174	205	0	0	0	0	699	1	613
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900	1900	1900	0				1900	1900	1900
Adj Flow Rate, veh/h	0	401	53	185	218	0				744	1	512
Adj No. of Lanes	0	1	0	1	1	0				0	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Cap, veh/h	0	475	63	218	864	0				766	1	681
Arrive On Green	0.00	0.29	0.29	0.04	0.15	0.00				0.42	0.42	0.42
Sat Flow, veh/h	0	1642	217	1810	1900	0				1807	2	1605
Grp Volume(v), veh/h	0	0	454	185	218	0				745	0	512
Grp Sat Flow(s),veh/h/ln	0	0	1859	1810	1900	0				1810	0	1605
Q Serve(g_s), s	0.0	0.0	22.7	10.1	10.0	0.0				39.9	0.0	26.7
Cycle Q Clear(g_c), s	0.0	0.0	22.7	10.1	10.0	0.0				39.9	0.0	26.7
Prop In Lane	0.00		0.12	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	0	537	218	864	0				767	0	681
V/C Ratio(X)	0.00	0.00	0.84	0.85	0.25	0.00				0.97	0.00	0.75
Avail Cap(c_a), veh/h	0	0	537	218	864	0				786	0	698
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.92	0.92	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	33.1	46.6	27.2	0.0				27.9	0.0	24.1
Incr Delay (d2), s/veh	0.0	0.0	15.0	23.2	0.6	0.0				24.6	0.0	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	13.8	6.5	5.4	0.0				25.1	0.0	12.6
LnGrp Delay(d),s/veh	0.0	0.0	48.1	69.9	27.8	0.0				52.5	0.0	28.1
LnGrp LOS			D	E	C					D		C
Approach Vol, veh/h		454			403						1257	
Approach Delay, s/veh		48.1			47.1						42.6	
Approach LOS		D			D						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	16.4	35.7		47.9		52.1		
Change Period (Y+Rc), s	4.5	6.0		6.0		6.0		
Max Green Setting (Gmax), s	11.9	28.6		43.0		45.0		
Max Q Clear Time (g_c+I1), s	12.1	24.7		41.9		12.0		
Green Ext Time (p_c), s	0.0	1.1		0.1		2.7		

Intersection Summary	
HCM 2010 Ctrl Delay	44.6
HCM 2010 LOS	D

LANE SUMMARY

Site: I-10 EB Ramps / Cherry Valley Blvd -2017 WP PM Peak

I-10 Gateway Job Center TIA (JN:08312)
Opening Year Cumulative (2017) With Project

Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Cherry Valley Blvd													
Lane 1[d]	412	0.0	1686	0.244	100	2.3	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	412	0.0		0.244		2.3	LOS A	0.0	0.0				
North: I-10 SB Off Ramp													
Lane 1[d]	761	0.0	1168	0.652	100	9.5	LOS A	6.7	167.9	Full	500	0.0	0.0
Lane 2	666	0.0	1675	0.398	100	0.4	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	1427	0.0		0.652		5.3	LOS A	6.7	167.9				
West: Cherry Valley Blvd													
Lane 1[d]	410	0.0	616	0.665	100	15.3	LOS B	8.0	199.8	Full	500	0.0	0.0
Lane 2	70	0.0	380	0.183	100	10.2	LOS B	1.1	27.7	Full	500	0.0	0.0
Approach	479	0.0		0.665		14.5	LOS B	8.0	199.8				
Intersection	2318	0.0		0.665		6.7	LOS A	8.0	199.8				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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SIDRA INTERSECTION 6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	299	776	0	0	272	480	107	0	161	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	325	843	0	0	296	336	116	0	149			
Adj No. of Lanes	1	1	0	0	1	1	0	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	526	1321	0	0	646	545	130	0	167			
Arrive On Green	0.29	0.70	0.00	0.00	0.57	0.57	0.18	0.00	0.18			
Sat Flow, veh/h	1810	1900	0	0	1900	1603	736	0	945			
Grp Volume(v), veh/h	325	843	0	0	296	336	265	0	0			
Grp Sat Flow(s),veh/h/ln	1810	1900	0	0	1900	1603	1681	0	0			
Q Serve(g_s), s	14.5	22.7	0.0	0.0	8.5	13.0	14.4	0.0	0.0			
Cycle Q Clear(g_c), s	14.5	22.7	0.0	0.0	8.5	13.0	14.4	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.44		0.56			
Lane Grp Cap(c), veh/h	526	1321	0	0	646	545	297	0	0			
V/C Ratio(X)	0.62	0.64	0.00	0.00	0.46	0.62	0.89	0.00	0.00			
Avail Cap(c_a), veh/h	526	1321	0	0	646	545	413	0	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00			
Upstream Filter(I)	0.40	0.40	0.00	0.00	0.85	0.85	1.00	0.00	0.00			
Uniform Delay (d), s/veh	28.7	7.8	0.0	0.0	15.2	16.1	37.6	0.0	0.0			
Incr Delay (d2), s/veh	0.6	1.0	0.0	0.0	2.0	4.4	13.5	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	7.3	12.1	0.0	0.0	4.7	6.3	7.8	0.0	0.0			
LnGrp Delay(d),s/veh	29.3	8.8	0.0	0.0	17.2	20.5	51.1	0.0	0.0			
LnGrp LOS	C	A			B	C	D					
Approach Vol, veh/h		1168			632			265				
Approach Delay, s/veh		14.5			19.0			51.1				
Approach LOS		B			B			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		77.5			39.7	37.8		22.5
Change Period (Y+Rc), s		6.0			6.0	* 6		6.0
Max Green Setting (Gmax), s		65.0			27.2	* 32		23.0
Max Q Clear Time (g_c+I1), s		24.7			16.5	15.0		16.4
Green Ext Time (p_c), s		4.7			3.4	1.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

LANE SUMMARY

Site: I-10 WB Ramps / Cherry Valley Blvd -2017 WP PM Peak

I-10 Gateway Job Center TIA (JN:08312)
Opening Year Cumulative (2017) With Project

Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: I-10 NB Off Ramp													
Lane 1	51	0.0	757	0.067	100	9.0	LOS A	0.3	6.8	Full	500	0.0	0.0
Lane 2[d]	66	0.0	986	0.067	100	8.0	LOS A	0.3	7.3	Full	500	0.0	0.0
Lane 3	175	0.0	950	0.184	100	5.0	LOS A	1.1	26.6	Full	500	0.0	0.0
Approach	292	0.0		0.184		6.4	LOS A	1.1	26.6				
East: Cherry Valley Blvd													
Lane 1	296	0.0	814	0.363	100	2.7	LOS A	1.8	44.0	Full	200	0.0	0.0
Lane 2[d]	522	0.0	967	0.540	100	4.0	LOS A	3.6	89.2	Full	200	0.0	0.0
Approach	817	0.0		0.540		3.5	LOS A	3.6	89.2				
West: Cherry Valley Blvd													
Lane 1	325	0.0	1325	0.245	100	5.0	LOS A	0.0	0.0	Short	100	0.0	0.0
Lane 2[d]	843	0.0	1693	0.498	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	1168	0.0		0.498		1.4	LOS A	0.0	0.0				
Intersection	2278	0.0		0.540		2.8	LOS A	3.6	89.2				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Processed: Wednesday, September 10, 2014 12:36:50 PM
SIDRA INTERSECTION 6.0.24.4877
Project: U:\UcJobs_08100-08500_08300\08312\SIDRA\I-10 - Cherry Valley Interchange Roundabout-2017 WP-SIDRA Model.sip6
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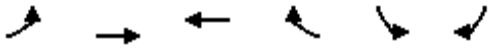
SIDRA INTERSECTION 6



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	135	803	661	48	68	90
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	153	912	751	38	77	90
Adj No. of Lanes	1	1	1	0	0	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	190	1419	1063	54	96	112
Arrive On Green	0.10	0.75	0.59	0.59	0.12	0.12
Sat Flow, veh/h	1810	1900	1793	91	774	905
Grp Volume(v), veh/h	153	912	0	789	168	0
Grp Sat Flow(s),veh/h/ln	1810	1900	0	1884	1689	0
Q Serve(g_s), s	6.8	19.1	0.0	24.0	7.9	0.0
Cycle Q Clear(g_c), s	6.8	19.1	0.0	24.0	7.9	0.0
Prop In Lane	1.00			0.05	0.46	0.54
Lane Grp Cap(c), veh/h	190	1419	0	1117	209	0
V/C Ratio(X)	0.81	0.64	0.00	0.71	0.80	0.00
Avail Cap(c_a), veh/h	332	1859	0	1405	359	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	35.8	5.0	0.0	11.7	34.9	0.0
Incr Delay (d2), s/veh	2.3	1.7	0.0	3.8	2.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	10.5	0.0	13.4	3.8	0.0
LnGrp Delay(d),s/veh	38.1	6.7	0.0	15.4	37.6	0.0
LnGrp LOS	D	A		B	D	
Approach Vol, veh/h		1065	789		168	
Approach Delay, s/veh		11.2	15.4		37.6	
Approach LOS		B	B		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		93.3		14.7	12.6	80.7		
Change Period (Y+Rc), s		* 6		4.6	4.0	6.0		
Max Green Setting (Gmax), s		* 80		17.4	15.0	61.0		
Max Q Clear Time (g_c+I1), s		21.1		9.9	8.8	26.0		
Green Ext Time (p_c), s		30.2		0.0	0.1	22.5		

Intersection Summary	
HCM 2010 Ctrl Delay	15.1
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX 6.11:

EAP (2017) CONDITIONS FREEWAY OFF-RAMP QUEUING ANALYSIS WORKSHEETS, WITH RECOMMENDED IMPROVEMENTS

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Intersection: 1: I-10 EB Ramps & Cherry Valley Blvd

Movement	EB	WB	WB	SB	SB
Directions Served	TR	L	T	LT	R
Maximum Queue (ft)	150	103	49	251	102
Average Queue (ft)	125	44	13	119	33
95th Queue (ft)	162	89	40	202	74
Link Distance (ft)	66		600	809	
Upstream Blk Time (%)	26				
Queuing Penalty (veh)	170				
Storage Bay Dist (ft)		150			250
Storage Blk Time (%)		0		1	
Queuing Penalty (veh)		0		1	

Intersection: 2: I-10 WB Ramps & Cherry Valley Blvd

Movement	EB	EB	WB	WB	NB
Directions Served	L	T	T	R	LTR
Maximum Queue (ft)	284	164	116	252	149
Average Queue (ft)	133	20	56	131	53
95th Queue (ft)	245	141	101	219	106
Link Distance (ft)		600	544		562
Upstream Blk Time (%)		0			
Queuing Penalty (veh)		0			
Storage Bay Dist (ft)	250			250	
Storage Blk Time (%)	1			0	
Queuing Penalty (veh)	5			0	

Intersection: 3: Cherry Valley Blvd & Calimesa Blvd

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	31	51
Average Queue (ft)	7	22
95th Queue (ft)	29	44
Link Distance (ft)		515
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	300	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: I-10 EB Ramps & Cherry Valley Blvd

Movement	EB	WB	WB	SB	SB
Directions Served	TR	L	T	LT	R
Maximum Queue (ft)	136	136	106	366	274
Average Queue (ft)	102	69	39	177	102
95th Queue (ft)	154	121	86	295	206
Link Distance (ft)	66		600	809	
Upstream Blk Time (%)	22				
Queuing Penalty (veh)	65				
Storage Bay Dist (ft)		150			250
Storage Blk Time (%)		0		2	0
Queuing Penalty (veh)		1		8	0

Intersection: 2: I-10 WB Ramps & Cherry Valley Blvd

Movement	EB	EB	WB	WB	NB
Directions Served	L	T	T	R	LTR
Maximum Queue (ft)	203	84	118	119	209
Average Queue (ft)	92	20	47	52	89
95th Queue (ft)	166	58	97	92	169
Link Distance (ft)		600	544		562
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	250			250	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Cherry Valley Blvd & Calimesa Blvd

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	35	60
Average Queue (ft)	7	28
95th Queue (ft)	29	51
Link Distance (ft)		515
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	300	
Storage Blk Time (%)		
Queuing Penalty (veh)		

APPENDIX 6.12:

EAPC (2017) CONDITIONS FREEWAY OFF-RAMP QUEUING ANALYSIS WORKSHEETS, WITH RECOMMENDED IMPROVEMENTS

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Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	976	160	135	374	154
v/c Ratio	0.95	0.88	0.10	0.96	0.35
Control Delay	45.6	68.2	9.2	84.7	10.2
Queue Delay	41.1	0.0	0.0	0.0	0.0
Total Delay	86.7	68.2	9.2	84.7	10.2
Queue Length 50th (ft)	691	125	84	288	7
Queue Length 95th (ft)	#987	#241	121	#470	62
Internal Link Dist (ft)	392		570	754	
Turn Bay Length (ft)		200			200
Base Capacity (vph)	1023	188	1302	392	448
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	132	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.10	0.85	0.10	0.95	0.34

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	WBR	NBT
Lane Group Flow (vph)	757	537	265	817	195
v/c Ratio	0.92	0.35	0.43	1.12	0.75
Control Delay	35.3	0.7	31.2	90.5	34.7
Queue Delay	9.3	0.5	11.4	0.3	0.1
Total Delay	44.6	1.2	42.5	90.8	34.8
Queue Length 50th (ft)	449	2	166	~543	44
Queue Length 95th (ft)	m#714	m41	183	#784	105
Internal Link Dist (ft)		570	150		538
Turn Bay Length (ft)	200				
Base Capacity (vph)	825	1551	611	729	361
Starvation Cap Reductn	60	578	314	34	0
Spillback Cap Reductn	0	122	0	0	8
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.99	0.55	0.89	1.18	0.55

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	469	185	218	745	652
v/c Ratio	0.86	0.89	0.25	0.97	0.69
Control Delay	50.0	86.6	31.7	54.3	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	50.0	86.6	31.7	54.3	9.4
Queue Length 50th (ft)	279	128	118	449	61
Queue Length 95th (ft)	#460	#249	175	#699	191
Internal Link Dist (ft)	392		570	754	
Turn Bay Length (ft)		200			200
Base Capacity (vph)	547	214	861	777	954
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.86	0.86	0.25	0.96	0.68

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	WBR	NBT
Lane Group Flow (vph)	325	843	296	522	291
v/c Ratio	0.63	0.62	0.40	0.57	0.82
Control Delay	22.7	2.3	21.3	2.8	44.9
Queue Delay	0.0	0.4	2.1	0.6	0.0
Total Delay	22.7	2.7	23.3	3.3	44.9
Queue Length 50th (ft)	157	9	108	1	121
Queue Length 95th (ft)	m172	m134	183	21	201
Internal Link Dist (ft)		570	150		538
Turn Bay Length (ft)	200				
Base Capacity (vph)	518	1364	733	923	461
Starvation Cap Reductn	0	159	297	135	0
Spillback Cap Reductn	0	64	0	0	2
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.63	0.70	0.68	0.66	0.63

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

APPENDIX 7.1:

HORIZON YEAR (2035) WITHOUT PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Intersection	
Int Delay, s/veh	3393.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	1510	244	148	414	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	1641	265	161	450	0	0	0	0

Major/Minor	Major1			Major2		
Conflicting Flow All	450	0	0	1907	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	1121	-	-	316	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	1121	-	-	316	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB
HCM Control Delay, s	0	7.3
HCM LOS		

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1121	-	-	316	-	-	29
HCM Lane V/C Ratio	-	-	-	0.509	-	-	29.873
HCM Control Delay (s)	0	-	-	27.6	0	-	$ 13249
HCM Lane LOS	A	-	-	D	A	-	F
HCM 95th %tile Q(veh)	0	-	-	2.7	-	-	107.7

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	266	1	530
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	0	0	0
Mvmt Flow	289	1	576

Major/Minor	Minor2		
Conflicting Flow All	2546	2679	450
Stage 1	772	772	-
Stage 2	1774	1907	-
Critical Hdwy	6.4	6.5	6.2
Critical Hdwy Stg 1	5.4	5.5	-
Critical Hdwy Stg 2	5.4	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	~ 30	22	613
Stage 1	459	412	-
Stage 2	~ 151	118	-
Platoon blocked, %			
Mov Cap-1 Maneuver	~ 10	0	613
Mov Cap-2 Maneuver	~ 10	0	-
Stage 1	~ 147	0	-
Stage 2	~ 151	0	-

Approach	SB
HCM Control Delay, s	$ 13249
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	3377

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	845	931	0	0	283	724	279	0	284
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	918	1012	0	0	308	787	303	0	309

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	1095	0	0	1012	0	0	3550	3944	1012
Stage 1	-	-	-	-	-	-	2849	2849	-
Stage 2	-	-	-	-	-	-	701	1095	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	~ 645	-	-	693	-	-	~ 7	3	~ 293
Stage 1	-	-	-	-	-	-	~ 42	38	-
Stage 2	-	-	-	-	-	-	496	292	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	~ 645	-	-	693	-	-	~ 7	0	~ 293
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 7	0	-
Stage 1	-	-	-	-	-	-	~ 42	0	-
Stage 2	-	-	-	-	-	-	496	0	-

Approach	EB	WB	NB
HCM Control Delay, s	104	0	$ 19741.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	14	~ 645	-	-	693	-	-
HCM Lane V/C Ratio	43.711	1.424	-	-	-	-	-
HCM Control Delay (s)	$ 19741.8	218.6	0	-	0	-	-
HCM Lane LOS	F	F	A	-	A	-	-
HCM 95th %tile Q(veh)	77.7	42.3	-	-	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	0

Major/Minor
Conflicting Flow All
Stage 1
Stage 2
Critical Hdwy
Critical Hdwy Stg 1
Critical Hdwy Stg 2
Follow-up Hdwy
Pot Cap-1 Maneuver
Stage 1
Stage 2
Platoon blocked, %
Mov Cap-1 Maneuver
Mov Cap-2 Maneuver
Stage 1
Stage 2

Approach
HCM Control Delay, s
HCM LOS

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	207.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	129	1086	875	285	47	132
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	140	1180	951	310	51	143

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1261	0	-	0	2567	1106
Stage 1	-	-	-	-	1106	-
Stage 2	-	-	-	-	1461	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	558	-	-	-	~ 29	258
Stage 1	-	-	-	-	320	-
Stage 2	-	-	-	-	215	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	558	-	-	-	~ 8	258
Mov Cap-2 Maneuver	-	-	-	-	~ 8	-
Stage 1	-	-	-	-	320	-
Stage 2	-	-	-	-	58	-

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	$ 2953.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	558	-	-	-	28
HCM Lane V/C Ratio	0.251	-	-	-	6.949
HCM Control Delay (s)	13.6	0	-	-	$ 2953.1
HCM Lane LOS	B	A	-	-	F
HCM 95th %tile Q(veh)	1	-	-	-	23.9

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	299.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	35	785	142	20	898	2	122	14	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	38	853	154	22	976	2	133	15	18

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	978	0	0	1008	0	0	2091	2029	930
Stage 1	-	-	-	-	-	-	1007	1007	-
Stage 2	-	-	-	-	-	-	1084	1022	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	714	-	-	695	-	-	~ 39	58	327
Stage 1	-	-	-	-	-	-	293	321	-
Stage 2	-	-	-	-	-	-	265	316	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	714	-	-	695	-	-	~ 15	47	327
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 15	47	-
Stage 1	-	-	-	-	-	-	256	281	-
Stage 2	-	-	-	-	-	-	149	294	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	0.2	$ 4124.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	18	714	-	-	695	-	-	145
HCM Lane V/C Ratio	9.239	0.053	-	-	0.031	-	-	0.9
HCM Control Delay (s)	$ 4124.7	10.3	0	-	10.3	0	-	110
HCM Lane LOS	F	B	A	-	B	A	-	F
HCM 95th %tile Q(veh)	21.4	0.2	-	-	0.1	-	-	6.1

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	3	16	101
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	0	0	0
Mvmt Flow	3	17	110

Major/Minor	Minor2		
Conflicting Flow All	2044	2105	977
Stage 1	1021	1021	-
Stage 2	1023	1084	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	42	52	307
Stage 1	288	316	-
Stage 2	287	296	-
Platoon blocked, %			
Mov Cap-1 Maneuver	26	42	307
Mov Cap-2 Maneuver	26	42	-
Stage 1	252	294	-
Stage 2	224	259	-

Approach	SB
HCM Control Delay, s	110
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Intersection Delay, s/veh	55.3
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	39	710	82	0	64	870	18	0	53	25	142
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	42	772	89	0	70	946	20	0	58	27	154
Number of Lanes	0	0	1	1	0	0	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	2
HCM Control Delay	60.3	65	17.1
HCM LOS	F	F	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	24%	5%	0%	7%	0%	15%
Vol Thru, %	11%	95%	0%	93%	0%	27%
Vol Right, %	65%	0%	100%	0%	100%	58%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	220	749	82	934	18	120
LT Vol	25	710	0	870	0	32
Through Vol	142	0	82	0	18	70
RT Vol	53	39	0	64	0	18
Lane Flow Rate	239	814	89	1015	20	130
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.484	1	0.155	1	0.034	0.287
Departure Headway (Hd)	7.397	6.979	6.252	7.051	6.315	7.928
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	490	529	577	528	569	457
Service Time	5.397	4.689	3.962	4.763	4.027	5.928
HCM Lane V/C Ratio	0.488	1.539	0.154	1.922	0.035	0.284
HCM Control Delay	17.1	65.8	10.1	66.1	9.2	14.1
HCM Lane LOS	C	F	B	F	A	B
HCM 95th-tile Q	2.6	13.9	0.5	13.8	0.1	1.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	18	32	70
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0
Mvmt Flow	0	20	35	76
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	14.1
HCM LOS	B

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	71	473	337	51	655	31	335	233	47	40	335	111
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	77	514	229	55	712	32	364	253	49	43	364	103
Adj No. of Lanes	1	1	1	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	80	578	483	71	533	24	387	803	674	55	454	378
Arrive On Green	0.04	0.30	0.30	0.04	0.30	0.30	0.21	0.42	0.42	0.03	0.24	0.24
Sat Flow, veh/h	1810	1900	1588	1810	1803	81	1810	1900	1596	1810	1900	1581
Grp Volume(v), veh/h	77	514	229	55	0	744	364	253	49	43	364	103
Grp Sat Flow(s),veh/h/ln	1810	1900	1588	1810	0	1884	1810	1900	1596	1810	1900	1581
Q Serve(g_s), s	3.8	23.3	10.6	2.7	0.0	26.7	17.9	8.0	1.7	2.1	16.3	4.8
Cycle Q Clear(g_c), s	3.8	23.3	10.6	2.7	0.0	26.7	17.9	8.0	1.7	2.1	16.3	4.8
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	80	578	483	71	0	557	387	803	674	55	454	378
V/C Ratio(X)	0.96	0.89	0.47	0.78	0.00	1.33	0.94	0.32	0.07	0.79	0.80	0.27
Avail Cap(c_a), veh/h	80	578	483	80	0	557	387	876	736	80	554	461
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.0	29.9	25.5	43.0	0.0	31.8	34.9	17.4	15.5	43.5	32.3	28.0
Incr Delay (d2), s/veh	86.8	16.0	1.0	29.0	0.0	162.6	30.6	1.0	0.2	15.4	13.9	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	14.7	4.8	1.9	0.0	39.0	12.2	4.4	0.8	1.3	10.2	2.3
LnGrp Delay(d),s/veh	129.9	45.9	26.5	72.0	0.0	194.4	65.5	18.4	15.7	58.9	46.3	29.7
LnGrp LOS	F	D	C	E		F	E	B	B	E	D	C
Approach Vol, veh/h		820			799			666			510	
Approach Delay, s/veh		48.4			186.0			44.0			44.0	
Approach LOS		D			F			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	48.6	7.2	32.8	23.0	32.0	8.0	32.0
Change Period (Y+Rc), s	3.7	5.7	3.7	5.3	3.7	* 5.7	4.0	* 5.3
Max Green Setting (Gmax), s	4.0	41.6	4.0	27.0	19.3	* 26	4.0	* 27
Max Q Clear Time (g_c+I1), s	4.1	10.0	4.7	25.3	19.9	18.3	5.8	28.7
Green Ext Time (p_c), s	0.0	5.1	0.0	1.4	0.0	2.9	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	85.9
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	14498.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	1326	301	88	924	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	1411	320	94	983	0	0	0	0

Major/Minor	Major1			Major2		
Conflicting Flow All	983	0	0	1731	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	711	-	-	369	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	711	-	-	369	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB
HCM Control Delay, s	0	1.6
HCM LOS		

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	711	-	-	369	-	-	23
HCM Lane V/C Ratio	-	-	-	0.254	-	-	81.036
HCM Control Delay (s)	0	-	-	18	0	-	$ 36335.5
HCM Lane LOS	A	-	-	C	A	-	F
HCM 95th %tile Q(veh)	0	-	-	1	-	-	233.1

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	716	0	1036
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	94	94	94
Heavy Vehicles, %	0	0	0
Mvmt Flow	762	0	1102

Major/Minor	Minor2		
Conflicting Flow All	2741	2901	983
Stage 1	1170	1170	-
Stage 2	1571	1731	-
Critical Hdwy	6.4	6.5	6.2
Critical Hdwy Stg 1	5.4	5.5	-
Critical Hdwy Stg 2	5.4	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	~ 23	16	~ 305
Stage 1	~ 298	269	-
Stage 2	~ 190	144	-
Platoon blocked, %			
Mov Cap-1 Maneuver	~ 10	0	~ 305
Mov Cap-2 Maneuver	~ 10	0	-
Stage 1	~ 131	0	-
Stage 2	~ 190	0	-

Approach	SB
HCM Control Delay, s	$ 36335.5
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	12242.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	754	1289	0	0	456	442	556	0	313
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	820	1401	0	0	496	480	604	0	340

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	976	0	0	1401	0	0	3776	4016	1401
Stage 1	-	-	-	-	-	-	3040	3040	-
Stage 2	-	-	-	-	-	-	736	976	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	~ 715	-	-	494	-	-	~ 5	3	~ 174
Stage 1	-	-	-	-	-	-	~ 34	30	-
Stage 2	-	-	-	-	-	-	~ 477	332	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	~ 715	-	-	494	-	-	~ 5	0	~ 174
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 5	0	-
Stage 1	-	-	-	-	-	-	~ 34	0	-
Stage 2	-	-	-	-	-	-	~ 477	0	-

Approach	EB	WB	NB
HCM Control Delay, s	38.2	0	$ 53586.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	8	~ 715	-	-	494	-	-
HCM Lane V/C Ratio	118.071	1.146	-	-	-	-	-
HCM Control Delay (s)	$ 53586.8	103.6	0	-	0	-	-
HCM Lane LOS	F	F	A	-	A	-	-
HCM 95th %tile Q(veh)	120	25.2	-	-	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	0

Major/Minor
Conflicting Flow All
Stage 1
Stage 2
Critical Hdwy
Critical Hdwy Stg 1
Critical Hdwy Stg 2
Follow-up Hdwy
Pot Cap-1 Maneuver
Stage 1
Stage 2
Platoon blocked, %
Mov Cap-1 Maneuver
Mov Cap-2 Maneuver
Stage 1
Stage 2

Approach
HCM Control Delay, s
HCM LOS

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	591.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	211	1391	799	338	187	99
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	229	1512	868	367	203	108

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1236	0	-	0	3023	1052
Stage 1	-	-	-	-	1052	-
Stage 2	-	-	-	-	1971	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	571	-	-	-	~ 15	278
Stage 1	-	-	-	-	339	-
Stage 2	-	-	-	-	~ 120	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	571	-	-	-	~ 15	278
Mov Cap-2 Maneuver	-	-	-	-	~ 15	-
Stage 1	-	-	-	-	339	-
Stage 2	-	-	-	-	~ 120	-

Approach	EB	WB	SB
HCM Control Delay, s	2	0	$ 6248.5
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	571	-	-	-	22
HCM Lane V/C Ratio	0.402	-	-	-	14.13
HCM Control Delay (s)	15.5	0	-	-	$ 6248.5
HCM Lane LOS	C	A	-	-	F
HCM 95th %tile Q(veh)	1.9	-	-	-	39.1

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	1167.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	104	1075	84	9	1040	7	206	1	31
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	108	1120	88	9	1083	7	215	1	32

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	1091	0	0	1207	0	0	2510	2489	1164
Stage 1	-	-	-	-	-	-	1380	1380	-
Stage 2	-	-	-	-	-	-	1130	1109	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	647	-	-	585	-	-	~ 19	30	239
Stage 1	-	-	-	-	-	-	~ 180	214	-
Stage 2	-	-	-	-	-	-	250	288	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	647	-	-	585	-	-	~ 8	14	239
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 8	14	-
Stage 1	-	-	-	-	-	-	~ 86	102	-
Stage 2	-	-	-	-	-	-	~ 197	277	-

Approach	EB	WB	NB
HCM Control Delay, s	1	0.1	$ 12752.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	9	647	-	-	585	-	-	65
HCM Lane V/C Ratio	27.546	0.167	-	-	0.016	-	-	0.801
HCM Control Delay (s)	$ 12752.4	11.7	0	-	11.3	0	-	163.9
HCM Lane LOS	F	B	A	-	B	A	-	F
HCM 95th %tile Q(veh)	32.7	0.6	-	-	0	-	-	3.7

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	4	2	44
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	96	96	96
Heavy Vehicles, %	0	0	0
Mvmt Flow	4	2	46

Major/Minor	Minor2		
Conflicting Flow All	2503	2530	1087
Stage 1	1106	1106	-
Stage 2	1397	1424	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	20	28	265
Stage 1	258	289	-
Stage 2	176	204	-
Platoon blocked, %			
Mov Cap-1 Maneuver	9	13	265
Mov Cap-2 Maneuver	9	13	-
Stage 1	123	278	-
Stage 2	72	98	-

Approach	SB
HCM Control Delay, s	163.9
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Intersection Delay, s/veh	56.1
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	42	1079	64	0	33	1004	15	0	62	58	34
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	46	1173	70	0	36	1091	16	0	67	63	37
Number of Lanes	0	0	1	1	0	0	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	2
HCM Control Delay	59	61.4	13.9
HCM LOS	F	F	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	40%	4%	0%	3%	0%	21%
Vol Thru, %	38%	96%	0%	97%	0%	39%
Vol Right, %	22%	0%	100%	0%	100%	39%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	154	1121	64	1037	15	56
LT Vol	58	1079	0	1004	0	22
Through Vol	34	0	64	0	15	22
RT Vol	62	42	0	33	0	12
Lane Flow Rate	167	1218	70	1127	16	61
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.337	1	0.106	1	0.025	0.129
Departure Headway (Hd)	7.252	6.186	5.467	6.238	5.522	7.652
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	497	597	655	586	646	470
Service Time	5.272	3.928	3.209	3.987	3.271	5.673
HCM Lane V/C Ratio	0.336	2.04	0.107	1.923	0.025	0.13
HCM Control Delay	13.9	61.9	8.9	62.2	8.4	11.8
HCM Lane LOS	B	F	A	F	A	B
HCM 95th-tile Q	1.5	14.7	0.4	14.7	0.1	0.4

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	12	22	22
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0
Mvmt Flow	0	13	24	24
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	11.8
HCM LOS	B

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	108	670	410	70	626	29	364	433	87	45	290	101
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	115	713	362	74	666	20	387	461	90	48	309	75
Adj No. of Lanes	1	1	1	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	94	666	558	94	636	19	195	618	517	61	477	397
Arrive On Green	0.05	0.35	0.35	0.05	0.35	0.35	0.11	0.33	0.33	0.03	0.25	0.25
Sat Flow, veh/h	1810	1900	1592	1810	1834	55	1810	1900	1590	1810	1900	1583
Grp Volume(v), veh/h	115	713	362	74	0	686	387	461	90	48	309	75
Grp Sat Flow(s),veh/h/ln	1810	1900	1592	1810	0	1889	1810	1900	1590	1810	1900	1583
Q Serve(g_s), s	4.0	27.0	14.7	3.1	0.0	26.7	8.3	16.7	3.1	2.0	11.2	2.9
Cycle Q Clear(g_c), s	4.0	27.0	14.7	3.1	0.0	26.7	8.3	16.7	3.1	2.0	11.2	2.9
Prop In Lane	1.00		1.00	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	94	666	558	94	0	655	195	618	517	61	477	397
V/C Ratio(X)	1.22	1.07	0.65	0.79	0.00	1.05	1.98	0.75	0.17	0.79	0.65	0.19
Avail Cap(c_a), veh/h	94	666	558	94	0	655	195	780	652	94	673	561
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.5	25.0	21.0	36.1	0.0	25.2	34.4	23.2	18.6	36.9	25.8	22.7
Incr Delay (d2), s/veh	164.7	55.3	3.0	32.3	0.0	48.2	460.9	8.0	0.7	10.1	6.7	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	24.3	6.9	2.4	0.0	22.6	29.1	10.1	1.5	1.2	6.7	1.4
LnGrp Delay(d),s/veh	201.2	80.3	24.0	68.4	0.0	73.3	495.3	31.2	19.3	47.0	32.5	23.7
LnGrp LOS	F	F	C	E		F	F	C	B	D	C	C
Approach Vol, veh/h		1190			760			938			432	
Approach Delay, s/veh		74.8			72.9			221.5			32.6	
Approach LOS		E			E			F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.3	38.7	7.7	32.3	12.0	33.0	8.0	32.0
Change Period (Y+Rc), s	3.7	5.7	3.7	5.3	3.7	* 5.7	4.0	* 5.3
Max Green Setting (Gmax), s	4.0	31.6	4.0	27.0	8.3	* 27	4.0	* 27
Max Q Clear Time (g_c+I1), s	4.0	18.7	5.1	29.0	10.3	13.2	6.0	28.7
Green Ext Time (p_c), s	0.0	5.0	0.0	0.0	0.0	5.2	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	110.3
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX 7.2:

HORIZON YEAR (2035) WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Intersection	
Int Delay, s/veh	12171.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	1510	244	183	414	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	1641	265	199	450	0	0	0	0

Major/Minor	Major1			Major2		
Conflicting Flow All	450	0	0	1907	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	1121	-	-	316	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	1121	-	-	316	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB
HCM Control Delay, s	0	10.4
HCM LOS		

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1121	-	-	316	-	-	10
HCM Lane V/C Ratio	-	-	-	0.629	-	-	97.391
HCM Control Delay (s)	0	-	-	33.9	0	-	$ 44101.8
HCM Lane LOS	A	-	-	D	A	-	F
HCM 95th %tile Q(veh)	0	-	-	4	-	-	123.4

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	365	1	530
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	0	0	0
Mvmt Flow	397	1	576

Major/Minor	Minor2		
Conflicting Flow All	2622	2755	450
Stage 1	848	848	-
Stage 2	1774	1907	-
Critical Hdwy	6.4	6.5	6.2
Critical Hdwy Stg 1	5.4	5.5	-
Critical Hdwy Stg 2	5.4	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	~ 27	20	613
Stage 1	423	380	-
Stage 2	~ 151	118	-
Platoon blocked, %			
Mov Cap-1 Maneuver	~ 4	0	613
Mov Cap-2 Maneuver	~ 4	0	-
Stage 1	~ 68	0	-
Stage 2	~ 151	0	-

Approach	SB
HCM Control Delay, s	$ 44101.8
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	5185.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	845	1030	0	0	318	769	279	0	363
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	918	1120	0	0	346	836	303	0	395

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	1182	0	0	1120	0	0	3721	4139	1120
Stage 1	-	-	-	-	-	-	2957	2957	-
Stage 2	-	-	-	-	-	-	764	1182	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	~ 598	-	-	631	-	-	~ 5	2	~ 254
Stage 1	-	-	-	-	-	-	~ 37	34	-
Stage 2	-	-	-	-	-	-	463	266	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	~ 598	-	-	631	-	-	~ 5	0	~ 254
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 5	0	-
Stage 1	-	-	-	-	-	-	~ 37	0	-
Stage 2	-	-	-	-	-	-	463	0	-

Approach	EB	WB	NB
HCM Control Delay, s	120.9	0	$ 28758.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	11	~ 598	-	-	631	-	-
HCM Lane V/C Ratio	63.439	1.536	-	-	-	-	-
HCM Control Delay (s)	$ 28758.4	268.4	0	-	0	-	-
HCM Lane LOS	F	F	A	-	A	-	-
HCM 95th %tile Q(veh)	88.8	47.3	-	-	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	0

Major/Minor
Conflicting Flow All
Stage 1
Stage 2
Critical Hdwy
Critical Hdwy Stg 1
Critical Hdwy Stg 2
Follow-up Hdwy
Pot Cap-1 Maneuver
Stage 1
Stage 2
Platoon blocked, %
Mov Cap-1 Maneuver
Mov Cap-2 Maneuver
Stage 1
Stage 2

Approach
HCM Control Delay, s
HCM LOS

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	75.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	129	1264	955	285	47	132
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	140	1374	1038	310	51	143

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1348	0	-	0	2847	1193
Stage 1	-	-	-	-	1193	-
Stage 2	-	-	-	-	1654	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	517	-	-	-	~ 19	230
Stage 1	-	-	-	-	290	-
Stage 2	-	-	-	-	173	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	517	-	-	-	~ 19	230
Mov Cap-2 Maneuver	-	-	-	-	~ 19	-
Stage 1	-	-	-	-	290	-
Stage 2	-	-	-	-	173	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	$ 1181.2
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	517	-	-	-	59
HCM Lane V/C Ratio	0.271	-	-	-	3.298
HCM Control Delay (s)	14.5	0	-	-	$ 1181.2
HCM Lane LOS	B	A	-	-	F
HCM 95th %tile Q(veh)	1.1	-	-	-	20.5

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	1145	1485	5	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	1245	1614	5	0	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1620	0	-	0	2239	810
Stage 1	-	-	-	-	1617	-
Stage 2	-	-	-	-	622	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	407	-	-	-	37	327
Stage 1	-	-	-	-	151	-
Stage 2	-	-	-	-	503	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	407	-	-	-	37	327
Mov Cap-2 Maneuver	-	-	-	-	37	-
Stage 1	-	-	-	-	151	-
Stage 2	-	-	-	-	503	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	407	-	-	-	327
HCM Lane V/C Ratio	-	-	-	-	0.05
HCM Control Delay (s)	0	-	-	-	16.6
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	915	1298	10	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	995	1411	11	0	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1422	0	-	0	1913	711
Stage 1	-	-	-	-	1416	-
Stage 2	-	-	-	-	497	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	485	-	-	-	61	380
Stage 1	-	-	-	-	193	-
Stage 2	-	-	-	-	582	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	485	-	-	-	61	380
Mov Cap-2 Maneuver	-	-	-	-	61	-
Stage 1	-	-	-	-	193	-
Stage 2	-	-	-	-	582	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	485	-	-	-	380
HCM Lane V/C Ratio	-	-	-	-	0.014
HCM Control Delay (s)	0	-	-	-	14.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	357.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	35	792	144	20	913	2	127	14	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	38	861	157	22	992	2	138	15	18

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	995	0	0	1017	0	0	2116	2053	939
Stage 1	-	-	-	-	-	-	1015	1015	-
Stage 2	-	-	-	-	-	-	1101	1038	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	703	-	-	690	-	-	~ 37	56	323
Stage 1	-	-	-	-	-	-	290	318	-
Stage 2	-	-	-	-	-	-	259	311	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	703	-	-	690	-	-	~ 13	45	323
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 13	45	-
Stage 1	-	-	-	-	-	-	252	277	-
Stage 2	-	-	-	-	-	-	143	289	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	0.2	$ 4845.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	16	703	-	-	690	-	-	139
HCM Lane V/C Ratio	10.734	0.054	-	-	0.032	-	-	0.938
HCM Control Delay (s)	$ 4845.6	10.4	0	-	10.4	0	-	122.5
HCM Lane LOS	F	B	A	-	B	A	-	F
HCM 95th %tile Q(veh)	22.3	0.2	-	-	0.1	-	-	6.5

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	3	16	101
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	0	0	0
Mvmt Flow	3	17	110

Major/Minor	Minor2		
Conflicting Flow All	2069	2130	993
Stage 1	1037	1037	-
Stage 2	1032	1093	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	40	50	300
Stage 1	282	311	-
Stage 2	284	293	-
Platoon blocked, %			
Mov Cap-1 Maneuver	24	40	300
Mov Cap-2 Maneuver	24	40	-
Stage 1	245	289	-
Stage 2	220	255	-

Approach	SB
HCM Control Delay, s	122.5
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Intersection Delay, s/veh	55.4
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	39	717	82	0	64	885	18	0	53	25	142
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	42	779	89	0	70	962	20	0	58	27	154
Number of Lanes	0	0	1	1	0	0	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	2
HCM Control Delay	60.3	65	17.1
HCM LOS	F	F	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	24%	5%	0%	7%	0%	15%
Vol Thru, %	11%	95%	0%	93%	0%	27%
Vol Right, %	65%	0%	100%	0%	100%	58%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	220	756	82	949	18	120
LT Vol	25	717	0	885	0	32
Through Vol	142	0	82	0	18	70
RT Vol	53	39	0	64	0	18
Lane Flow Rate	239	822	89	1032	20	130
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.484	1	0.155	1	0.034	0.287
Departure Headway (Hd)	7.397	6.979	6.252	7.051	6.315	7.928
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	490	526	577	526	569	457
Service Time	5.397	4.689	3.962	4.763	4.027	5.928
HCM Lane V/C Ratio	0.488	1.563	0.154	1.962	0.035	0.284
HCM Control Delay	17.1	65.8	10.1	66.1	9.2	14.1
HCM Lane LOS	C	F	B	F	A	B
HCM 95th-tile Q	2.6	13.9	0.5	13.8	0.1	1.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	18	32	70
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0
Mvmt Flow	0	20	35	76
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	14.1
HCM LOS	B

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	71	473	344	51	655	31	350	233	47	40	335	111
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	77	514	237	55	712	32	380	253	49	43	364	103
Adj No. of Lanes	1	1	1	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	80	578	483	71	533	24	387	803	674	55	454	378
Arrive On Green	0.04	0.30	0.30	0.04	0.30	0.30	0.21	0.42	0.42	0.03	0.24	0.24
Sat Flow, veh/h	1810	1900	1588	1810	1803	81	1810	1900	1596	1810	1900	1581
Grp Volume(v), veh/h	77	514	237	55	0	744	380	253	49	43	364	103
Grp Sat Flow(s),veh/h/ln	1810	1900	1588	1810	0	1884	1810	1900	1596	1810	1900	1581
Q Serve(g_s), s	3.8	23.3	11.0	2.7	0.0	26.7	18.9	8.0	1.7	2.1	16.3	4.8
Cycle Q Clear(g_c), s	3.8	23.3	11.0	2.7	0.0	26.7	18.9	8.0	1.7	2.1	16.3	4.8
Prop In Lane	1.00		1.00	1.00		0.04	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	80	578	483	71	0	557	387	803	674	55	454	378
V/C Ratio(X)	0.96	0.89	0.49	0.78	0.00	1.33	0.98	0.32	0.07	0.79	0.80	0.27
Avail Cap(c_a), veh/h	80	578	483	80	0	557	387	876	736	80	554	461
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.0	29.9	25.7	43.0	0.0	31.8	35.3	17.4	15.5	43.5	32.3	28.0
Incr Delay (d2), s/veh	86.8	16.0	1.1	29.0	0.0	162.6	40.7	1.0	0.2	15.4	13.9	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	14.7	4.9	1.9	0.0	39.0	13.8	4.4	0.8	1.3	10.2	2.3
LnGrp Delay(d),s/veh	129.9	45.9	26.8	72.0	0.0	194.4	76.0	18.4	15.7	58.9	46.3	29.7
LnGrp LOS	F	D	C	E		F	E	B	B	E	D	C
Approach Vol, veh/h		828			799			682			510	
Approach Delay, s/veh		48.2			186.0			50.3			44.0	
Approach LOS		D			F			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	48.6	7.2	32.8	23.0	32.0	8.0	32.0
Change Period (Y+Rc), s	3.7	5.7	3.7	5.3	3.7	* 5.7	4.0	* 5.3
Max Green Setting (Gmax), s	4.0	41.6	4.0	27.0	19.3	* 26	4.0	* 27
Max Q Clear Time (g_c+I1), s	4.1	10.0	4.7	25.3	20.9	18.3	5.8	28.7
Green Ext Time (p_c), s	0.0	5.1	0.0	1.4	0.0	2.9	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	87.0
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	9182.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	1326	301	182	924	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	1411	320	194	983	0	0	0	0

Major/Minor	Major1			Major2		
Conflicting Flow All	983	0	0	1731	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	711	-	-	369	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	711	-	-	369	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB
HCM Control Delay, s	0	4.1
HCM LOS		

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	711	-	-	369	-	-	37
HCM Lane V/C Ratio	-	-	-	0.525	-	-	51.869
HCM Control Delay (s)	0	-	-	25	0	-	$ 23092.1
HCM Lane LOS	A	-	-	D	A	-	F
HCM 95th %tile Q(veh)	0	-	-	2.9	-	-	238.3

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	768	0	1036
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	94	94	94
Heavy Vehicles, %	0	0	0
Mvmt Flow	817	0	1102

Major/Minor	Minor2		
Conflicting Flow All	2941	3101	983
Stage 1	1370	1370	-
Stage 2	1571	1731	-
Critical Hdwy	6.4	6.5	6.2
Critical Hdwy Stg 1	5.4	5.5	-
Critical Hdwy Stg 2	5.4	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	~ 17	12	~ 305
Stage 1	~ 238	216	-
Stage 2	~ 190	144	-
Platoon blocked, %			
Mov Cap-1 Maneuver	~ 17	0	~ 305
Mov Cap-2 Maneuver	~ 17	0	-
Stage 1	~ 238	0	-
Stage 2	~ 190	0	-

Approach	SB
HCM Control Delay, s	$ 23092.1
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	19992.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	754	1341	0	0	550	558	556	0	355
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	820	1458	0	0	598	607	604	0	386

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	1204	0	0	1458	0	0	3998	4301	1458
Stage 1	-	-	-	-	-	-	3097	3097	-
Stage 2	-	-	-	-	-	-	901	1204	-
Critical Hdwy	4.1	-	-	4.1	-	-	6.4	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	~ 587	-	-	470	-	-	~ 3	2	~ 161
Stage 1	-	-	-	-	-	-	~ 31	28	-
Stage 2	-	-	-	-	-	-	~ 400	259	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	~ 587	-	-	470	-	-	~ 3	0	~ 161
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 3	0	-
Stage 1	-	-	-	-	-	-	~ 31	0	-
Stage 2	-	-	-	-	-	-	~ 400	0	-

Approach	EB	WB	NB
HCM Control Delay, s	75.2	0	$ 90112.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR
Capacity (veh/h)	5	~ 587	-	-	470	-	-
HCM Lane V/C Ratio	198.043	1.396	-	-	-	-	-
HCM Control Delay (s)	$ 90112.4	208.9	0	-	0	-	-
HCM Lane LOS	F	F	A	-	A	-	-
HCM 95th %tile Q(veh)	126.1	37.3	-	-	0	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	92	92	92
Heavy Vehicles, %	0	0	0
Mvmt Flow	0	0	0

Major/Minor
Conflicting Flow All
Stage 1
Stage 2
Critical Hdwy
Critical Hdwy Stg 1
Critical Hdwy Stg 2
Follow-up Hdwy
Pot Cap-1 Maneuver
Stage 1
Stage 2
Platoon blocked, %
Mov Cap-1 Maneuver
Mov Cap-2 Maneuver
Stage 1
Stage 2

Approach
HCM Control Delay, s
HCM LOS

Minor Lane/Major Mvmt

Intersection	
Int Delay, s/veh	935.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	211	1485	1009	338	187	99
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	229	1614	1097	367	203	108

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1464	0	-	0	3353	1280
Stage 1	-	-	-	-	1280	-
Stage 2	-	-	-	-	2073	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	467	-	-	-	~ 9	204
Stage 1	-	-	-	-	264	-
Stage 2	-	-	-	-	~ 107	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	467	-	-	-	~ 9	204
Mov Cap-2 Maneuver	-	-	-	-	~ 9	-
Stage 1	-	-	-	-	264	-
Stage 2	-	-	-	-	~ 107	-

Approach	EB	WB	SB
HCM Control Delay, s	2.5	0	$ 10874.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	467	-	-	-	13
HCM Lane V/C Ratio	0.491	-	-	-	23.913
HCM Control Delay (s)	19.9	0	-		$ 10874.1
HCM Lane LOS	C	A	-	-	F
HCM 95th %tile Q(veh)	2.7	-	-	-	40.1

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	1764	1851	2	0	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	1917	2012	2	0	46

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	2014	0	-	0	2972	1007
Stage 1	-	-	-	-	2013	-
Stage 2	-	-	-	-	959	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	287	-	-	-	11	242
Stage 1	-	-	-	-	92	-
Stage 2	-	-	-	-	337	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	287	-	-	-	11	242
Mov Cap-2 Maneuver	-	-	-	-	11	-
Stage 1	-	-	-	-	92	-
Stage 2	-	-	-	-	337	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	23.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	287	-	-	-	242
HCM Lane V/C Ratio	-	-	-	-	0.189
HCM Control Delay (s)	0	-	-	-	23.3
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.7

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	1669	1620	5	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	1814	1761	5	0	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1766	0	-	0	2671	883
Stage 1	-	-	-	-	1764	-
Stage 2	-	-	-	-	907	-
Critical Hdwy	4.1	-	-	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	358	-	-	-	19	293
Stage 1	-	-	-	-	125	-
Stage 2	-	-	-	-	359	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	358	-	-	-	19	293
Mov Cap-2 Maneuver	-	-	-	-	19	-
Stage 1	-	-	-	-	125	-
Stage 2	-	-	-	-	359	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	17.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	358	-	-	-	293
HCM Lane V/C Ratio	-	-	-	-	0.037
HCM Control Delay (s)	0	-	-	-	17.8
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	1174.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	104	1090	89	9	1047	7	208	1	31
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0
Mvmt Flow	108	1135	93	9	1091	7	217	1	32

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	1098	0	0	1228	0	0	2535	2515	1182
Stage 1	-	-	-	-	-	-	1398	1398	-
Stage 2	-	-	-	-	-	-	1137	1117	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3
Pot Cap-1 Maneuver	643	-	-	575	-	-	~ 19	29	233
Stage 1	-	-	-	-	-	-	~ 176	209	-
Stage 2	-	-	-	-	-	-	248	285	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	643	-	-	575	-	-	~ 8	13	233
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 8	13	-
Stage 1	-	-	-	-	-	-	~ 80	95	-
Stage 2	-	-	-	-	-	-	~ 195	274	-

Approach	EB	WB	NB
HCM Control Delay, s	1	0.1	$ 12856.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	9	643	-	-	575	-	-	64
HCM Lane V/C Ratio	27.778	0.168	-	-	0.016	-	-	0.814
HCM Control Delay (s)	$ 12856.6	11.7	0	-	11.4	0	-	168.9
HCM Lane LOS	F	B	A	-	B	A	-	F
HCM 95th %tile Q(veh)	33	0.6	-	-	0.1	-	-	3.7

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	4	2	44
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	96	96	96
Heavy Vehicles, %	0	0	0
Mvmt Flow	4	2	46

Major/Minor	Minor2		
Conflicting Flow All	2528	2558	1094
Stage 1	1113	1113	-
Stage 2	1415	1445	-
Critical Hdwy	7.1	6.5	6.2
Critical Hdwy Stg 1	6.1	5.5	-
Critical Hdwy Stg 2	6.1	5.5	-
Follow-up Hdwy	3.5	4	3.3
Pot Cap-1 Maneuver	19	27	263
Stage 1	255	286	-
Stage 2	172	199	-
Platoon blocked, %			
Mov Cap-1 Maneuver	9	12	263
Mov Cap-2 Maneuver	9	12	-
Stage 1	116	275	-
Stage 2	67	90	-

Approach	SB
HCM Control Delay, s	168.9
HCM LOS	F

Minor Lane/Major Mvmt

Intersection	
Intersection Delay, s/veh	56.2
Intersection LOS	F

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	42	1094	64	0	33	1011	15	0	62	58	34
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	46	1189	70	0	36	1099	16	0	67	63	37
Number of Lanes	0	0	1	1	0	0	1	1	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	2	2	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	2
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	2
HCM Control Delay	59.1	61.4	13.9
HCM LOS	F	F	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	40%	4%	0%	3%	0%	21%
Vol Thru, %	38%	96%	0%	97%	0%	39%
Vol Right, %	22%	0%	100%	0%	100%	39%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	154	1136	64	1044	15	56
LT Vol	58	1094	0	1011	0	22
Through Vol	34	0	64	0	15	22
RT Vol	62	42	0	33	0	12
Lane Flow Rate	167	1235	70	1135	16	61
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.337	1	0.106	1	0.025	0.129
Departure Headway (Hd)	7.252	6.185	5.467	6.238	5.522	7.652
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	497	593	655	590	646	470
Service Time	5.272	3.928	3.209	3.987	3.271	5.673
HCM Lane V/C Ratio	0.336	2.083	0.107	1.924	0.025	0.13
HCM Control Delay	13.9	61.9	8.9	62.2	8.4	11.8
HCM Lane LOS	B	F	A	F	A	B
HCM 95th-tile Q	1.5	14.7	0.4	14.7	0.1	0.4

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	12	22	22
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0
Mvmt Flow	0	13	24	24
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	2
Conflicting Approach Right	EB
Conflicting Lanes Right	2
HCM Control Delay	11.8
HCM LOS	B

Lane

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	108	670	425	70	626	29	371	433	87	45	290	101
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	115	713	378	74	666	20	395	461	90	48	309	75
Adj No. of Lanes	1	1	1	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	94	666	558	94	636	19	195	618	517	61	477	397
Arrive On Green	0.05	0.35	0.35	0.05	0.35	0.35	0.11	0.33	0.33	0.03	0.25	0.25
Sat Flow, veh/h	1810	1900	1592	1810	1834	55	1810	1900	1590	1810	1900	1583
Grp Volume(v), veh/h	115	713	378	74	0	686	395	461	90	48	309	75
Grp Sat Flow(s),veh/h/ln	1810	1900	1592	1810	0	1889	1810	1900	1590	1810	1900	1583
Q Serve(g_s), s	4.0	27.0	15.6	3.1	0.0	26.7	8.3	16.7	3.1	2.0	11.2	2.9
Cycle Q Clear(g_c), s	4.0	27.0	15.6	3.1	0.0	26.7	8.3	16.7	3.1	2.0	11.2	2.9
Prop In Lane	1.00		1.00	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	94	666	558	94	0	655	195	618	517	61	477	397
V/C Ratio(X)	1.22	1.07	0.68	0.79	0.00	1.05	2.03	0.75	0.17	0.79	0.65	0.19
Avail Cap(c_a), veh/h	94	666	558	94	0	655	195	780	652	94	673	561
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.5	25.0	21.3	36.1	0.0	25.2	34.4	23.2	18.6	36.9	25.8	22.7
Incr Delay (d2), s/veh	164.7	55.3	3.7	32.3	0.0	48.2	479.1	8.0	0.7	10.1	6.7	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	24.3	7.4	2.4	0.0	22.6	30.1	10.1	1.5	1.2	6.7	1.4
LnGrp Delay(d),s/veh	201.2	80.3	25.0	68.4	0.0	73.3	513.4	31.2	19.3	47.0	32.5	23.7
LnGrp LOS	F	F	C	E		F	F	C	B	D	C	C
Approach Vol, veh/h		1206			760			946			432	
Approach Delay, s/veh		74.5			72.9			231.4			32.6	
Approach LOS		E			E			F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.3	38.7	7.7	32.3	12.0	33.0	8.0	32.0
Change Period (Y+Rc), s	3.7	5.7	3.7	5.3	3.7	* 5.7	4.0	* 5.3
Max Green Setting (Gmax), s	4.0	31.6	4.0	27.0	8.3	* 27	4.0	* 27
Max Q Clear Time (g_c+I1), s	4.0	18.7	5.1	29.0	10.3	13.2	6.0	28.7
Green Ext Time (p_c), s	0.0	5.0	0.0	0.0	0.0	5.2	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	113.1
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX 7.3:

HORIZON YEAR (2035) WITHOUT PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

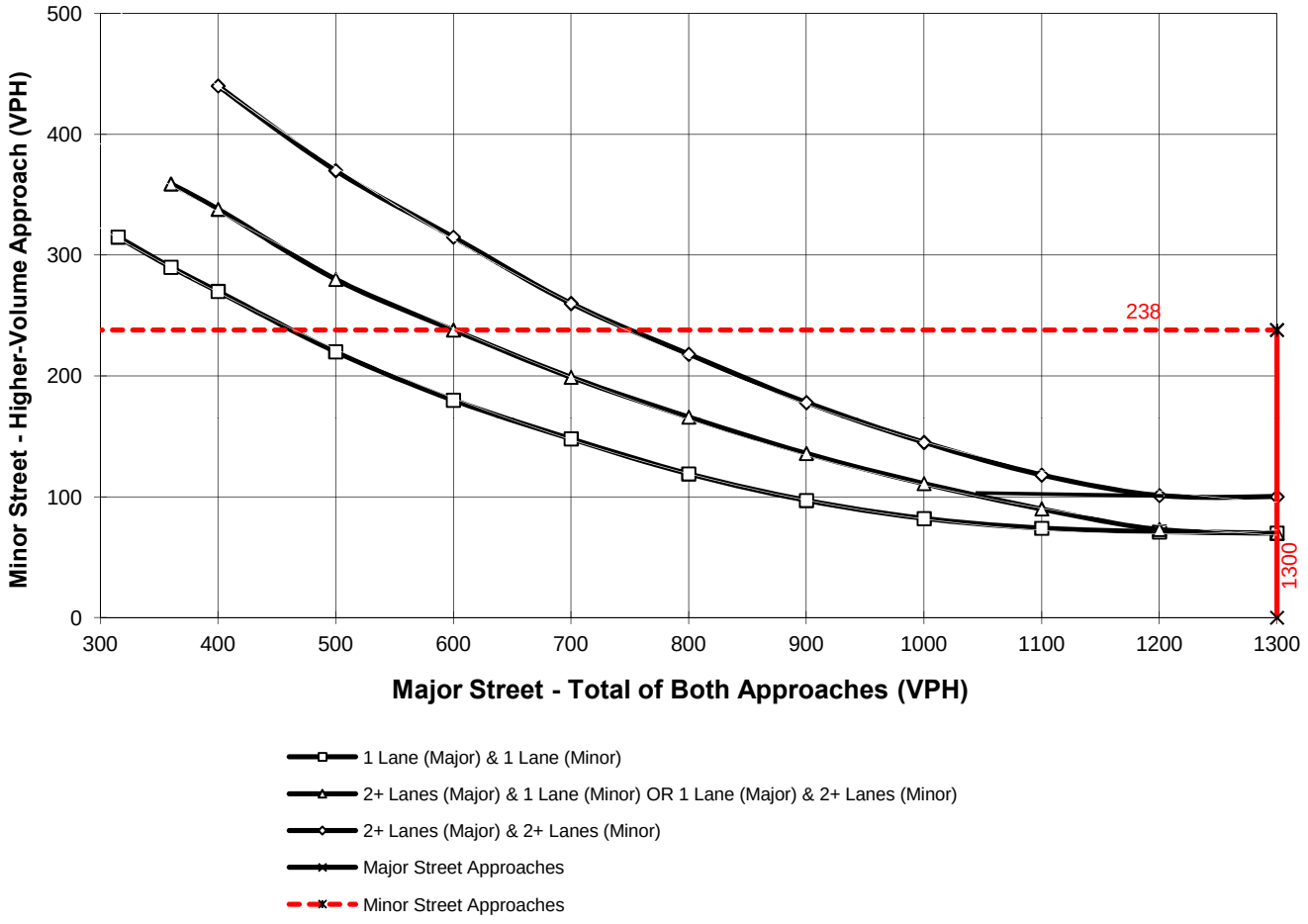
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Horizon Year (2035) without Project Conditions - Weekday PM Peak Hour**

Major Street Name = **Cherry Valley Boulevard** Total of Both Approaches (VPH) = **2319**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Union Street** High Volume Approach (VPH) = **238**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

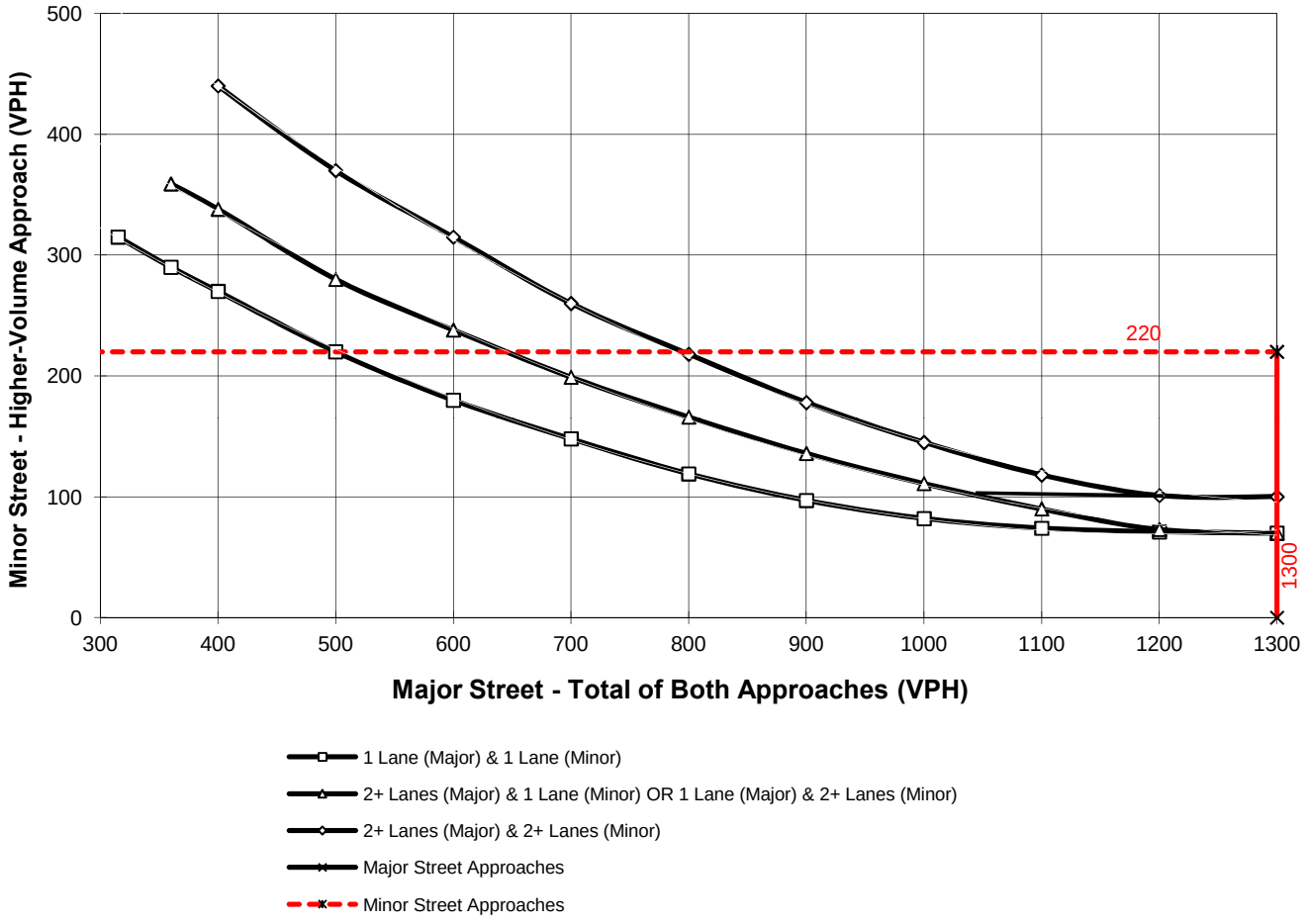
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Horizon Year (2035) without Project Conditions - Weekday AM Peak Hour**

Major Street Name = **Cherry Valley Boulevard** Total of Both Approaches (VPH) = **1783**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Nancy Street** High Volume Approach (VPH) = **220**
Number of Approach Lanes Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

APPENDIX 7.4:

HORIZON YEAR (2035) WITHOUT PROJECT CONDITIONS BASIC FREEWAY SEGMENT ANALYSIS WORKSHEETS

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*North of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*2035 Without Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6741*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2577*	pc/h/ln
S	*45.4*	mph
D = v_p / S	*56.8*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*South of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*2035 Without Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6336*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2433*	pc/h/ln
S	*49.9*	mph
D = v_p / S	*48.8*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*DL*	Highway/Direction of Travel	*I-10 Westbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*North of Cherry Valley*
Date Performed	*09/10/14*	Jurisdiction	*Caltrans*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*2035 Without Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*12708*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*3*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*4812*	pc/h/ln	Design LOS		
S		mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
D = v_p / S		pc/mi/ln	S		mph
LOS	*F*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*DL*	Highway/Direction of Travel	*I-10 Westbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*South of Cherry Valley*
Date Performed	*09/10/14*	Jurisdiction	*Caltrans*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*2035 Without Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*11702*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*4494*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*DL*	Highway/Direction of Travel	*I-10 Eastbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*North of Cherry Valley*
Date Performed	*09/10/14*	Jurisdiction	*Caltrans*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*2035 Without Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9975*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*8*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3759*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*South of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*2035 Without Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8611*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3292*	pc/h/ln
S	*14.2*	mph
D = v_p / S	*231.2*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*North of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*2035 Without Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*10797*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*4127*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*South of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*2035 Without Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*10470*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*4021*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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APPENDIX 7.5:

HORIZON YEAR (2035) WITH PROJECT CONDITIONS BASIC FREEWAY SEGMENT ANALYSIS WORKSHEETS

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*North of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*2035 With Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6808*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2615*	pc/h/ln
S	*44.1*	mph
D = v_p / S	*59.3*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*South of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*2035 With Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6360*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2443*	pc/h/ln
S	*49.6*	mph
D = v_p / S	*49.3*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*North of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*2035 With Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*12740*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*4847*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*South of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*2035 With Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*11755*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*4515*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*North of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*2035 With Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*10008*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*8*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3771*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*South of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*2035 With Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8671*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3330*	pc/h/ln
S	*12.2*	mph
D = v_p / S	*273.4*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*North of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*2035 With Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*10872*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*4156*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*09/10/14*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*South of Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*2035 With Project*

Project Description *I-10 Gateway Job Center (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*10496*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*4031*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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APPENDIX 7.6:

HORIZON YEAR (2035) WITHOUT PROJECT CONDITIONS FREEWAY RAMP JUNCTION ANALYSIS WORKSHEETS

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 Without Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	565
Freeway Volume, V_F	6741
Ramp Volume, V_R	797
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1660 ft
V_D = 392 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6741	0.92	Level	11	0	0.948	1.00	7730
Ramp	797	0.92	Level	1	0	0.995	1.00	871
UpStream								
DownStream	392	0.92	Level	1	0	0.995	1.00	428

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = using Equation (Exhibit 13-6)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)
S_R= mph (Exhibit 13-11)
S_0= mph (Exhibit 13-11)
S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = 0.527 using Equation (Exhibit 13-7)
V_{12} = 4484 pc/h
V_3 or V_{av34} 3246 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 5030 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	7730	Exhibit 13-8	7050	Yes
$V_{FO} = V_F - V_R$	6859	Exhibit 13-8	7050	No
V_R	871	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4484	Exhibit 13-8	4400:All	Yes

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 42.4 (pc/mi/ln)
LOS = F (Exhibit 13-2)

Speed Determination

D_s = 0.376 (Exhibit 13-12)
S_R= 56.3 mph (Exhibit 13-12)
S_0= 64.7 mph (Exhibit 13-12)
S = 59.0 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 Without Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	3	Downstream Adj Ramp	
☑ Yes	☐ On	Ramp Number of Lanes, N	1	☐ Yes	☐ On
☐ No	☑ Off	Acceleration Lane Length, L_A	410	☑ No	☐ Off
L_{up} =	1660 ft	Deceleration Lane Length L_D		L_{down} =	ft
V_u =	797 veh/h	Freeway Volume, V_F	5944	V_D =	veh/h
		Ramp Volume, V_R	392		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	45.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	5944	0.92	Level	13	0	0.939	1.00	6881
Ramp	392	0.92	Level	1	0	0.995	1.00	428
UpStream	797	0.92	Level	1	0	0.995	1.00	871
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1697.57 (Equation 13-6 or 13-7)

P_{FM} = 0.586 using Equation (Exhibit 13-6)

V_{12} = 4036 pc/h

V_3 or V_{av34} 2845 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 4181 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	7309	Exhibit 13-8		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4609	Exhibit 13-8	4600:All	Yes

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 38.7 (pc/mi/ln)

LOS = F (Exhibit 13-2)

Speed Determination

M_S = 0.676 (Exibit 13-11)

S_R= 49.5 mph (Exhibit 13-11)

S_0= 56.1 mph (Exhibit 13-11)

S = 51.7 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R= mph (Exhibit 13-12)

S_0= mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 Without Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 3	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 1745 ft	Acceleration Lane Length, L_A: 500	L_{down} = ft
V_u = 563 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 11139	
	Ramp Volume, V_R: 1569	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 45.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	11139	0.92	Level	12	0	0.943	1.00	12834
Ramp	1569	0.92	Level	1	0	0.995	1.00	1714
UpStream	563	0.92	Level	5	0	0.976	1.00	627
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 3286.67 (Equation 13-6 or 13-7)

P_{FM} = 0.494 using Equation (Exhibit 13-6)

V_{12} = 6341 pc/h

V_3 or V_{av34} 6493 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 10134 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	14548	Exhibit 13-8		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	11848	Exhibit 13-8	4600:All	Yes

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 94.0 (pc/mi/ln)

LOS = F (Exhibit 13-2)

Speed Determination

M_S = 545.513 (Exibit 13-11)

S_R = -12481.8 mph (Exhibit 13-11)

S_0 = 56.1 mph (Exhibit 13-11)

S = 308.2 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 Without Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	535
Freeway Volume, V_F	11702
Ramp Volume, V_R	563
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1745 ft
V_D = 1569 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	11702	0.92	Level	12	0	0.943	1.00	13483
Ramp	563	0.92	Level	5	0	0.976	1.00	627
UpStream								
DownStream	1569	0.92	Level	1	0	0.995	1.00	1714

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = using Equation (Exhibit 13-6)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)
S_R= mph (Exhibit 13-11)
S_0= mph (Exhibit 13-11)
S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = 0.394 using Equation (Exhibit 13-7)
V_{12} = 5693 pc/h
V_3 or V_{av34} 7790 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 10783 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	13483	Exhibit 13-8	7050	Yes
$V_{FO} = V_F - V_R$	12856	Exhibit 13-8	7050	Yes
V_R	627	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	5693	Exhibit 13-8	4400:All	Yes

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 92.2 (pc/mi/ln)
LOS = F (Exhibit 13-2)

Speed Determination

D_s = 0.354 (Exhibit 13-12)
S_R= 56.8 mph (Exhibit 13-12)
S_0= 64.7 mph (Exhibit 13-12)
S = 58.3 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 Without Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	565
Freeway Volume, V_F	9975
Ramp Volume, V_R	1753
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1660 ft
V_D = 389 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	9975	0.92	Level	8	0	0.962	1.00	11276
Ramp	1753	0.92	Level	1	0	0.995	1.00	1915
UpStream								
DownStream	389	0.92	Level	1	0	0.995	1.00	425

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = using Equation (Exhibit 13-6)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)
S_R= mph (Exhibit 13-11)
S_0= mph (Exhibit 13-11)
S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = 0.390 using Equation (Exhibit 13-7)
V_{12} = 5566 pc/h
V_3 or V_{av34} 5710 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 8576 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	11276	Exhibit 13-8	7050	Yes
$V_{FO} = V_F - V_R$	9361	Exhibit 13-8	7050	Yes
V_R	1915	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	5566	Exhibit 13-8	4400:All	Yes

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$
D_R = 72.9 (pc/mi/ln)
LOS = F (Exhibit 13-2)

Speed Determination

D_s = 0.470 (Exhibit 13-12)
S_R= 54.2 mph (Exhibit 13-12)
S_0= 64.7 mph (Exhibit 13-12)
S = 56.4 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 Without Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	3	Downstream Adj Ramp	
☑ Yes	☐ On	Ramp Number of Lanes, N	1	☐ Yes	☐ On
☐ No	☑ Off	Acceleration Lane Length, L_A	410	☑ No	☐ Off
L_{up} =	1660 ft	Deceleration Lane Length L_D		L_{down} =	ft
V_u =	1753 veh/h	Freeway Volume, V_F	8222	V_D =	veh/h
		Ramp Volume, V_R	389		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	45.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	8222	0.92	Level	11	0	0.948	1.00	9428
Ramp	389	0.92	Level	1	0	0.995	1.00	425
UpStream	1753	0.92	Level	1	0	0.995	1.00	1915
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 2241.98 (Equation 13-6 or 13-7)

P_{FM} = 0.552 using Equation (Exhibit 13-6)

V_{12} = 5206 pc/h

V_3 or V_{av34} 4222 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 6728 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	9853	Exhibit 13-8		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	7153	Exhibit 13-8	4600:All	Yes

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 58.5 (pc/mi/ln)

LOS = F (Exhibit 13-2)

Speed Determination

M_S = 5.268 (Exibit 13-11)

S_R = -56.2 mph (Exhibit 13-11)

S_0 = 56.1 mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 Without Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1745 ft
V_u = 869 veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	500
Deceleration Lane Length L_D	
Freeway Volume, V_F	9601
Ramp Volume, V_R	1196
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	9601	0.92	Level	13	0	0.939	1.00	11114
Ramp	1196	0.92	Level	1	0	0.995	1.00	1306
UpStream	869	0.92	Level	1	0	0.995	1.00	949
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 2831.28 (Equation 13-6 or 13-7)
P_{FM} = 0.523 using Equation (Exhibit 13-6)
V_{12} = 5811 pc/h
V_3 or V_{av34} 5303 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 8414 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	12420	Exhibit 13-8		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	9720	Exhibit 13-8	4600:All	Yes

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 77.6 (pc/mi/ln)
LOS = F (Exhibit 13-2)

Speed Determination

M_S = 65.200 (Exibit 13-11)
S_R = -1434.6 mph (Exhibit 13-11)
S_0 = 56.1 mph (Exhibit 13-11)
S = 300.2 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = using Equation (Exhibit 13-7)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)
S_R = mph (Exhibit 13-12)
S_0 = mph (Exhibit 13-12)
S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 Without Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	535
Freeway Volume, V_F	10470
Ramp Volume, V_R	869
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1745 ft
V_D = 1196 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	10470	0.92	Level	12	0	0.943	1.00	12063
Ramp	869	0.92	Level	1	0	0.995	1.00	949
UpStream								
DownStream	1196	0.92	Level	1	0	0.995	1.00	1306

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = using Equation (Exhibit 13-6)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)
S_R= mph (Exhibit 13-11)
S_0= mph (Exhibit 13-11)
S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = 0.415 using Equation (Exhibit 13-7)
V_{12} = 5559 pc/h
V_3 or V_{av34} 6504 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 9363 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	12063	Exhibit 13-8	7050	Yes
$V_{FO} = V_F - V_R$	11114	Exhibit 13-8	7050	Yes
V_R	949	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	5559	Exhibit 13-8	4400:All	Yes

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$
D_R = 80.0 (pc/mi/ln)
LOS = F (Exhibit 13-2)

Speed Determination

D_s = 0.383 (Exhibit 13-12)
S_R= 56.2 mph (Exhibit 13-12)
S_0= 64.7 mph (Exhibit 13-12)
S = 57.9 mph (Exhibit 13-13)

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APPENDIX 7.7:

HORIZON YEAR (2035) WITH PROJECT CONDITIONS FREEWAY RAMP JUNCTION ANALYSIS WORKSHEETS

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 With Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	565
Freeway Volume, V_F	6808
Ramp Volume, V_R	864
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1660 ft
V_D = 416 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6808	0.92	Level	12	0	0.943	1.00	7844
Ramp	864	0.92	Level	3	0	0.985	1.00	953
UpStream								
DownStream	416	0.92	Level	3	0	0.985	1.00	459

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = using Equation (Exhibit 13-6)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)
S_R = mph (Exhibit 13-11)
S_0 = mph (Exhibit 13-11)
S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = 0.520 using Equation (Exhibit 13-7)
V_{12} = 4537 pc/h
V_3 or V_{av34} 3307 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes, V_{12a} = 5144 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	7844	Exhibit 13-8	7050	Yes
$V_{FO} = V_F - V_R$	6891	Exhibit 13-8	7050	No
V_R	953	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4537	Exhibit 13-8	4400:All	Yes

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 43.4 (pc/mi/ln)
LOS = F (Exhibit 13-2)

Speed Determination

D_s = 0.384 (Exhibit 13-12)
S_R = 56.2 mph (Exhibit 13-12)
S_0 = 64.7 mph (Exhibit 13-12)
S = 58.8 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 With Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	3	Downstream Adj Ramp	
☑ Yes	☐ On	Ramp Number of Lanes, N	1	☐ Yes	☐ On
☐ No	☑ Off	Acceleration Lane Length, L_A	410	☑ No	☐ Off
L_{up} =	1660 ft	Deceleration Lane Length L_D		L_{down} =	ft
V_u =	864 veh/h	Freeway Volume, V_F	5944	V_D =	veh/h
		Ramp Volume, V_R	416		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	45.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	5944	0.92	Level	13	0	0.939	1.00	6881
Ramp	416	0.92	Level	3	0	0.985	1.00	459
UpStream	864	0.92	Level	3	0	0.985	1.00	953
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1704.20 (Equation 13-6 or 13-7)

P_{FM} = 0.586 using Equation (Exhibit 13-6)

V_{12} = 4033 pc/h

V_3 or V_{av34} 2848 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 4181 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	7340	Exhibit 13-8		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4640	Exhibit 13-8	4600:All	Yes

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 38.9 (pc/mi/ln)

LOS = F (Exhibit 13-2)

Speed Determination

M_S = 0.688 (Exibit 13-11)

S_R= 49.2 mph (Exhibit 13-11)

S_0= 56.1 mph (Exhibit 13-11)

S = 51.5 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R= mph (Exhibit 13-12)

S_0= mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 With Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	3	Downstream Adj Ramp	
☑ Yes	☐ On	Ramp Number of Lanes, N	1	☐ Yes	☐ On
☐ No	☑ Off	Acceleration Lane Length, L_A	500	☑ No	☐ Off
L_{up} =	1745 ft	Deceleration Lane Length L_D		L_{down} =	ft
V_u =	616 veh/h	Freeway Volume, V_F	11139	V_D =	veh/h
		Ramp Volume, V_R	1601		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	45.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	11139	0.92	Level	12	0	0.943	1.00	12834
Ramp	1601	0.92	Level	1	0	0.995	1.00	1749
UpStream	616	0.92	Level	7	0	0.966	1.00	693
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 3294.16 (Equation 13-6 or 13-7)

P_{FM} = 0.494 using Equation (Exhibit 13-6)

V_{12} = 6335 pc/h

V_3 or V_{av34} 6499 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 10134 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	14583	Exhibit 13-8		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	11883	Exhibit 13-8	4600:All	Yes

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 94.2 (pc/mi/ln)

LOS = F (Exhibit 13-2)

Speed Determination

M_S = 564.935 (Exibit 13-11)

S_R = -12928.5 mph (Exhibit 13-11)

S_0 = 56.1 mph (Exhibit 13-11)

S = 308.7 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 With Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	3	Downstream Adj Ramp	
☐ Yes	☐ On	Ramp Number of Lanes, N	1	☑ Yes	☑ On
☑ No	☐ Off	Acceleration Lane Length, L_A		☐ No	☐ Off
L_{up} =	ft	Deceleration Lane Length L_D	535	L_{down} =	1745 ft
V_u =	veh/h	Freeway Volume, V_F	11755	V_D =	1601 veh/h
		Ramp Volume, V_R	616		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	45.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	11755	0.92	Level	12	0	0.943	1.00	13544
Ramp	616	0.92	Level	7	0	0.966	1.00	693
UpStream								
DownStream	1601	0.92	Level	1	0	0.995	1.00	1749

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R= mph (Exhibit 13-11)

S_0= mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.390 using Equation (Exhibit 13-7)

V_{12} = 5699 pc/h

V_3 or V_{av34} 7845 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 10844 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	13544	Exhibit 13-8	7050	Yes
$V_{FO} = V_F - V_R$	12851	Exhibit 13-8	7050	Yes
V_R	693	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	5699	Exhibit 13-8	4400:All	Yes

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 92.7 (pc/mi/ln)

LOS = F (Exhibit 13-2)

Speed Determination

D_s = 0.360 (Exhibit 13-12)

S_R= 56.7 mph (Exhibit 13-12)

S_0= 64.7 mph (Exhibit 13-12)

S = 58.1 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 With Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	3	Downstream Adj Ramp	
☐ Yes	☐ On	Ramp Number of Lanes, N	1	☑ Yes	☑ On
☑ No	☐ Off	Acceleration Lane Length, L_A		☐ No	☐ Off
L_{up} =	ft	Deceleration Lane Length L_D	565	L_{down} =	1660 ft
V_u =	veh/h	Freeway Volume, V_F	10008	V_D =	449 veh/h
		Ramp Volume, V_R	1786		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	45.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	10008	0.92	Level	8	0	0.962	1.00	11313
Ramp	1786	0.92	Level	1	0	0.995	1.00	1951
UpStream								
DownStream	449	0.92	Level	6	0	0.971	1.00	503

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R= mph (Exhibit 13-11)

S_0= mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.387 using Equation (Exhibit 13-7)

V_{12} = 5578 pc/h

V_3 or V_{av34} 5735 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 8613 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	11313	Exhibit 13-8	7050	Yes
$V_{FO} = V_F - V_R$	9362	Exhibit 13-8	7050	Yes
V_R	1951	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	5578	Exhibit 13-8	4400:All	Yes

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 73.2 (pc/mi/ln)

LOS = F (Exhibit 13-2)

Speed Determination

D_s = 0.474 (Exhibit 13-12)

S_R= 54.1 mph (Exhibit 13-12)

S_0= 64.7 mph (Exhibit 13-12)

S = 56.3 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Eastbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 With Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	3	Downstream Adj Ramp	
☑ Yes	☐ On	Ramp Number of Lanes, N	1	☐ Yes	☐ On
☐ No	☑ Off	Acceleration Lane Length, L_A	410	☑ No	☐ Off
L_{up} =	1660 ft	Deceleration Lane Length L_D		L_{down} =	ft
V_u =	1786 veh/h	Freeway Volume, V_F	8222	V_D =	veh/h
		Ramp Volume, V_R	449		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	45.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	8222	0.92	Level	11	0	0.948	1.00	9428
Ramp	449	0.92	Level	6	0	0.971	1.00	503
UpStream	1786	0.92	Level	1	0	0.995	1.00	1951
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 2258.67 (Equation 13-6 or 13-7)

P_{FM} = 0.551 using Equation (Exhibit 13-6)

V_{12} = 5196 pc/h

V_3 or V_{av34} 4232 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 6728 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	9931	Exhibit 13-8		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	7231	Exhibit 13-8	4600:All	Yes

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 59.1 (pc/mi/ln)

LOS = F (Exhibit 13-2)

Speed Determination

M_S = 5.672 (Exibit 13-11)

S_R= -65.5 mph (Exhibit 13-11)

S_0= 56.1 mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R= mph (Exhibit 13-12)

S_0= mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	On-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 With Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 3	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 1745 ft	Acceleration Lane Length, L_A: 500	L_{down} = ft
V_u = 895 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 9601	
	Ramp Volume, V_R: 1271	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 45.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	9601	0.92	Level	13	0	0.939	1.00	11114
Ramp	1271	0.92	Level	3	0	0.985	1.00	1402
UpStream	895	0.92	Level	2	0	0.990	1.00	983
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 2851.82 (Equation 13-6 or 13-7)

P_{FM} = 0.522 using Equation (Exhibit 13-6)

V_{12} = 5796 pc/h

V_3 or V_{av34} 5318 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes, V_{12a} = 8414 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	12516	Exhibit 13-8		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	9816	Exhibit 13-8	4600:All	Yes

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 78.3 (pc/mi/ln)

LOS = F (Exhibit 13-2)

Speed Determination

M_S = 71.742 (Exibit 13-11)

S_R = -1585.1 mph (Exhibit 13-11)

S_0 = 56.1 mph (Exhibit 13-11)

S = 298.3 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-10 Westbound
Agency or Company	Urban Crossroads, Inc.	Junction	Off-Ramp at Cherry Valley
Date Performed	9/10/14	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 With Project

Project Description I-10 Gateway Job Center (PM 36093) TIA (JN: 08312)

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	3	Downstream Adj Ramp	
☐ Yes	☐ On	Ramp Number of Lanes, N	1	☑ Yes	☑ On
☑ No	☐ Off	Acceleration Lane Length, L_A		☐ No	☐ Off
L_{up} =	ft	Deceleration Lane Length L_D	535	L_{down} =	1745 ft
V_u =	veh/h	Freeway Volume, V_F	10496	V_D =	1271 veh/h
		Ramp Volume, V_R	895		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	45.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	10496	0.92	Level	12	0	0.943	1.00	12093
Ramp	895	0.92	Level	2	0	0.990	1.00	983
UpStream								
DownStream	1271	0.92	Level	3	0	0.985	1.00	1402

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R= mph (Exhibit 13-11)

S_0= mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.412 using Equation (Exhibit 13-7)

V_{12} = 5565 pc/h

V_3 or V_{av34} 6528 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 9393 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	12093	Exhibit 13-8	7050	Yes
$V_{FO} = V_F - V_R$	11110	Exhibit 13-8	7050	Yes
V_R	983	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	5565	Exhibit 13-8	4400:All	Yes

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 80.2 (pc/mi/ln)

LOS = F (Exhibit 13-2)

Speed Determination

D_s = 0.386 (Exhibit 13-12)

S_R= 56.1 mph (Exhibit 13-12)

S_0= 64.7 mph (Exhibit 13-12)

S = 57.8 mph (Exhibit 13-13)

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APPENDIX 7.8:

HORIZON YEAR (2035) WITHOUT PROJECT CONDITIONS INTERSECTION OPERATION ANALYSIS WORKSHEETS, WITH RECOMMENDED IMPROVEMENTS

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	62	874	31	19	1265	4	97	0	23	9	0	58
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	67	950	34	21	1375	4	105	0	25	10	0	-2
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	87	1899	68	32	1859	5	132	0	389	72	0	254
Arrive On Green	0.05	0.53	0.53	0.02	0.50	0.50	0.07	0.00	0.24	0.04	0.00	0.00
Sat Flow, veh/h	1810	3555	127	1810	3692	11	1810	0	1615	1810	1900	0
Grp Volume(v), veh/h	67	482	502	21	672	707	105	0	25	10	-2	-2
Grp Sat Flow(s),veh/h/ln	1810	1805	1878	1810	1805	1898	1810	0	1615	1810	1900	1615
Q Serve(g_s), s	3.7	17.1	17.1	1.2	29.7	29.7	5.8	0.0	1.2	0.5	0.0	0.0
Cycle Q Clear(g_c), s	3.7	17.1	17.1	1.2	29.7	29.7	5.8	0.0	1.2	0.5	0.0	0.0
Prop In Lane	1.00		0.07	1.00		0.01	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	87	964	1003	32	909	955	132	0	389	72	0	0
V/C Ratio(X)	0.77	0.50	0.50	0.66	0.74	0.74	0.79	0.00	0.06	0.14	0.00	0.00
Avail Cap(c_a), veh/h	406	1210	1259	102	909	955	196	0	389	99	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	47.4	14.9	14.9	49.2	19.8	19.8	46.0	0.0	29.5	46.7	0.0	0.0
Incr Delay (d2), s/veh	5.2	0.6	0.6	8.3	3.5	3.3	7.1	0.0	0.3	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	8.6	8.9	0.7	15.6	16.4	3.2	0.0	0.6	0.3	0.0	0.0
LnGrp Delay(d),s/veh	52.6	15.5	15.5	57.5	23.3	23.1	53.1	0.0	29.8	47.1	0.0	0.0
LnGrp LOS	D	B	B	E	C	C	D		C	D		
Approach Vol, veh/h		1051			1400			130			6	
Approach Delay, s/veh		17.9			23.7			48.6			78.4	
Approach LOS		B			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	47.7	5.5	59.1	11.1	44.3	8.6	56.1
Change Period (Y+Rc), s	3.7	* 4.2	3.7	5.3	3.7	* 4.2	3.7	5.3
Max Green Setting (Gmax), s	5.5	* 24	5.7	67.6	10.9	* 19	22.6	50.7
Max Q Clear Time (g_c+I1), s	2.5	3.2	3.2	19.1	7.8	0.0	5.7	31.7
Green Ext Time (p_c), s	0.0	0.1	0.0	34.7	0.0	0.0	0.1	16.3

Intersection Summary	
HCM 2010 Ctrl Delay	22.7
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	65	1508	97	98	1508	9	127	0	123	18	0	48
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	71	1639	105	107	1639	10	138	0	134	20	0	1
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	92	1779	113	133	1983	12	166	0	362	64	0	269
Arrive On Green	0.05	0.52	0.52	0.07	0.54	0.54	0.09	0.00	0.22	0.04	0.00	0.17
Sat Flow, veh/h	1810	3447	219	1810	3678	22	1810	0	1615	1810	0	1601
Grp Volume(v), veh/h	71	853	891	107	804	845	138	0	134	20	0	1
Grp Sat Flow(s),veh/h/ln	1810	1805	1861	1810	1805	1896	1810	0	1615	1810	0	1601
Q Serve(g_s), s	4.4	48.7	49.9	6.5	41.6	41.7	8.4	0.0	7.9	1.2	0.0	0.1
Cycle Q Clear(g_c), s	4.4	48.7	49.9	6.5	41.6	41.7	8.4	0.0	7.9	1.2	0.0	0.1
Prop In Lane	1.00		0.12	1.00		0.01	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	92	932	961	133	973	1022	166	0	362	64	0	269
V/C Ratio(X)	0.77	0.92	0.93	0.81	0.83	0.83	0.83	0.00	0.37	0.31	0.00	0.00
Avail Cap(c_a), veh/h	230	991	1022	150	973	1022	182	0	362	111	0	296
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.7	24.9	25.2	51.3	21.5	21.5	50.2	0.0	36.9	52.8	0.0	38.9
Incr Delay (d2), s/veh	5.1	12.7	13.8	21.4	6.2	6.0	22.9	0.0	2.9	1.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	27.4	29.2	4.1	22.2	23.3	5.3	0.0	3.8	0.6	0.0	0.0
LnGrp Delay(d),s/veh	57.8	37.6	39.0	72.6	27.7	27.5	73.0	0.0	39.7	53.8	0.0	38.9
LnGrp LOS	E	D	D	E	C	C	E		D	D		D
Approach Vol, veh/h		1815			1756			272			21	
Approach Delay, s/veh		39.1			30.4			56.6			53.1	
Approach LOS		D			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	37.1	11.9	63.3	14.0	30.8	9.4	65.8
Change Period (Y+Rc), s	3.7	* 4.2	3.7	5.3	3.7	* 4.2	3.7	5.3
Max Green Setting (Gmax), s	6.9	* 25	9.3	61.7	11.3	* 21	14.3	56.7
Max Q Clear Time (g_c+I1), s	3.2	9.9	8.5	51.9	10.4	2.1	6.4	43.7
Green Ext Time (p_c), s	0.0	0.6	0.0	6.1	0.0	0.7	0.0	12.8

Intersection Summary	
HCM 2010 Ctrl Delay	36.4
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX 7.9:

HORIZON YEAR (2035) WITH PROJECT CONDITIONS INTERSECTION OPERATION ANALYSIS WORKSHEETS, WITH RECOMMENDED IMPROVEMENTS

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1510	244	183	414	0	0	0	0	365	1	530
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900	1900	1900	0				1900	1900	1900
Adj Flow Rate, veh/h	0	1641	43	199	450	0				397	1	0
Adj No. of Lanes	0	2	1	1	2	0				0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Cap, veh/h	0	1801	806	224	2381	0				454	1	406
Arrive On Green	0.00	0.50	0.50	0.25	1.00	0.00				0.25	0.25	0.00
Sat Flow, veh/h	0	3705	1615	1810	3705	0				1805	5	1615
Grp Volume(v), veh/h	0	1641	43	199	450	0				398	0	0
Grp Sat Flow(s),veh/h/ln	0	1805	1615	1810	1805	0				1810	0	1615
Q Serve(g_s), s	0.0	47.8	1.6	12.1	0.0	0.0				24.2	0.0	0.0
Cycle Q Clear(g_c), s	0.0	47.8	1.6	12.1	0.0	0.0				24.2	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1801	806	224	2381	0				455	0	406
V/C Ratio(X)	0.00	0.91	0.05	0.89	0.19	0.00				0.87	0.00	0.00
Avail Cap(c_a), veh/h	0	1904	852	259	2553	0				455	0	406
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.89	0.89	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	26.4	14.8	42.3	0.0	0.0				41.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	8.5	0.1	22.4	0.2	0.0				20.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	25.8	0.7	7.4	0.1	0.0				14.6	0.0	0.0
LnGrp Delay(d),s/veh	0.0	34.8	14.9	64.8	0.2	0.0				61.4	0.0	0.0
LnGrp LOS		C	B	E	A					E		
Approach Vol, veh/h		1684			649						398	
Approach Delay, s/veh		34.3			20.0						61.4	
Approach LOS		C			B						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	18.4	68.6		33.0		87.0		
Change Period (Y+Rc), s	* 4.2	6.0		* 4.2		6.0		
Max Green Setting (Gmax), s	* 16	60.4		* 29		81.0		
Max Q Clear Time (g_c+I1), s	14.1	49.8		26.2		2.0		
Green Ext Time (p_c), s	0.1	7.3		0.0		17.8		

Intersection Summary	
HCM 2010 Ctrl Delay	34.8
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

LANE SUMMARY

Site: I-10 EB Ramps / Cherry Valley Blvd -2035 WP AM Peak

I-10 Gateway Job Center TIA (JN:08312)
Horizon Year (2035) With Project

Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Cherry Valley Blvd													
Lane 1	290	0.0	1552	0.187	100	3.3	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 2[d]	339	0.0	1812	0.187	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	628	0.0		0.187		1.5	LOS A	0.0	0.0				
North: I-10 EB Off Ramp													
Lane 1[d]	385	0.0	921	0.418	100	7.9	LOS A	2.0	49.5	Full	500	0.0	0.0
Lane 2	558	0.0	1675	0.333	80[5]	0.4	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	943	0.0		0.418		3.5	LOS A	2.0	49.5				
West: Cherry Valley Blvd													
Lane 1	730	0.0	842	0.867	100	16.4	LOS B	15.8	395.6	Full	500	0.0	0.0
Lane 2[d]	859	0.0	991	0.867	100	14.4	LOS B	17.0	423.9	Full	500	0.0	0.3
Lane 3	257	0.0	1675	0.153	100	0.6	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	1846	0.0		0.867		13.3	LOS B	17.0	423.9				
Intersection	3418	0.0		0.867		8.4	LOS A	17.0	423.9				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

5 Lane under-utilisation found by the program
d Dominant lane on roundabout approach

Processed: Wednesday, September 10, 2014 12:46:58 PM
SIDRA INTERSECTION 6.0.24.4877
Project: U:\UcJobs_08100-08500_08300\08312\SIDRA\I-10 - Cherry Valley Interchange Roundabout-2035 WP-SIDRA Model.sip6
8003765, 6021005, URBAN CROSSROADS, INC., PLUS / 1PC

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SIDRA INTERSECTION 6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	845	1030	0	0	318	769	279	0	363	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	918	1120	0	0	346	288	279	34	255			
Adj No. of Lanes	2	2	0	0	2	1	1	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	1229	2341	0	0	773	346	377	40	302			
Arrive On Green	0.35	0.65	0.00	0.00	0.36	0.36	0.21	0.21	0.21			
Sat Flow, veh/h	3510	3705	0	0	3705	1615	1810	193	1451			
Grp Volume(v), veh/h	918	1120	0	0	346	288	279	0	289			
Grp Sat Flow(s),veh/h/ln	1755	1805	0	0	1805	1615	1810	0	1644			
Q Serve(g_s), s	16.4	11.3	0.0	0.0	5.2	11.6	10.3	0.0	12.0			
Cycle Q Clear(g_c), s	16.4	11.3	0.0	0.0	5.2	11.6	10.3	0.0	12.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		0.88			
Lane Grp Cap(c), veh/h	1229	2341	0	0	773	346	377	0	343			
V/C Ratio(X)	0.75	0.48	0.00	0.00	0.45	0.83	0.74	0.00	0.84			
Avail Cap(c_a), veh/h	1578	4208	0	0	2281	1021	681	0	619			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00			
Upstream Filter(I)	0.29	0.29	0.00	0.00	0.94	0.94	1.00	0.00	1.00			
Uniform Delay (d), s/veh	20.4	6.4	0.0	0.0	19.7	21.7	26.4	0.0	27.1			
Incr Delay (d2), s/veh	0.3	0.2	0.0	0.0	1.8	19.4	1.1	0.0	2.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	8.0	5.5	0.0	0.0	2.8	7.0	5.2	0.0	5.7			
LnGrp Delay(d),s/veh	20.7	6.6	0.0	0.0	21.4	41.1	27.5	0.0	29.3			
LnGrp LOS	C	A			C	D	C		C			
Approach Vol, veh/h		2038			634			568				
Approach Delay, s/veh		12.9			30.3			28.4				
Approach LOS		B			C			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		101.0			79.7	21.2		19.0
Change Period (Y+Rc), s		6.0			6.0	* 6		4.2
Max Green Setting (Gmax), s		83.0			32.0	* 45		26.8
Max Q Clear Time (g_c+I1), s		13.3			18.4	13.6		14.0
Green Ext Time (p_c), s		9.6			6.5	1.6		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	19.0
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

LANE SUMMARY

Site: I-10 WB Ramps / Cherry Valley Blvd -2035 WP AM Peak

I-10 Gateway Job Center TIA (JN:08312)
Horizon Year (2035) With Project

Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: I-10 WB Off Ramp													
Lane 1	130	0.0	633	0.205	100	9.7	LOS A	0.7	16.4	Full	500	0.0	0.0
Lane 2[d]	165	0.0	808	0.205	100	8.6	LOS A	0.7	17.2	Full	500	0.0	0.0
Lane 3	382	0.0	893	0.428	100	4.5	LOS A	1.9	48.6	Full	500	0.0	0.0
Approach	677	0.0		0.428		6.5	LOS A	1.9	48.6				
East: Cherry Valley Blvd													
Lane 1	159	0.0	750	0.211	100	3.3	LOS A	0.8	19.2	Full	500	0.0	0.0
Lane 2[d]	176	0.0	833	0.211	100	2.9	LOS A	0.8	19.8	Full	500	0.0	0.0
Lane 3	809	0.0	1675	0.483	100	0.6	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	1144	0.0		0.483		1.3	LOS A	0.8	19.8				
West: Cherry Valley Blvd													
Lane 1	623	0.0	1555	0.400	100	5.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 2	623	0.0	1555	0.400	100	2.2	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 3[d]	729	0.0	1819	0.400	100	0.0	LOS A	0.0	0.0	Short	100	0.0	0.0
Approach	1974	0.0		0.400		2.3	LOS A	0.0	0.0				
Intersection	3795	0.0		0.483		2.7	LOS A	1.9	48.6				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Processed: Wednesday, September 10, 2014 12:47:00 PM
SIDRA INTERSECTION 6.0.24.4877
Project: U:\UcJobs_08100-08500_08300\08312\SIDRA\I-10 - Cherry Valley Interchange Roundabout-2035 WP-SIDRA Model.sip6
8003765, 6021005, URBAN CROSSROADS, INC., PLUS / 1PC

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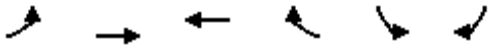
SIDRA INTERSECTION 6



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	129	1264	955	285	47	132
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	140	1374	1038	310	51	0
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	402	3048	3048	1422	66	59
Arrive On Green	0.84	0.84	0.84	0.84	0.04	0.00
Sat Flow, veh/h	411	3705	3705	1615	1810	1615
Grp Volume(v), veh/h	140	1374	1038	310	51	0
Grp Sat Flow(s),veh/h/ln	411	1805	1805	1615	1810	1615
Q Serve(g_s), s	10.0	8.5	5.6	2.5	2.5	0.0
Cycle Q Clear(g_c), s	15.6	8.5	5.6	2.5	2.5	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	402	3048	3048	1422	66	59
V/C Ratio(X)	0.35	0.45	0.34	0.22	0.77	0.00
Avail Cap(c_a), veh/h	458	3535	3535	1640	456	407
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	3.2	1.7	1.5	0.8	42.4	0.0
Incr Delay (d2), s/veh	2.1	0.4	0.3	0.4	7.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	4.2	2.9	1.5	1.4	0.0
LnGrp Delay(d),s/veh	5.3	2.2	1.8	1.1	49.4	0.0
LnGrp LOS	A	A	A	A	D	
Approach Vol, veh/h		1514	1348		51	
Approach Delay, s/veh		2.5	1.7		49.4	
Approach LOS		A	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		112.2		7.8		112.2		
Change Period (Y+Rc), s		* 6		4.6		6.0		
Max Green Setting (Gmax), s		* 87		22.4		87.0		
Max Q Clear Time (g_c+I1), s		17.6		4.5		7.6		
Green Ext Time (p_c), s		57.4		0.0		64.1		

Intersection Summary	
HCM 2010 Ctrl Delay	2.9
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

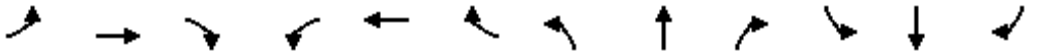
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	240	874	31	19	1275	9	97	0	23	18	0	118
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	261	950	30	21	1386	9	105	0	0	20	0	0
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	210	1886	60	38	1592	10	133	5	0	195	5	0
Arrive On Green	0.12	0.53	0.53	0.02	0.43	0.43	0.07	0.00	0.00	0.11	0.00	0.00
Sat Flow, veh/h	1810	3572	113	1810	3677	24	1810	1900	0	1810	1900	0
Grp Volume(v), veh/h	261	480	500	21	680	715	105	0	0	20	0	0
Grp Sat Flow(s),veh/h/ln	1810	1805	1880	1810	1805	1896	1810	1900	0	1810	1900	0
Q Serve(g_s), s	4.3	6.3	6.3	0.4	12.7	12.7	2.1	0.0	0.0	0.4	0.0	0.0
Cycle Q Clear(g_c), s	4.3	6.3	6.3	0.4	12.7	12.7	2.1	0.0	0.0	0.4	0.0	0.0
Prop In Lane	1.00		0.06	1.00		0.01	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	210	953	993	38	781	821	133	5	0	195	5	0
V/C Ratio(X)	1.24	0.50	0.50	0.55	0.87	0.87	0.79	0.00	0.00	0.10	0.00	0.00
Avail Cap(c_a), veh/h	210	953	993	195	829	870	195	913	0	195	913	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.4	5.6	5.6	18.0	9.6	9.6	16.9	0.0	0.0	14.9	0.0	0.0
Incr Delay (d2), s/veh	142.6	0.6	0.6	4.6	9.9	9.6	7.1	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.4	3.2	3.4	0.3	8.4	8.7	1.3	0.0	0.0	0.2	0.0	0.0
LnGrp Delay(d),s/veh	159.0	6.2	6.2	22.6	19.5	19.1	24.0	0.0	0.0	15.0	0.0	0.0
LnGrp LOS	F	A	A	C	B	B	C			B		
Approach Vol, veh/h		1241			1416			105			20	
Approach Delay, s/veh		38.3			19.4			24.0			15.0	
Approach LOS		D			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	23.0	4.5	24.9	6.4	24.2	8.0	21.3
Change Period (Y+Rc), s	3.7	* 4.2	3.7	5.3	3.7	* 4.2	3.7	5.3
Max Green Setting (Gmax), s	4.0	* 18	4.0	17.3	4.0	* 18	4.3	17.0
Max Q Clear Time (g_c+I1), s	2.4	0.0	2.4	8.3	4.1	0.0	6.3	14.7
Green Ext Time (p_c), s	0.0	0.0	0.0	8.2	0.0	0.0	0.0	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	28.0
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	792	144	20	913	2	127	14	17	3	16	101
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	38	861	157	22	992	2	138	15	18	3	17	110
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	61	1347	246	39	1587	3	377	184	221	465	52	334
Arrive On Green	0.03	0.44	0.44	0.01	0.14	0.14	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1810	3051	556	1810	3696	7	1284	788	945	1398	221	1427
Grp Volume(v), veh/h	38	509	509	22	484	510	138	0	33	3	0	127
Grp Sat Flow(s),veh/h/ln	1810	1805	1802	1810	1805	1899	1284	0	1733	1398	0	1648
Q Serve(g_s), s	0.9	9.9	9.9	0.5	11.4	11.4	4.5	0.0	0.7	0.1	0.0	2.9
Cycle Q Clear(g_c), s	0.9	9.9	9.9	0.5	11.4	11.4	7.4	0.0	0.7	0.7	0.0	2.9
Prop In Lane	1.00		0.31	1.00		0.00	1.00		0.55	1.00		0.87
Lane Grp Cap(c), veh/h	61	797	796	39	775	815	377	0	405	465	0	385
V/C Ratio(X)	0.63	0.64	0.64	0.57	0.62	0.62	0.37	0.00	0.08	0.01	0.00	0.33
Avail Cap(c_a), veh/h	160	811	810	160	811	853	702	0	844	819	0	803
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.68	0.68	0.68	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.5	9.8	9.8	22.2	16.0	16.0	17.4	0.0	13.5	13.8	0.0	14.4
Incr Delay (d2), s/veh	3.9	3.9	3.9	3.3	2.6	2.5	0.6	0.0	0.1	0.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	5.7	5.7	0.3	6.3	6.6	1.7	0.0	0.3	0.0	0.0	1.4
LnGrp Delay(d),s/veh	25.4	13.7	13.7	25.5	18.6	18.4	18.0	0.0	13.6	13.8	0.0	14.9
LnGrp LOS	C	B	B	C	B	B	B		B	B		B
Approach Vol, veh/h		1056			1016			171			130	
Approach Delay, s/veh		14.1			18.7			17.2			14.8	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.7	40.8		14.6	5.2	40.2		14.6
Change Period (Y+Rc), s	3.7	6.0		4.0	3.7	6.0		4.0
Max Green Setting (Gmax), s	4.0	20.3		22.0	4.0	20.3		22.0
Max Q Clear Time (g_c+I1), s	2.5	11.9		4.9	2.9	13.4		9.4
Green Ext Time (p_c), s	0.0	7.2		1.3	0.0	6.0		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	16.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	39	717	82	64	885	18	53	25	142	18	32	70
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	42	779	89	70	962	20	58	27	154	20	35	76
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	61	1071	122	89	1241	26	180	110	388	124	209	362
Arrive On Green	0.01	0.11	0.11	0.05	0.34	0.34	0.38	0.38	0.38	0.38	0.38	0.38
Sat Flow, veh/h	1810	3266	373	1810	3617	75	275	292	1026	141	553	959
Grp Volume(v), veh/h	42	430	438	70	480	502	239	0	0	131	0	0
Grp Sat Flow(s),veh/h/ln	1810	1805	1834	1810	1805	1887	1593	0	0	1653	0	0
Q Serve(g_s), s	1.3	13.5	13.5	2.2	13.9	13.9	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.3	13.5	13.5	2.2	13.9	13.9	5.9	0.0	0.0	3.0	0.0	0.0
Prop In Lane	1.00		0.20	1.00		0.04	0.24		0.64	0.15		0.58
Lane Grp Cap(c), veh/h	61	592	601	89	619	647	678	0	0	695	0	0
V/C Ratio(X)	0.69	0.73	0.73	0.79	0.78	0.78	0.35	0.00	0.00	0.19	0.00	0.00
Avail Cap(c_a), veh/h	127	592	601	143	619	647	678	0	0	695	0	0
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.87	0.87	0.54	0.54	0.54	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	28.5	23.5	23.5	27.4	17.1	17.1	13.1	0.0	0.0	12.2	0.0	0.0
Incr Delay (d2), s/veh	4.3	6.7	6.6	3.1	5.2	5.0	1.4	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	7.8	7.9	1.2	7.7	8.0	3.1	0.0	0.0	1.5	0.0	0.0
LnGrp Delay(d),s/veh	32.8	30.2	30.1	30.5	22.3	22.1	14.6	0.0	0.0	12.8	0.0	0.0
LnGrp LOS	C	C	C	C	C	C	B			B		
Approach Vol, veh/h		910			1052			239			131	
Approach Delay, s/veh		30.3			22.7			14.6			12.8	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.6	26.1		27.3	5.7	27.0		27.3
Change Period (Y+Rc), s	3.7	5.3		* 5.3	3.7	5.3		5.3
Max Green Setting (Gmax), s	4.6	19.1		* 22	4.1	19.6		22.0
Max Q Clear Time (g_c+I1), s	4.2	15.5		5.0	3.3	15.9		7.9
Green Ext Time (p_c), s	0.0	3.2		1.9	0.0	3.3		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	24.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	71	473	344	51	655	31	350	233	47	40	335	111
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	77	514	237	55	712	32	380	253	49	43	364	103
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	83	1038	813	71	975	44	399	823	694	55	460	387
Arrive On Green	0.05	0.29	0.29	0.04	0.28	0.28	0.22	0.43	0.43	0.03	0.24	0.24
Sat Flow, veh/h	1810	3610	1587	1810	3516	158	1810	1900	1604	1810	1900	1595
Grp Volume(v), veh/h	77	514	237	55	365	379	380	253	49	43	364	103
Grp Sat Flow(s),veh/h/ln	1810	1805	1587	1810	1805	1869	1810	1900	1604	1810	1900	1595
Q Serve(g_s), s	3.7	10.3	7.6	2.6	16.0	16.1	18.1	7.6	1.6	2.1	15.7	4.6
Cycle Q Clear(g_c), s	3.7	10.3	7.6	2.6	16.0	16.1	18.1	7.6	1.6	2.1	15.7	4.6
Prop In Lane	1.00		1.00	1.00		0.08	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	83	1038	813	71	501	518	399	823	694	55	460	387
V/C Ratio(X)	0.93	0.50	0.29	0.78	0.73	0.73	0.95	0.31	0.07	0.79	0.79	0.27
Avail Cap(c_a), veh/h	83	1115	846	83	551	571	399	850	717	135	571	480
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.72	0.72	0.72	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.6	25.9	12.4	41.6	28.6	28.6	33.6	16.2	14.5	42.1	31.0	26.8
Incr Delay (d2), s/veh	62.1	0.4	0.2	26.9	5.0	4.8	32.4	1.0	0.2	9.0	13.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	5.2	3.3	1.8	8.6	9.0	12.7	4.2	0.7	1.2	9.8	2.2
LnGrp Delay(d),s/veh	103.7	26.3	12.6	68.6	33.6	33.5	66.0	17.2	14.7	51.1	44.0	28.5
LnGrp LOS	F	C	B	E	C	C	E	B	B	D	D	C
Approach Vol, veh/h		828			799			682			510	
Approach Delay, s/veh		29.6			36.0			44.2			41.5	
Approach LOS		C			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.3	51.1	7.1	30.4	23.0	34.5	8.0	29.5
Change Period (Y+Rc), s	3.7	5.7	3.7	5.3	3.7	* 5.7	4.0	* 5.3
Max Green Setting (Gmax), s	6.5	39.1	4.0	27.0	19.3	* 26	4.0	* 27
Max Q Clear Time (g_c+I1), s	4.1	9.6	4.6	12.3	20.1	17.7	5.7	18.1
Green Ext Time (p_c), s	0.0	5.0	0.0	9.3	0.0	3.0	0.0	6.2

Intersection Summary	
HCM 2010 Ctrl Delay	37.1
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1326	301	182	924	0	0	0	0	768	0	1036
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900	1900	1900	0				1900	1900	1900
Adj Flow Rate, veh/h	0	1411	320	194	983	0				817	0	0
Adj No. of Lanes	0	2	1	1	2	0				0	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Cap, veh/h	0	1425	606	178	1835	0				736	0	657
Arrive On Green	0.00	0.38	0.38	0.20	1.00	0.00				0.41	0.00	0.00
Sat Flow, veh/h	0	3800	1615	1810	3705	0				1810	0	1615
Grp Volume(v), veh/h	0	1411	320	194	983	0				817	0	0
Grp Sat Flow(s),veh/h/ln	0	1900	1615	1810	1805	0				1810	0	1615
Q Serve(g_s), s	0.0	44.3	18.5	11.8	0.0	0.0				48.8	0.0	0.0
Cycle Q Clear(g_c), s	0.0	44.3	18.5	11.8	0.0	0.0				48.8	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1425	606	178	1835	0				736	0	657
V/C Ratio(X)	0.00	0.99	0.53	1.09	0.54	0.00				1.11	0.00	0.00
Avail Cap(c_a), veh/h	0	1425	606	178	1835	0				736	0	657
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.61	0.61	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	37.3	29.2	48.2	0.0	0.0				35.6	0.0	0.0
Incr Delay (d2), s/veh	0.0	21.6	3.3	78.9	0.7	0.0				67.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	27.4	8.8	9.7	0.2	0.0				38.2	0.0	0.0
LnGrp Delay(d),s/veh	0.0	58.9	32.5	127.1	0.7	0.0				103.3	0.0	0.0
LnGrp LOS		E	C	F	A					F		
Approach Vol, veh/h		1731			1177						817	
Approach Delay, s/veh		54.0			21.5						103.3	
Approach LOS		D			C						F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	16.0	51.0		53.0		67.0		
Change Period (Y+Rc), s	* 4.2	6.0		* 4.2		6.0		
Max Green Setting (Gmax), s	* 12	45.0		* 49		61.0		
Max Q Clear Time (g_c+I1), s	13.8	46.3		50.8		2.0		
Green Ext Time (p_c), s	0.0	0.0		0.0		22.5		

Intersection Summary	
HCM 2010 Ctrl Delay	54.6
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

LANE SUMMARY

Site: I-10 EB Ramps / Cherry Valley Blvd -2035 WP PM Peak

I-10 Gateway Job Center TIA (JN:08312)
Horizon Year (2035) With Project

Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Cherry Valley Blvd													
Lane 1	510	0.0	1552	0.329	100	1.8	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 2[d]	596	0.0	1812	0.329	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	1106	0.0		0.329		0.8	LOS A	0.0	0.0				
North: I-10 EB Off Ramp													
Lane 1[d]	770	0.0	789	0.976	100	30.9	LOS C	18.3	457.5	Full	500	0.0	2.4
Lane 2	1036	0.0	1675	0.619	63[5]	0.5	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	1806	0.0		0.976		13.4	LOS B	18.3	457.5				
West: Cherry Valley Blvd													
Lane 1	590	0.0	461	1.280	100	156.2	LOS F	58.1	1451.5	Full	1600	0.0	2.2
Lane 2[d]	736	0.0	575	1.280	100	153.1	LOS F	70.9	1772.2	Full	1600	0.0	8.1
Lane 3	301	0.0	1675	0.180	100	0.6	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	1627	0.0		1.280		126.0	LOS F	70.9	1772.2				
Intersection	4539	0.0		1.280		50.7	LOS D	70.9	1772.2				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

5 Lane under-utilisation found by the program
d Dominant lane on roundabout approach

Processed: Wednesday, September 10, 2014 12:47:03 PM
SIDRA INTERSECTION 6.0.24.4877
Project: U:\UcJobs_08100-08500_08300\08312\SIDRA\I-10 - Cherry Valley Interchange Roundabout-2035 WP-SIDRA Model.sip6
8003765, 6021005, URBAN CROSSROADS, INC., PLUS / 1PC

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SIDRA INTERSECTION 6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	754	1341	0	0	550	558	556	0	355	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	820	1458	0	0	598	0	450	215	297			
Adj No. of Lanes	2	2	0	0	2	1	1	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	1062	2037	0	0	708	317	587	235	324			
Arrive On Green	0.30	0.56	0.00	0.00	0.33	0.00	0.32	0.32	0.32			
Sat Flow, veh/h	3510	3705	0	0	3705	1615	1810	724	1000			
Grp Volume(v), veh/h	820	1458	0	0	598	0	450	0	512			
Grp Sat Flow(s),veh/h/ln	1755	1805	0	0	1805	1615	1810	0	1724			
Q Serve(g_s), s	19.4	27.0	0.0	0.0	14.1	0.0	20.4	0.0	26.1			
Cycle Q Clear(g_c), s	19.4	27.0	0.0	0.0	14.1	0.0	20.4	0.0	26.1			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		0.58			
Lane Grp Cap(c), veh/h	1062	2037	0	0	708	317	587	0	559			
V/C Ratio(X)	0.77	0.72	0.00	0.00	0.85	0.00	0.77	0.00	0.92			
Avail Cap(c_a), veh/h	1191	2608	0	0	1146	513	868	0	826			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00			
Upstream Filter(I)	0.11	0.11	0.00	0.00	0.93	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	29.0	14.6	0.0	0.0	29.4	0.0	27.8	0.0	29.7			
Incr Delay (d2), s/veh	0.3	0.3	0.0	0.0	11.1	0.0	1.1	0.0	8.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	9.4	13.4	0.0	0.0	8.1	0.0	10.3	0.0	13.7			
LnGrp Delay(d),s/veh	29.3	14.8	0.0	0.0	40.5	0.0	28.9	0.0	38.3			
LnGrp LOS	C	B			D		C		D			
Approach Vol, veh/h		2278			598			962				
Approach Delay, s/veh		20.0			40.5			33.9				
Approach LOS		C			D			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		8
Phs Duration (G+Y+Rc), s		86.2			62.3	23.9		33.8
Change Period (Y+Rc), s		6.0			6.0	* 6		4.2
Max Green Setting (Gmax), s		66.0			31.0	* 29		43.8
Max Q Clear Time (g_c+I1), s		29.0			21.4	16.1		28.1
Green Ext Time (p_c), s		12.4			6.2	1.8		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	26.7
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

LANE SUMMARY

Site: I-10 WB Ramps / Cherry Valley Blvd -2035 WP PM Peak

I-10 Gateway Job Center TIA (JN:08312)
Horizon Year (2035) With Project

Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: I-10 WB Off Ramp													
Lane 1	252	0.0	578	0.436	100	12.4	LOS B	1.8	44.6	Full	500	0.0	0.0
Lane 2[d]	334	0.0	767	0.436	100	10.7	LOS B	1.9	48.1	Full	500	0.0	0.0
Lane 3	374	0.0	829	0.451	100	5.6	LOS A	2.1	53.1	Full	500	0.0	0.0
Approach	960	0.0		0.451		9.2	LOS A	2.1	53.1				
East: Cherry Valley Blvd													
Lane 1	270	0.0	605	0.447	100	6.3	LOS A	2.3	57.0	Full	500	0.0	0.0
Lane 2[d]	309	0.0	692	0.447	100	5.6	LOS A	2.4	59.9	Full	500	0.0	0.0
Lane 3	587	0.0	1675	0.351	100	0.6	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	1166	0.0		0.447		3.2	LOS A	2.4	59.9				
West: Cherry Valley Blvd													
Lane 1	696	0.0	1555	0.447	100	5.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 2	696	0.0	1555	0.447	100	0.7	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 3[d]	814	0.0	1819	0.447	100	0.0	LOS A	0.0	0.0	Short	100	0.0	0.0
Approach	2205	0.0		0.447		1.8	LOS A	0.0	0.0				
Intersection	4332	0.0		0.451		3.8	LOS A	2.4	59.9				

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Processed: Wednesday, September 10, 2014 12:47:05 PM
SIDRA INTERSECTION 6.0.24.4877
Project: U:\UcJobs_08100-08500_08300\08312\SIDRA\I-10 - Cherry Valley Interchange Roundabout-2035 WP-SIDRA Model.sip6
8003765, 6021005, URBAN CROSSROADS, INC., PLUS / 1PC

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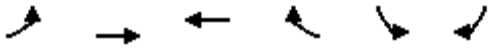
SIDRA INTERSECTION 6



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	211	1485	1009	338	187	99
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	229	1614	1097	367	203	108
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	313	2807	2807	1465	234	209
Arrive On Green	1.00	1.00	0.78	0.78	0.13	0.13
Sat Flow, veh/h	368	3705	3705	1615	1810	1615
Grp Volume(v), veh/h	229	1614	1097	367	203	108
Grp Sat Flow(s),veh/h/ln	368	1805	1805	1615	1810	1615
Q Serve(g_s), s	44.4	0.0	11.1	3.1	12.6	7.1
Cycle Q Clear(g_c), s	55.5	0.0	11.1	3.1	12.6	7.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	313	2807	2807	1465	234	209
V/C Ratio(X)	0.73	0.57	0.39	0.25	0.87	0.52
Avail Cap(c_a), veh/h	317	2846	2846	1483	308	274
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.65	0.65	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	3.5	0.0	4.1	0.6	48.7	46.3
Incr Delay (d2), s/veh	9.4	0.6	0.4	0.4	14.9	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	0.2	5.6	3.4	7.2	3.2
LnGrp Delay(d),s/veh	12.9	0.6	4.5	1.0	63.6	47.1
LnGrp LOS	B	A	A	A	E	D
Approach Vol, veh/h		1843	1464		311	
Approach Delay, s/veh		2.1	3.6		57.9	
Approach LOS		A	A		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		100.6		19.4		100.6		
Change Period (Y+Rc), s		* 6		4.6		6.0		
Max Green Setting (Gmax), s		* 90		19.4		90.0		
Max Q Clear Time (g_c+I1), s		57.5		14.6		13.1		
Green Ext Time (p_c), s		31.3		0.2		70.5		

Intersection Summary	
HCM 2010 Ctrl Delay	7.5
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	159	1508	97	98	1521	11	127	0	123	38	0	206
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	173	1639	96	107	1653	11	138	0	0	41	0	173
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	203	1901	111	133	1873	12	167	346	0	74	0	209
Arrive On Green	0.11	0.55	0.55	0.07	0.51	0.51	0.09	0.00	0.00	0.04	0.00	0.13
Sat Flow, veh/h	1810	3467	202	1810	3676	24	1810	1900	0	1810	0	1596
Grp Volume(v), veh/h	173	848	887	107	811	853	138	0	0	41	0	173
Grp Sat Flow(s),veh/h/ln	1810	1805	1864	1810	1805	1896	1810	1900	0	1810	0	1596
Q Serve(g_s), s	10.2	43.6	44.6	6.3	43.6	43.7	8.2	0.0	0.0	2.4	0.0	11.5
Cycle Q Clear(g_c), s	10.2	43.6	44.6	6.3	43.6	43.7	8.2	0.0	0.0	2.4	0.0	11.5
Prop In Lane	1.00		0.11	1.00		0.01	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	203	990	1022	133	920	966	167	346	0	74	0	209
V/C Ratio(X)	0.85	0.86	0.87	0.80	0.88	0.88	0.83	0.00	0.00	0.56	0.00	0.83
Avail Cap(c_a), veh/h	287	1023	1056	155	920	966	188	440	0	115	0	305
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.4	21.0	21.2	49.7	23.8	23.8	48.6	0.0	0.0	51.3	0.0	46.1
Incr Delay (d2), s/veh	11.5	7.5	7.9	19.6	10.3	9.9	21.0	0.0	0.0	2.4	0.0	29.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	23.5	24.9	3.9	24.3	25.4	5.0	0.0	0.0	1.3	0.0	6.8
LnGrp Delay(d),s/veh	58.9	28.5	29.1	69.2	34.1	33.8	69.6	0.0	0.0	53.7	0.0	76.1
LnGrp LOS	E	C	C	E	C	C	E			D		E
Approach Vol, veh/h		1908			1771			138			214	
Approach Delay, s/veh		31.5			36.0			69.6			71.8	
Approach LOS		C			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	35.1	11.7	65.0	13.7	29.5	15.9	60.8
Change Period (Y+Rc), s	3.7	* 4.2	3.7	5.3	3.7	* 4.2	3.7	5.3
Max Green Setting (Gmax), s	6.9	* 25	9.3	61.7	11.3	* 21	17.3	53.7
Max Q Clear Time (g_c+I1), s	4.4	0.0	8.3	46.6	10.2	13.5	12.2	45.7
Green Ext Time (p_c), s	0.0	0.0	0.0	13.1	0.0	0.5	0.1	7.9

Intersection Summary	
HCM 2010 Ctrl Delay	36.9
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	104	1090	89	9	1047	7	208	1	31	4	2	44
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	0.99		1.00	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	108	1135	77	9	1091	6	217	1	0	4	2	0
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	139	1752	119	17	1632	9	439	397	0	440	397	0
Arrive On Green	0.08	0.51	0.51	0.00	0.15	0.15	0.21	0.21	0.00	0.21	0.21	0.00
Sat Flow, veh/h	1810	3430	233	1810	3681	20	1427	1900	0	1428	1900	0
Grp Volume(v), veh/h	108	597	615	9	535	562	217	1	0	4	2	0
Grp Sat Flow(s),veh/h/ln	1810	1805	1858	1810	1805	1896	1427	1900	0	1428	1900	0
Q Serve(g_s), s	3.0	12.2	12.3	0.3	14.2	14.2	7.2	0.0	0.0	0.1	0.0	0.0
Cycle Q Clear(g_c), s	3.0	12.2	12.3	0.3	14.2	14.2	7.2	0.0	0.0	0.1	0.0	0.0
Prop In Lane	1.00		0.13	1.00		0.01	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	139	922	949	17	800	841	439	397	0	440	397	0
V/C Ratio(X)	0.78	0.65	0.65	0.53	0.67	0.67	0.49	0.00	0.00	0.01	0.01	0.00
Avail Cap(c_a), veh/h	225	922	949	147	821	862	762	826	0	763	826	0
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.61	0.61	0.61	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.9	9.0	9.1	25.1	18.1	18.1	18.7	15.8	0.0	15.9	15.8	0.0
Incr Delay (d2), s/veh	3.5	3.5	3.4	5.7	2.7	2.6	0.9	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	6.9	7.1	0.2	7.7	8.1	2.9	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	26.4	12.6	12.5	30.8	20.8	20.7	19.6	15.8	0.0	15.9	15.8	0.0
LnGrp LOS	C	B	B	C	C	C	B	B		B	B	
Approach Vol, veh/h		1320			1106			218			6	
Approach Delay, s/veh		13.7			20.8			19.5			15.9	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.2	46.3		14.6	7.6	42.8		14.6
Change Period (Y+Rc), s	3.7	6.0		4.0	3.7	6.0		4.0
Max Green Setting (Gmax), s	4.1	25.2		22.0	6.3	23.0		22.0
Max Q Clear Time (g_c+I1), s	2.3	14.3		2.1	5.0	16.2		9.2
Green Ext Time (p_c), s	0.0	9.7		0.6	0.0	6.2		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	17.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	42	1094	64	33	1011	15	62	58	34	12	22	22
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	46	1189	59	36	1099	14	67	63	20	13	24	1
Adj No. of Lanes	1	2	0	1	2	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	63	1377	68	54	1417	18	306	273	76	240	413	16
Arrive On Green	0.01	0.13	0.13	0.03	0.39	0.39	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	1810	3500	174	1810	3650	46	637	779	218	467	1180	45
Grp Volume(v), veh/h	46	613	635	36	543	570	150	0	0	38	0	0
Grp Sat Flow(s),veh/h/ln	1810	1805	1868	1810	1805	1891	1634	0	0	1692	0	0
Q Serve(g_s), s	1.6	21.0	21.0	1.2	16.6	16.6	1.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.6	21.0	21.0	1.2	16.6	16.6	3.8	0.0	0.0	0.8	0.0	0.0
Prop In Lane	1.00		0.09	1.00		0.02	0.45		0.13	0.34		0.03
Lane Grp Cap(c), veh/h	63	710	735	54	701	734	655	0	0	669	0	0
V/C Ratio(X)	0.72	0.86	0.86	0.67	0.78	0.78	0.23	0.00	0.00	0.06	0.00	0.00
Avail Cap(c_a), veh/h	118	710	735	118	701	734	655	0	0	669	0	0
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.78	0.78	0.78	0.50	0.50	0.50	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	30.9	25.8	25.8	30.3	16.9	16.9	14.5	0.0	0.0	13.6	0.0	0.0
Incr Delay (d2), s/veh	4.5	10.6	10.4	2.7	4.3	4.1	0.8	0.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	12.6	13.0	0.7	9.0	9.4	2.0	0.0	0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh	35.4	36.4	36.2	33.0	21.2	21.0	15.3	0.0	0.0	13.8	0.0	0.0
LnGrp LOS	D	D	D	C	C	C	B			B		
Approach Vol, veh/h		1294			1149			150			38	
Approach Delay, s/veh		36.3			21.5			15.3			13.8	
Approach LOS		D			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.6	32.0		27.4	5.9	31.7		27.4
Change Period (Y+Rc), s	3.7	5.3		* 5.3	3.7	5.3		5.3
Max Green Setting (Gmax), s	4.1	24.5		* 22	4.1	24.5		22.1
Max Q Clear Time (g_c+I1), s	3.2	23.0		2.8	3.6	18.6		5.8
Green Ext Time (p_c), s	0.0	1.4		0.8	0.0	5.5		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	28.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	108	670	425	70	626	29	371	433	87	45	290	101
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	115	713	378	74	666	20	395	461	90	48	309	75
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	85	1048	789	91	1038	31	368	777	656	61	455	382
Arrive On Green	0.05	0.29	0.29	0.05	0.29	0.29	0.20	0.41	0.41	0.03	0.24	0.24
Sat Flow, veh/h	1810	3610	1587	1810	3576	107	1810	1900	1603	1810	1900	1595
Grp Volume(v), veh/h	115	713	378	74	336	350	395	461	90	48	309	75
Grp Sat Flow(s),veh/h/ln	1810	1805	1587	1810	1805	1879	1810	1900	1603	1810	1900	1595
Q Serve(g_s), s	4.0	14.9	13.5	3.4	13.8	13.8	17.3	16.1	3.0	2.2	12.6	3.2
Cycle Q Clear(g_c), s	4.0	14.9	13.5	3.4	13.8	13.8	17.3	16.1	3.0	2.2	12.6	3.2
Prop In Lane	1.00		1.00	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	85	1048	789	91	524	545	368	777	656	61	455	382
V/C Ratio(X)	1.35	0.68	0.48	0.81	0.64	0.64	1.07	0.59	0.14	0.78	0.68	0.20
Avail Cap(c_a), veh/h	85	1146	832	91	573	596	368	862	728	143	625	525
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.53	0.53	0.53	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.5	26.7	14.3	40.0	26.3	26.3	33.9	19.6	15.7	40.8	29.4	25.8
Incr Delay (d2), s/veh	193.3	0.9	0.3	37.6	2.6	2.5	67.8	3.3	0.4	7.9	7.9	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	7.6	6.0	2.7	7.2	7.6	15.5	9.2	1.4	1.3	7.6	1.5
LnGrp Delay(d),s/veh	233.8	27.6	14.6	77.5	28.9	28.8	101.7	22.9	16.2	48.7	37.3	27.0
LnGrp LOS	F	C	B	E	C	C	F	C	B	D	D	C
Approach Vol, veh/h		1206			760			946			432	
Approach Delay, s/veh		43.2			33.6			55.2			36.8	
Approach LOS		D			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.6	50.4	8.0	30.0	21.0	36.0	8.0	30.0
Change Period (Y+Rc), s	3.7	5.7	3.7	5.3	3.7	* 5.7	4.0	* 5.3
Max Green Setting (Gmax), s	6.7	38.6	4.3	27.0	17.3	* 28	4.0	* 27
Max Q Clear Time (g_c+I1), s	4.2	18.1	5.4	16.9	19.3	14.6	6.0	15.8
Green Ext Time (p_c), s	0.0	6.2	0.0	7.8	0.0	5.1	0.0	8.5

Intersection Summary	
HCM 2010 Ctrl Delay	43.6
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX 7.10:

HORIZON YEAR (2035) WITH PROJECT CONDITIONS FREEWAY OFF-RAMP QUEUING ANALYSIS WORKSHEETS, WITH RECOMMENDED IMPROVEMENTS

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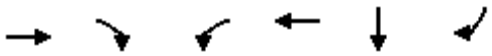


Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1641	265	199	450	398	576
v/c Ratio	0.91	0.29	0.86	0.19	0.87	0.36
Control Delay	36.8	5.2	83.1	5.0	63.4	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.8	5.2	83.1	5.0	63.4	0.6
Queue Length 50th (ft)	590	24	151	25	302	0
Queue Length 95th (ft)	708	70	m#258	m22	#488	0
Internal Link Dist (ft)	392			570	754	
Turn Bay Length (ft)			200			200
Base Capacity (vph)	1817	914	246	2436	459	1615
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.29	0.81	0.18	0.87	0.36

Intersection Summary

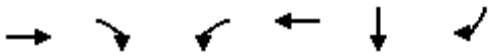
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	918	1120	346	836	273	425
v/c Ratio	0.95	0.45	0.25	0.90	0.71	0.95
Control Delay	38.6	5.3	24.6	25.7	54.3	64.6
Queue Delay	0.0	0.2	0.9	1.8	0.0	0.5
Total Delay	38.6	5.5	25.6	27.5	54.3	65.1
Queue Length 50th (ft)	367	101	96	287	207	252
Queue Length 95th (ft)	m#435	m118	108	#288	311	#470
Internal Link Dist (ft)		570	150			538
Turn Bay Length (ft)	200					
Base Capacity (vph)	989	2518	1396	933	395	455
Starvation Cap Reductn	0	523	771	31	0	0
Spillback Cap Reductn	0	78	0	0	0	2
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.56	0.55	0.93	0.69	0.94

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	EBR	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	1411	320	194	983	817	1102
v/c Ratio	0.99	0.42	1.10	0.54	1.11	0.68
Control Delay	59.2	9.2	121.0	34.5	103.1	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0
Total Delay	59.2	9.2	121.0	34.5	103.2	2.4
Queue Length 50th (ft)	537	41	~173	417	~725	0
Queue Length 95th (ft)	#694	114	m#272	499	#969	0
Internal Link Dist (ft)	392			570	754	
Turn Bay Length (ft)			200			200
Base Capacity (vph)	1425	755	177	1835	734	1615
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	8	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.42	1.10	0.54	1.13	0.68

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBT	WBR	NBL	NBT
Lane Group Flow (vph)	820	1458	598	607	519	471
v/c Ratio	0.91	0.70	0.58	0.68	0.90	0.81
Control Delay	54.6	28.7	36.2	8.0	57.8	41.3
Queue Delay	0.0	1.4	2.6	0.6	0.0	0.0
Total Delay	54.6	30.1	38.7	8.6	57.8	41.3
Queue Length 50th (ft)	286	531	221	135	384	282
Queue Length 95th (ft)	m258	m482	250	48	#574	424
Internal Link Dist (ft)		570	150			538
Turn Bay Length (ft)	200					
Base Capacity (vph)	959	2090	1034	895	625	624
Starvation Cap Reductn	0	406	306	79	0	0
Spillback Cap Reductn	0	43	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.87	0.82	0.74	0.83	0.75

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

APPENDIX 8.1:

SITE ADJACENT QUEUING ANALYSIS

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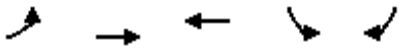
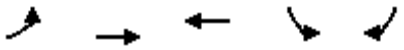


Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	193	232	530	10	65
v/c Ratio	0.64	0.21	0.78	0.02	0.14
Control Delay	33.4	5.9	27.5	18.4	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	33.4	5.9	27.5	18.4	6.7
Queue Length 50th (ft)	64	29	155	3	0
Queue Length 95th (ft)	#135	67	#337	12	23
Internal Link Dist (ft)		1199	2488	286	
Turn Bay Length (ft)	250			150	
Base Capacity (vph)	319	1152	698	582	550
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.61	0.20	0.76	0.02	0.12

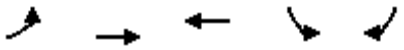
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	102	465	263	22	172
v/c Ratio	0.44	0.59	0.55	0.03	0.22
Control Delay	29.4	15.7	23.6	13.7	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	15.7	23.6	13.7	3.9
Queue Length 50th (ft)	35	121	84	4	0
Queue Length 95th (ft)	70	146	132	20	37
Internal Link Dist (ft)		1199	2488	286	
Turn Bay Length (ft)	250			150	
Base Capacity (vph)	289	1014	593	793	785
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.35	0.46	0.44	0.03	0.22

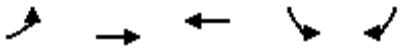
Intersection Summary



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	254	379	813	18	113
v/c Ratio	0.67	0.27	0.95	0.08	0.39
Control Delay	33.3	4.4	41.6	20.9	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	33.3	4.4	41.6	20.9	8.8
Queue Length 50th (ft)	81	26	258	6	0
Queue Length 95th (ft)	#196	111	#593	17	30
Internal Link Dist (ft)		1199	2488	286	
Turn Bay Length (ft)	250			150	
Base Capacity (vph)	381	1379	859	550	557
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.67	0.27	0.95	0.03	0.20

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	154	790	517	39	220
v/c Ratio	0.57	0.75	0.73	0.07	0.36
Control Delay	31.5	14.9	25.2	18.1	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	31.5	14.9	25.2	18.1	5.1
Queue Length 50th (ft)	52	165	150	11	0
Queue Length 95th (ft)	98	315	#338	29	42
Internal Link Dist (ft)		1199	2488	286	
Turn Bay Length (ft)	250			150	
Base Capacity (vph)	304	1106	711	626	688
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.51	0.71	0.73	0.06	0.32

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
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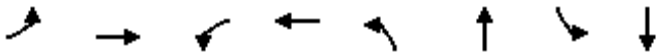

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	261	984	21	1396	105	25	20	128
v/c Ratio	0.85	0.54	0.23	1.17	0.88	0.04	0.22	0.22
Control Delay	58.4	15.3	42.9	114.6	96.6	0.2	42.6	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.4	15.3	42.9	114.6	96.6	0.2	42.6	0.9
Queue Length 50th (ft)	127	149	10	~457	53	0	10	0
Queue Length 95th (ft)	#247	248	33	#588	#144	0	31	0
Internal Link Dist (ft)		1199		2488		360		286
Turn Bay Length (ft)	250						150	
Base Capacity (vph)	322	1826	90	1190	119	556	90	587
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.54	0.23	1.17	0.88	0.04	0.22	0.22

Intersection Summary

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Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
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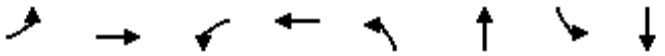

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	173	1744	107	1665	138	134	41	224
v/c Ratio	0.78	0.94	0.80	0.99	0.85	0.27	0.44	0.49
Control Delay	74.3	38.6	93.1	50.8	93.1	2.9	69.7	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.3	38.6	93.1	50.8	93.1	2.9	69.7	10.1
Queue Length 50th (ft)	130	647	83	~673	107	0	31	3
Queue Length 95th (ft)	#209	#835	#177	#871	#218	16	70	73
Internal Link Dist (ft)		1199		2488		350		286
Turn Bay Length (ft)	250						150	
Base Capacity (vph)	260	1854	139	1690	169	495	103	459
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.94	0.77	0.99	0.82	0.27	0.40	0.49

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

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I.2 - Supplemental Expanded Freeway Analysis

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www.urbanXroads.com

November 5, 2014

Mr. Brian Rupp
TSG Cherry Valley, L.P.
2 Park Plaza, Suite 700
Irvine, CA 92614

SUBJECT: SAN GORGONIO CROSSING TRAFFIC IMPACT ANALYSIS – SUPPLEMENTAL EXPANDED FREEWAY SEGMENT ANALYSIS

Dear Mr. Rupp:

This letter serves as a supplement to the *San Gorgonio Crossing (Parcel Map No.36093) Traffic Impact Analysis* (November 5, 2014) (referred to as "Traffic Study") that assesses freeway mainline segments for the following scenarios found in the Traffic Study:

- Existing (2014) Conditions
- Existing plus Project Conditions
- Opening Year Cumulative (2017) Without Project Conditions
- Opening Year Cumulative (2017) With Project Conditions
- Horizon Year (2035) Without Project Conditions
- Horizon Year (2035) With Project Conditions

Pursuant to recent clarification from Caltrans, study area mainline segments were selected based on the Project's contribution of 50 or more peak hour trips on a segment, which is a wider study area than the I-10 segments east and west of Cherry Valley Boulevard that were studied in the Project's Traffic Study.

SUMMARY OF FINDINGS

The addition of truck and passenger car traffic associated with the development of the proposed Project is not anticipated to result in any additional freeway segment deficiencies in addition to those identified for Existing, Opening Year Cumulative (2017) Without Project, and Horizon Year (2035) Without Project traffic conditions (see Tables 3, 4, and 5 of this report). Long-term forecasted traffic growth representative of Horizon Year (2035) traffic conditions along the I-10 and SR-60 Freeways are anticipated to exceed interim year planned improvements (Caltrans and San Bernardino Associated Governments' (SANBAG) I-10 Corridor Project, etc.), and would thus result in a deficient level of service (LOS) under Horizon Year (2035) traffic conditions (see Table 5 attached to this report).

INTRODUCTION

The *Caltrans Guide for the Preparation of Traffic Impact Studies* (December 2002) provides guidance for conditions in which the assessment of a state highway facility (SHF) is warranted. However, Caltrans has recently clarified the intent of their traffic study guidelines in a letter to the County of Riverside, and have further defined the scope of study for State Highway facilities in CEQA documents. By indicating that the analysis of freeway segments is likely warranted where a project is anticipated to contribute 50 or more peak hour trips, but also recognizes that a project's contribution to freeway segments dissipates with distance from the point of entry onto the State Highway System (SHS). The proposed San Gorgonio Crossing Project (referred to as "Project") is anticipated to contribute 50 or more peak hour trips to portions of the I-10 Freeway between the I-215 Freeway and the SR-60 Freeway and the SR-60 Freeway between the I-215 Freeway and I-10 Freeway. As the proposed Project is not anticipated to contribute 50 or more peak hour trips west of the I-215 Freeway on either the SR-60 or I-10 Freeways, or east of the SR-60 and I-10 Freeway interchange, these segments have not been included for the purposes of this analysis and are not required to be included by Caltrans. The following freeway segments are included in this supplemental analysis:

TABLE 1: BASIC FREEWAY SEGMENT ANALYSIS LOCATIONS

ID	Freeway	Direction	Segment
1	I-10	Westbound	I-215 Freeway to Waterman Av.
2	I-10	Westbound	Waterman Av. to Tippecanoe Av.
3	I-10	Westbound	Tippecanoe Av. to Mountain View Av.
4	I-10	Westbound	Mountain View Av. to California St.
5	I-10	Westbound	California St. to Alabama St.
6	I-10	Westbound	Alabama St. to Orange St.
7	I-10	Westbound	Orange St. to Cypress Av.
8	I-10	Westbound	Cypress Av. to Ford St.
9	I-10	Westbound	Ford St. to Wabash Av.
10	I-10	Westbound	Wabash Av. to Yucaipa Bl.
11	I-10	Westbound	Yucaipa Bl. to Live Oak Canyon Rd.
12	I-10	Westbound	Live Oak Canyon Rd. to W. County Line Rd.
13	I-10	Westbound	W. County Line Rd. to Calimesa Bl.
14	I-10	Westbound	Calimesa Bl. to Singleton Rd.
15	I-10	Westbound	Singleton Rd. to Cherry Valley Bl.
16	I-10	Westbound	Cherry Valley Bl. to Oak Valley Pkwy.
17	I-10	Westbound	Oak Valley Pkwy. to SR-60 Freeway
18	I-10	Eastbound	I-215 Freeway to Waterman Av.

ID	Freeway	Direction	Segment
19	I-10	Eastbound	Waterman Av. to Tippecanoe Av.
20	I-10	Eastbound	Tippecanoe Av. to Mountain View Av.
21	I-10	Eastbound	Mountain View Av. to California St.
22	I-10	Eastbound	California St. to Alabama St.
23	I-10	Eastbound	Alabama St. to Orange St.
24	I-10	Eastbound	Orange St. to Cypress Av.
25	I-10	Eastbound	Cypress Av. to Ford St.
26	I-10	Eastbound	Ford St. to Wabash Av.
27	I-10	Eastbound	Wabash Av. to Yucaipa Bl.
28	I-10	Eastbound	Yucaipa Bl. to Live Oak Canyon Rd.
29	I-10	Eastbound	Live Oak Canyon Rd. to W. County Line Rd.
30	I-10	Eastbound	W. County Line Rd. to Calimesa Bl.
31	I-10	Eastbound	Calimesa Bl. to Singleton Rd.
32	I-10	Eastbound	Singleton Rd. to Cherry Valley Bl.
33	I-10	Eastbound	Cherry Valley Bl. to Oak Valley Pkwy.
34	I-10	Eastbound	Oak Valley Pkwy. to SR-60 Freeway
35	SR-60	Westbound	I-215 Freeway to Day St.
36	SR-60	Westbound	Day St. to Frederick St./Pigeon Pass Rd.
37	SR-60	Westbound	Frederick St./Pigeon Pass Rd. to Heacock St.
38	SR-60	Westbound	Heacock St. to Perris Bl.
39	SR-60	Westbound	Perris Bl. To Nason St.
40	SR-60	Westbound	Nason St. to Moreno Beach Dr.
41	SR-60	Westbound	Moreno Beach Dr. to Redlands Bl.
42	SR-60	Westbound	Redlands Bl. To Theodore St.
43	SR-60	Westbound	Theodore St. to Gilman Springs Rd.
44	SR-60	Westbound	Gilman Springs Rd. to Jack Rabbit Tr.
45	SR-60	Westbound	Jack Rabbit Tr. to I-10 Freeway
46	SR-60	Eastbound	I-215 Freeway to Day St.
47	SR-60	Eastbound	Day St. to Frederick St./Pigeon Pass Rd.
48	SR-60	Eastbound	Frederick St./Pigeon Pass Rd. to Heacock St.
49	SR-60	Eastbound	Heacock St. to Perris Bl.
50	SR-60	Eastbound	Perris Bl. To Nason St.
51	SR-60	Eastbound	Nason St. to Moreno Beach Dr.
52	SR-60	Eastbound	Moreno Beach Dr. to Redlands Bl.
53	SR-60	Eastbound	Redlands Bl. To Theodore St.
54	SR-60	Eastbound	Theodore St. to Gilman Springs Rd.

ID	Freeway	Direction	Segment
55	SR-60	Eastbound	Gilman Springs Rd. to Jack Rabbit Tr.
56	SR-60	Eastbound	Jack Rabbit Tr. to I-10 Freeway

REGIONAL GOODS MOVEMENT

The Southern California Association of Governments (SCAG) is a regional agency established pursuant to California Government Code §6500, also referred to as the Joint Powers Authority law. On April 4, 2012, SCAG adopted the 2012-2035 Regional Transportation Plan / Sustainable Communities Strategy (RTP/SCS) with goals to: 1) maximize mobility and accessibility for all people and goods in the region; 2) ensure travel safety and reliability for all people and goods in the region; 3) preserve and ensure a sustainable transportation system; 4) maximize productivity of the transportation system; 5) protect the environment, improve air quality, and promote energy efficiency; 6) encourage land use and growth patterns that complement the transportation investments and improve the cost-effectiveness of expenditures; and 7) maximize the security of the transportation system The RTP/SCS includes a chapter titled "Goods Movement." It states that the SCAG region hosts one of the largest clusters of logistics activity in North America. Logistics activities, and the jobs that go with them, depend on complex transportation network. The Goods Movement section of the RTP/SCS sets forth regional strategies to achieve an efficient movement of goods throughout Southern California. It recognizes that the SCAG region will experience dramatic increases in truck traffic on east-west corridors that will cause increased congestion and longer delays to both trucks and general traffic on existing routes.

Goods movement within the SCAG region ranges from moving goods directly from manufacturing centers to local consumers, to those traveling from the San Pedro Bay Ports, to distance destinations across the United States. Goods movement and freight transportation are essential to the SCAG regional economy and quality of life. The regional goods movement system has six primary components: seaports, land ports, air cargo facilities, interstate/highways/local roads, railroads and warehousing/distribution centers. Each component is discussed below:

- Seaports – There are three major ports within the SCAG region: Los Angeles, Long Beach and Hueneme. The Ports of Los Angeles and Long Beach combined are the largest container port complex within the United States. Port Hueneme specializes in the import/export of automobiles, fresh fruit, produce and serves as the primary support facility for the offshore oil industry.
- Land Ports – There are three international border crossings in Imperial County (Calexico West-Mexicali I, Calexico East-Mexicali II and Andrade-Los Algodones. These border crossings are busy commercial land ports primarily used for the transport of agricultural products.
- Air Cargo Facilities – Los Angeles International Airport (LAX) and Ontario International Airport (ONT) handle a combined 96 percent of the SCAG region's air cargo.

- Interstate, Highways, and Local Roads – The roadway system carries a mix of local, domestic trade and international cargoes. The roadway system also provides connections between the ports, manufacturing facilities, intermodal terminals, warehouses and distribution centers.
- Railroads – The Burlington Northern Santa Fe Railway (NBSF) and the Union Pacific (UP) are two Class I railroads that are responsible for carrying international and domestic cargo to and from various areas of the country. Both railroads connect directly to the San Pedro Bay Ports.
- Warehousing and Distribution Centers – As of 2008, the SCAG region consisted of approximately 837 million square feet of warehousing space. Roughly 15 percent of the occupied warehouse space served port-related uses while the remaining 85 percent supported a mix of domestic and international cargo. Distribution facilities for domestic cargo tend to be located in areas farther away from the Ports – such as the Inland Empire.

REGIONAL FREEWAY SYSTEM

Based on information from the SCAG 2012-2035 Regional Transportation Plan (RTP), sections of the I-710, I-605, SR-60 and SR-91 carry the highest volumes of truck traffic within the SCAG region, with each averaging approximately 25,000 trucks per day. Other major freeways within the area include the I-5, I-10, I-15 and I-210 where some carry as much as 20,000 trucks per day. The regional freeway system is a key component to the regional goods movement within the SCAG region. Trucks use the freeway system to carry freight between businesses and consumers throughout the SCAG region. The I-710 is anticipated to experience the highest growth in truck traffic related to the growth in port-related traffic. Considerable growth in truck traffic is also anticipated on the I-10 and I-210 Freeway with the highest growth of the east-west corridors is expected for the SR-60 Freeway.

Based on information from the SCAG 2012-2035 Regional Transportation Plan (RTP), 87.9 percent of all truck trips are anticipated to remain internal to Riverside County. The remaining 12.1 percent are external trips generated within Riverside County and leaving the SCAG region. The internal truck trips have origins and destinations within the SCAG region and are generated by local industries, construction sites, domestic warehouses, domestic truck terminals and residences. The external truck trips are interregional that reflect trade between the SCAG region and the remainder of the United States. There are also port truck trips, secondary port truck trips and intermodal truck trips; however, these trips account for less than six percent of the overall truck trips.

Exhibit 1 illustrates the SCAG region truck routes, and shows the distribution of truck traffic external to the SCAG region, per the 2012-2035 RTP. Based on the 50 peak hour trip threshold, the I-10 and SR-60 Freeway segments listed previously on Table 1 are anticipated to receive 50 or more Project-related peak hour trips, and were thus selected for further analysis.

FREEWAY MAINLINE SEGMENT ANALYSIS METHODOLOGY & ASSUMPTIONS

The freeway segment analysis is based on the methodology described in Chapter 11 of the Highway Capacity Manual (HCM 2010), and performed using HCS 2010 software. The performance measure preferred by Caltrans to calculate LOS is density. Density is expressed in terms of passenger cars per mile per lane. Table 2 illustrates the freeway segment LOS thresholds for each density range utilized for this analysis. The freeway segments evaluated in this supplemental analysis are based on peak hour directional volumes.

The number of lanes for existing baseline conditions has been obtained from field observations conducted by Urban Crossroads or through aerial imagery. The existing freeway geometrics have been utilized for the following traffic conditions: Existing (2014) and Existing Plus Project (E+P) traffic conditions. The planned improvements for the I-10 Freeway have been assumed for Horizon Year (2035) Without and With Project traffic conditions.

The I-10 Freeway and SR-60 Freeway mainline volume data was obtained from the Caltrans Performance Measurement System (PeMS) website for each of the segments identified in Table 1. In addition, truck traffic, represented as a percentage of total traffic, has been utilized for the purposes of this analysis in an effort to not overstate traffic volumes and potential impacts. As such, actual vehicles (as opposed to passenger-car-equivalent volumes) have been utilized for the purposes of the basic freeway segment analysis, which is consistent with the HCM 2010 Basic Freeway Segment analysis methodology.

TABLE 2: FREEWAY MAINLINE LOS THRESHOLDS

Level of Service	Description	Density Range (pc/mi/ln)[1]
A	Free-flow operations in which vehicles are relatively unimpeded in their ability to maneuver within the traffic stream. Effects of incidents are easily absorbed.	0.0 – 11.0
B	Relative free-flow operations in which vehicle maneuvers within the traffic stream are slightly restricted. Effects of minor incidents are easily absorbed.	11.1 – 18.0
C	Travel is still at relative free-flow speeds, but freedom to maneuver within the traffic stream is noticeably restricted. Minor incidents may be absorbed, but local deterioration in service will be substantial. Queues begin to form behind significant blockages.	18.1 – 26.0
D	Speeds begin to decline slightly and flows and densities begin to increase more quickly. Freedom to maneuver is noticeably limited. Minor incidents can be expected to create queuing as the traffic stream has little space to absorb disruptions.	26.1 – 35.0

Level of Service	Description	Density Range (pc/mi/ln)[1]
E	Operation at capacity. Vehicles are closely spaced with little room to maneuver. Any disruption in the traffic stream can establish a disruption wave that propagates throughout the upstream traffic flow. Any incident can be expected to produce a serious disruption in traffic flow and extensive queuing.	35.1 – 45.0
F	Breakdown in vehicle flow.	>45.0

[1] *pc/mi/ln = passenger cars per mile per lane. Source: HCM 2010, Chapter 11*

EXISTING (2014) CONDITIONS ANALYSIS

Existing freeway segment directional volumes for the AM and PM peak hours are indicated on Table 3. The I-10 Freeway and SR-60 Freeway segments analyzed were found to operate at an acceptable LOS (i.e., LOS "D" or better) during the peak hours, with the exception of the following three segments:

ID	Freeway	Direction	Segment	Level of Service
2	I-10	Westbound	Waterman Av. to Tippecanoe Av.	LOS "E" AM peak hour only
3	I-10	Westbound	Tippecanoe Av. to Mountain View Av.	LOS "E" AM peak hour only
21	I-10	Eastbound	Mountain View Av. to California St.	LOS "E" AM peak hour only

Existing basic freeway segment analysis worksheets are provided in Attachment "A".

EXISTING PLUS PROJECT CONDITIONS ANALYSIS

E+P conditions freeway segment directional volumes for the AM and PM peak hours are also shown on Table 3. Project traffic was added to the Existing volumes based on a combination of the Project's trip distribution from the 2014 Traffic Study and the likely regional distribution pattern of trucks within the SCAG region (see Exhibit 1).

As shown on Table 3, I-10 and SR-60 Freeway segments analyzed were found to operate at an acceptable LOS (i.e., LOS "D" or better) during the peak hours under E+P conditions, with the exception of the segments previously identified as deficient under Existing traffic conditions. In other words, the addition of Project traffic is not anticipated to result in any additional freeway segment deficiencies. E+P conditions basic freeway segment analysis worksheets are provided in Attachment "B".

OPENING YEAR CUMULATIVE (2017) CONDITIONS

PLANNED ENHANCEMENTS TO THE REGIONAL FREEWAY SYSTEM

A review of currently planned freeway improvements in the region did not reveal any improvements to

the SR-60 or I-10 Freeway segments assessed in this letter that would be in place by the year 2017. As such, no improvements have been analyzed for Opening Year Cumulative (2017) traffic conditions.

OPENING YEAR CUMULATIVE (2017) CONDITIONS ANALYSIS

Opening Year Cumulative (2017) freeway segment directional volumes for the AM and PM peak hours are provided on Table 4 for both Without and With Project conditions. Project traffic has been added to the Opening Year Cumulative (2017) Without Project forecasts to develop Opening Year Cumulative (2017) With Project traffic conditions.

As shown on Table 4, I-10 Freeway and SR-60 Freeway segments analyzed were found to operate at an acceptable LOS (i.e., LOS "D" or better) during the peak hours for Opening Year Cumulative (2017) Without and With Project traffic conditions, with the exception of the following five segments:

ID	Freeway	Direction	Segment	Level of Service
1	I-10	Westbound	I-215 Freeway to Waterman Av.	LOS "E" AM peak hour only
2	I-10	Westbound	Waterman Av. to Tippecanoe Av.	LOS "E" AM peak hour only
3	I-10	Westbound	Tippecanoe Av. to Mountain View Av.	LOS "F" AM peak hour only
20	I-10	Eastbound	Tippecanoe Av. to Mountain View Av.	LOS "E" PM peak hour only
21	I-10	Eastbound	Mountain View Av. to California St.	LOS "F" AM peak hour only

Opening Year Cumulative (2017) Without and With Project basic freeway segment analysis worksheets are provided in Attachments "C" and "D", respectively.

HORIZON YEAR (2035) CONDITIONS

PLANNED ENHANCEMENTS TO THE REGIONAL FREEWAY SYSTEM

The SCAG 2012-2035 Regional Transportation Plan (RTP) and SANBAG have future plans in place for the widening of I-10 Freeway through the study area; however, a schedule for the widening of the I-10 Freeway between Haven Avenue in the City of Ontario and the San Bernardino and Riverside County line has not been set. The I-10 Corridor Project proposes to add a carpool lane (high-occupancy vehicle or HOV lane) in each direction. As indicated on the SCAG 2012-2035 RTP, the additional carpool lanes between Haven Avenue to Ford Street in the City of Redlands is anticipated to be completed in 2020. The additional carpool lane between Ford Street and the San Bernardino and Riverside County line is anticipated to be completed in 2030. As such, the future expansion of the I-10 Freeway has been assumed for the long-range Horizon Year (2035) analysis only. Based on discussions with Caltrans staff, the freeway mainline volumes can potentially be reduced up to fourteen (14) percent with the addition of a single HOV lane.

HORIZON YEAR (2035) CONDITIONS ANALYSIS

Horizon Year (2035) freeway segment directional volumes for the AM and PM peak hours are provided on Table 5 for both Without and With Project conditions. Project traffic has been added to the Horizon Year (2035) Without Project forecasts for Horizon Year (2035) With Project traffic conditions. As shown on Table 5, all I-10 and SR-60 Freeway segments analyzed were found to operate at an unacceptable LOS (i.e., LOS "E" or worse) during either the AM or PM peak hours for both Without and With Project traffic conditions with the exception of the following segments:

ID	Freeway	Direction	Segment
8	I-10	Westbound	Cypress Av. to Ford St.
9	I-10	Westbound	Ford St. to Wabash Av.
11	I-10	Westbound	Yucaipa Bl. to Live Oak Canyon Rd.
39	SR-60	Westbound	Perris Bl. To Nason St.
41	SR-60	Westbound	Moreno Beach Dr. to Redlands Bl.
43	SR-60	Westbound	Theodore St. to Gilman Springs Rd.
44	SR-60	Westbound	Gilman Springs Rd. to Jack Rabbit Tr.
50	SR-60	Eastbound	Perris Bl. To Nason St.
51	SR-60	Eastbound	Nason St. to Moreno Beach Dr.
52	SR-60	Eastbound	Moreno Beach Dr. to Redlands Bl.
54	SR-60	Eastbound	Theodore St. to Gilman Springs Rd.

Horizon Year (2035) Without and With Project basic freeway segment analysis worksheets are provided in Attachments "E" and "F", respectively.

If you have any questions, please contact me directly at (949) 660-1994 x204.

Respectfully submitted,
URBAN CROSSROADS, INC.

Aric Evatt, PTP
Principal

Pranesh Tarikere
Senior Engineer

Attachments

Table 3: Existing Plus Project Conditions Basic Freeway Segment Analysis

Freeway	Direction	Mainline Segment	Lanes[1]	Time Period	Existing (2014)			Existing Plus Project		
					Volume	Density[2]	LOS	Volume	Density[2]	LOS
I-10 Freeway	Westbound	1-215 to Waterman Av.	4	AM	7,035	32.4	D	7,042	32.4	D
				PM	6,505	28.7	D	6,525	28.9	D
		Waterman Av. to Tippecanoe Av.	4	AM	7,844	**39.3**	**E**	7,851	**39.4**	**E**
				PM	6,057	26.4	D	6,077	26.5	D
		Tippecanoe Av. to Mountain View Av.	4	AM	8,207	**44.0**	**E**	8,214	**44.1**	**E**
				PM	5,867	25.3	C	5,887	25.6	C
		Mountain View Av. To California St.	4	AM	3,682	15.2	B	3,689	15.2	B
				PM	6,258	27.6	D	6,278	27.7	D
		California St. to Alabama St.	5	AM	6,853	23.1	C	6,860	23.1	C
				PM	3,833	12.6	B	3,853	12.7	B
		Alabama St. to Orange St.	4	AM	5,759	24.6	C	5,765	24.6	C
				PM	3,070	12.6	B	3,091	12.8	B
		Orange St. to Cypress Av.	4	AM	6,351	28.0	D	6,360	28.0	D
				PM	3,961	16.1	B	3,989	16.3	B
		Cypress Av. to Ford St.	4	AM	6,351	28.0	D	6,360	28.0	D
				PM	3,961	16.1	B	3,989	16.3	B
		Ford St. to Wabash Av.	4	AM	4,999	20.8	C	5,008	20.8	C
				PM	3,607	14.7	B	3,635	14.9	B
		Wabash Av. to Yucaipa Bl.	4	AM	5,067	21.2	C	5,076	21.2	C
				PM	4,044	17.0	B	4,072	17.2	B
		Yucaipa Bl. to Live Oak Canyon Rd.	4	AM	3,908	16.4	B	3,917	16.4	B
				PM	3,172	13.3	B	3,200	13.5	B
		Live Oak Canyon Rd. to W. County Line Rd.	3	AM	3,609	20.3	C	3,625	20.4	C
				PM	2,529	14.1	B	2,573	14.4	B
		W. County Line Rd. to Calimesa Bl.	3	AM	3,025	16.9	B	3,049	17.0	B
				PM	2,613	14.4	B	2,672	14.8	B
		Calimesa Bl. to Singleton Rd.	3	AM	2,769	15.5	B	2,796	15.6	B
				PM	2,758	15.2	B	2,827	15.7	B
		Singleton Rd. to Cherry Valley Bl.	3	AM	4,137	23.1	C	4,169	23.4	C
				PM	3,515	19.4	C	3,589	19.9	C
		Cherry Valley Bl. to Oak Valley Pkwy.	3	AM	3,382	18.7	C	3,435	19.0	C
				PM	3,246	17.9	B	3,272	18.1	C
		Oak Valley Pkwy to SR-60	3	AM	4,584	26.7	D	4,623	27.2	D
				PM	2,695	14.9	B	2,736	15.2	B
I-10 Freeway	Eastbound	1-215 to Waterman Av.	5	AM	6,254	20.7	C	6,270	20.7	C
				PM	7,437	25.5	C	7,446	25.5	C
		Waterman Av. to Tippecanoe Av.	4	AM	4,994	20.6	C	5,010	20.7	C
				PM	6,146	26.6	D	6,155	26.6	D
		Tippecanoe Av. to Mountain View Av.	4	AM	4,302	17.8	B	4,318	18.0	B
				PM	7,250	34.6	D	7,259	34.7	D
		Mountain View Av. To California St.	4	AM	8,096	**42.3**	**E**	8,112	**42.5**	**E**
				PM	5,044	21.1	C	5,053	21.1	C
		California St. to Alabama St.	4	AM	3,304	13.6	B	3,320	13.7	B
				PM	6,189	27.0	D	6,198	27.0	D
		Alabama St. to Orange St.	4	AM	3,128	12.9	B	3,144	12.9	B
				PM	5,056	21.0	C	5,066	21.1	C
		Orange St. to Cypress Av.	4	AM	6,312	27.7	D	6,334	27.9	D
				PM	4,209	17.2	B	4,222	17.3	B

Table 3: Existing Plus Project Conditions Basic Freeway Segment Analysis

Freeway	Direction	Mainline Segment	Lanes[1]	Time Period	Existing (2014)			Existing Plus Project		
					Volume	Density[2]	LOS	Volume	Density[2]	LOS
I-10 Freeway	Eastbound	Cypress Av. to Ford St.	4	AM	2,597	10.7	A	2,618	10.8	A
				PM	4,824	19.8	C	4,837	19.9	C
		Ford St. to Wabash Av.	4	AM	4,949	20.5	C	4,971	20.6	C
				PM	4,197	17.1	B	4,210	17.2	B
		Wabash Av. to Yucaipa Bl.	4	AM	4,949	20.6	C	4,971	20.8	C
				PM	4,197	17.4	B	4,210	17.4	B
		Yucaipa Bl. to Live Oak Canyon Rd.	4	AM	6,449	29.4	D	6,471	29.5	D
				PM	6,818	31.3	D	6,830	31.4	D
		Live Oak Canyon Rd. to W. County Line Rd.	3	AM	2,188	12.2	B	2,225	12.5	B
				PM	4,377	25.1	C	4,397	25.3	C
		W. County Line Rd. to Calimesa Bl.	3	AM	2,189	12.2	B	2,241	12.6	B
				PM	3,601	20.0	C	3,627	20.1	C
		Calimesa Bl. to Singleton Rd.	3	AM	2,189	12.2	B	2,252	12.6	B
				PM	3,601	20.0	C	3,632	20.1	C
		Singleton Rd. to Cherry Valley Bl.	3	AM	2,195	12.0	B	2,263	12.5	B
				PM	3,248	17.7	B	3,281	17.8	C
		Cherry Valley Bl. to Oak Valley Pkwy.	3	AM	2,026	11.2	B	2,050	11.3	B
				PM	2,591	14.3	B	2,651	14.7	B
		Oak Valley Pkwy to SR-60	3	AM	2,037	11.2	B	2,054	11.4	B
				PM	4,267	24.3	C	4,326	24.9	C
SR-60 Freeway	Westbound	I-215 to Day St.	2	AM	2,617	21.6	C	2,622	21.8	C
				PM	2,733	22.8	C	2,748	23.1	C
		Day St. to Frederick St./ Pigeon Pass Rd.	2	AM	2,839	23.8	C	2,844	24.0	C
				PM	3,098	26.7	D	3,113	27.0	D
		Frederick St. to Heacock St.	2	AM	2,271	18.5	C	2,276	18.7	C
				PM	2,509	20.6	C	2,524	20.9	C
		Heacock St. to Perris Bl.	2	AM	1,900	15.5	B	1,905	15.6	B
				PM	2,238	18.3	C	2,253	18.5	C
		Perris Bl. to Nason St.	2	AM	763	6.2	A	768	6.3	A
				PM	882	7.2	A	897	7.4	A
		Nason St. to Moreno Beach Dr.	2	AM	3,194	29.0	D	3,199	29.0	D
				PM	2,907	24.6	C	2,922	24.9	C
		Moreno Beach Dr. to Redlands Bl.	2	AM	1,741	14.6	B	1,746	14.6	B
				PM	2,237	18.3	C	2,252	18.5	C
		Redlands Bl. to Theodore St.	2	AM	1,699	14.2	B	1,704	14.3	B
				PM	2,178	18.3	C	2,193	18.5	C
		Theodore St. to Gilman Springs Rd.	2	AM	1,309	11.0	A	1,314	11.0	B
				PM	1,827	15.3	B	1,842	15.5	B
		Gilman Springs Rd. to Jack Rabbit Tr.	2	AM	1,427	12.0	B	1,437	12.1	B
				PM	1,554	13.0	B	1,580	13.3	B
		Jack Rabbit Tr. to I-10	2	AM	1,276	10.7	A	1,286	10.8	A
				PM	1,843	15.5	B	1,869	15.7	B
SR-60 Freeway	Eastbound	I-215 to Day St.	3	AM	2,994	16.3	B	3,006	16.4	B
				PM	4,857	28.4	D	4,864	28.6	D
		Day St. to Frederick St./ Pigeon Pass Rd.	2	AM	2,469	20.3	C	2,481	20.5	C
				PM	3,459	31.3	D	3,466	31.6	D
		Frederick St. to Heacock St.	2	AM	2,469	20.3	C	2,481	20.5	C
				PM	3,459	31.3	D	3,466	31.6	D

Table 3: Existing Plus Project Conditions Basic Freeway Segment Analysis

Freeway	Direction	Mainline Segment	Lanes[1]	Time Period	Existing (2014)			Existing Plus Project		
					Volume	Density[2]	LOS	Volume	Density[2]	LOS
SR-60 Freeway	Eastbound	Heacock St. to Perris Bl.	2	AM	1,918	15.6	B	1,930	15.8	B
				PM	2,383	19.5	C	2,390	19.7	C
		Perris Bl. to Nason St.	2	AM	735	6.0	A	747	6.1	A
				PM	1,005	8.2	A	1,012	8.3	A
		Nason St. to Moreno Beach Dr.	2	AM	1,922	16.1	B	1,934	16.3	B
				PM	2,176	17.7	B	2,183	17.9	B
		Moreno Beach Dr. to Redlands Bl.	2	AM	1,739	14.6	B	1,751	14.8	B
				PM	2,166	17.7	B	2,173	17.8	B
		Redlands Bl. to Theodore St.	2	AM	1,708	14.3	B	1,720	14.5	B
				PM	2,210	18.6	C	2,217	18.6	C
		Theodore St. to Gilman Springs Rd.	2	AM	1,475	12.4	B	1,487	12.5	B
				PM	1,591	13.3	B	1,598	13.4	B
		Gilman Springs Rd. to Jack Rabbit Tr.	2	AM	1,281	11.6	B	1,303	11.8	B
				PM	1,842	16.6	B	1,854	16.7	B
		Jack Rabbit Tr. to I-10	2	AM	1,259	11.4	B	1,281	11.6	B
				PM	1,327	12.0	B	1,339	12.2	B

[1] Number of lanes are in the specified direction and is based on existing conditions.

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln).

* **BOLD** = Unacceptable Level of Service

Table 4: Opening Year Cumulative (2017) Conditions Basic Freeway Segment Analysis

Freeway	Direction	Mainline Segment	Lanes[1]	Time Period	Without Project			With Project		
					Volume	Density[2]	LOS	Volume	Density[2]	LOS
I-10 Freeway	Westbound	1-215 to Waterman Av.	4	AM	7,410	**35.3**	**E**	7,417	**35.4**	**E**
				PM	7,029	32.3	D	7,049	32.5	D
		Waterman Av. to Tippecanoe Av.	4	AM	8,230	**43.3**	**E**	8,237	**43.4**	**E**
				PM	6,636	30.0	D	6,656	30.1	D
		Tippecanoe Av. to Mountain View Av.	4	AM	8,492	**48.1**	**F**	8,499	**48.2**	**F**
				PM	6,306	27.9	D	6,326	28.0	D
		Mountain View Av. To California St.	4	AM	4,281	17.5	B	4,288	17.6	B
				PM	6,569	29.6	D	6,589	29.9	D
		California St. to Alabama St.	5	AM	7,366	25.3	C	7,373	25.3	C
				PM	4,345	14.2	B	4,365	14.4	B
		Alabama St. to Orange St.	4	AM	6,280	27.5	D	6,287	27.6	D
				PM	3,330	13.7	B	3,350	13.8	B
		Orange St. to Cypress Av.	4	AM	6,932	31.9	D	6,941	31.9	D
				PM	4,227	17.2	B	4,255	17.4	B
		Cypress Av. to Ford St.	4	AM	6,565	29.3	D	6,574	29.4	D
				PM	4,330	17.6	B	4,358	17.8	B
		Ford St. to Wabash Av.	4	AM	5,384	22.6	C	5,393	22.7	C
				PM	3,913	15.9	B	3,941	16.1	B
		Wabash Av. to Yucaipa Bl.	4	AM	5,457	23.1	C	5,466	23.2	C
				PM	4,387	18.4	C	4,415	18.5	C
		Yucaipa Bl. to Live Oak Canyon Rd.	4	AM	4,209	17.6	B	4,218	17.7	B
				PM	3,441	14.4	B	3,469	14.5	B
		Live Oak Canyon Rd. to W. County Line Rd.	3	AM	4,045	23.0	C	4,061	23.2	C
				PM	2,737	15.3	B	2,781	15.5	B
		W. County Line Rd. to Calimesa Bl.	3	AM	3,552	19.9	C	3,575	20.0	C
				PM	3,068	16.9	B	3,127	17.2	B
		Calimesa Bl. to Singleton Rd.	3	AM	3,250	18.1	C	3,278	18.3	C
				PM	3,238	17.8	B	3,307	18.2	C
		Singleton Rd. to Cherry Valley Bl.	3	AM	4,856	28.6	D	4,886	28.8	D
				PM	4,269	24.1	C	4,343	24.6	C
		Cherry Valley Bl. to Oak Valley Pkwy.	3	AM	4,038	22.7	C	4,092	23.1	C
				PM	3,833	21.3	C	3,872	21.7	C
		Oak Valley Pkwy to SR-60	3	AM	4,938	29.7	D	4,976	30.2	D
				PM	3,185	17.5	B	3,227	17.8	B
I-10 Freeway	Eastbound	1-215 to Waterman Av.	5	AM	6,728	22.5	C	6,744	22.5	C
				PM	7,841	27.3	D	7,850	27.3	D
		Waterman Av. to Tippecanoe Av.	4	AM	5,486	23.0	C	5,502	23.1	C
				PM	6,681	29.9	D	6,690	30.0	D
		Tippecanoe Av. to Mountain View Av.	4	AM	4,751	19.7	C	4,767	19.8	C
				PM	7,625	**37.9**	**E**	7,634	**38.0**	**E**
		Mountain View Av. To California St.	4	AM	8,341	**45.6**	**F**	8,357	**45.8**	**F**
				PM	5,591	23.8	C	5,600	23.9	C
		California St. to Alabama St.	4	AM	3,716	15.2	B	3,732	15.4	B
				PM	6,779	30.8	D	6,788	30.8	D
		Alabama St. to Orange St.	4	AM	3,507	14.4	B	3,523	14.5	B
				PM	5,684	24.0	C	5,693	24.1	C
		Orange St. to Cypress Av.	4	AM	6,503	28.9	D	6,524	29.3	D
				PM	4,785	19.6	C	4,798	19.7	C

Table 4: Opening Year Cumulative (2017) Conditions Basic Freeway Segment Analysis

Freeway	Direction	Mainline Segment	Lanes[1]	Time Period	Without Project			With Project		
					Volume	Density[2]	LOS	Volume	Density[2]	LOS
I-10 Freeway	Eastbound	Cypress Av. to Ford St.	4	AM	2,841	11.7	B	2,862	11.8	B
				PM	5,274	21.8	C	5,287	21.9	C
		Ford St. to Wabash Av.	4	AM	5,415	22.8	C	5,436	22.9	C
				PM	4,588	18.7	C	4,601	18.8	C
		Wabash Av. to Yucaipa Bl.	4	AM	5,415	22.9	C	5,436	23.0	C
				PM	4,588	19.0	C	4,601	19.1	C
		Yucaipa Bl. to Live Oak Canyon Rd.	4	AM	7,057	33.8	D	7,078	34.0	D
				PM	7,024	32.8	D	7,037	33.2	D
		Live Oak Canyon Rd. to W. County Line Rd.	3	AM	2,568	14.3	B	2,605	14.6	B
				PM	4,773	28.2	D	4,793	28.4	D
		W. County Line Rd. to Calimesa Bl.	3	AM	2,569	14.3	B	2,621	14.7	B
				PM	4,227	23.9	C	4,253	24.1	C
		Calimesa Bl. to Singleton Rd.	3	AM	2,569	14.3	B	2,632	14.7	B
				PM	4,227	23.9	C	4,258	24.1	C
		Singleton Rd. to Cherry Valley Bl.	3	AM	2,576	14.1	B	2,644	14.6	B
				PM	4,274	23.7	C	4,307	24.0	C
		Cherry Valley Bl. to Oak Valley Pkwy.	3	AM	2,361	13.0	B	2,385	13.1	B
				PM	3,204	17.5	B	3,264	17.9	B
		Oak Valley Pkwy to SR-60	3	AM	2,397	13.2	B	2,414	13.3	B
				PM	4,665	27.3	D	4,724	28.0	D
SR-60 Freeway	Westbound	I-215 to Day St.	2	AM	3,017	25.8	C	3,022	25.8	C
				PM	2,866	23.1	C	2,881	23.4	C
		Day St. to Frederick St./ Pigeon Pass Rd.	2	AM	3,103	26.7	D	3,108	26.8	D
				PM	3,192	28.0	D	3,207	28.2	D
		Frederick St. to Heacock St.	2	AM	2,423	19.9	C	2,428	20.0	C
				PM	2,692	22.4	C	2,707	22.6	C
		Heacock St. to Perris Bl.	2	AM	2,081	17.0	B	2,086	17.0	B
				PM	2,407	19.7	C	2,422	20.0	C
		Perris Bl. to Nason St.	2	AM	945	7.7	A	950	7.7	A
				PM	1,057	8.6	A	1,072	8.8	A
		Nason St. to Moreno Beach Dr.	2	AM	3,291	30.3	D	3,296	30.6	D
				PM	2,995	25.7	C	3,010	25.8	C
		Moreno Beach Dr. to Redlands Bl.	2	AM	1,903	16.0	B	1,908	16.0	B
				PM	2,334	19.2	C	2,349	19.3	C
		Redlands Bl. to Theodore St.	2	AM	1,939	16.2	B	1,944	16.2	B
				PM	2,356	19.9	C	2,371	20.0	C
		Theodore St. to Gilman Springs Rd.	2	AM	1,434	12.0	B	1,439	12.1	B
				PM	1,882	15.8	B	1,897	16.0	B
		Gilman Springs Rd. to Jack Rabbit Tr.	2	AM	1,619	13.5	B	1,629	13.6	B
				PM	1,679	14.1	B	1,705	14.3	B
		Jack Rabbit Tr. to I-10	2	AM	1,493	12.5	B	1,503	12.5	B
				PM	1,957	16.4	B	1,983	16.7	B
SR-60 Freeway	Eastbound	I-215 to Day St.	3	AM	3,085	16.8	B	3,097	16.9	B
				PM	5,004	29.8	D	5,011	29.9	D
		Day St. to Frederick St./ Pigeon Pass Rd.	2	AM	2,544	21.1	C	2,556	21.2	C
				PM	3,564	33.1	D	3,571	33.2	D
		Frederick St. to Heacock St.	2	AM	2,606	21.7	C	2,618	21.8	C
				PM	3,564	33.1	D	3,571	33.2	D

Table 4: Opening Year Cumulative (2017) Conditions Basic Freeway Segment Analysis

Freeway	Direction	Mainline Segment	Lanes[1]	Time Period	Without Project			With Project		
					Volume	Density[2]	LOS	Volume	Density[2]	LOS
SR-60 Freeway	Eastbound	Heacock St. to Perris Bl.	2	AM	2,093	17.1	B	2,105	17.2	B
				PM	2,586	21.4	C	2,593	21.5	C
		Perris Bl. to Nason St.	2	AM	907	7.4	A	919	7.5	A
				PM	1,205	9.8	A	1,212	9.9	A
		Nason St. to Moreno Beach Dr.	2	AM	1,980	16.6	B	1,992	16.8	B
				PM	2,242	18.4	C	2,249	18.5	C
		Moreno Beach Dr. to Redlands Bl.	2	AM	1,872	15.7	B	1,884	15.8	B
				PM	2,294	18.8	C	2,301	18.9	C
		Redlands Bl. to Theodore St.	2	AM	1,903	15.9	B	1,915	16.1	B
				PM	2,429	20.4	C	2,436	20.6	C
		Theodore St. to Gilman Springs Rd.	2	AM	1,524	12.8	B	1,536	12.9	B
				PM	1,722	14.4	B	1,729	14.5	B
		Gilman Springs Rd. to Jack Rabbit Tr.	2	AM	1,394	12.6	B	1,416	12.8	B
				PM	2,098	18.9	C	2,110	19.0	C
		Jack Rabbit Tr. to I-10	2	AM	1,380	12.5	B	1,402	12.7	B
				PM	1,602	14.3	B	1,614	14.5	B

[1] Number of lanes are in the specified direction and is based on existing conditions.

[2] Density is measured by passenger cars per mile per lane (pc/mi/ln).

* **BOLD** = Unacceptable Level of Service

Table 5: Horizon Year (2035) Conditions Basic Freeway Segment Analysis

Freeway	Direction	Mainline Segment	Lanes[1]	Time Period	Without Project			With Project		
					Volume[2]	Density[3]	LOS	Volume[2]	Density[3]	LOS
I-10 Freeway	Westbound	1-215 to Waterman Av.	4	AM	8,701	**50.5**	**F**	8,707	**51.2**	**F**
				PM	9,618	**65.8**	**F**	9,639	**67.4**	**F**
		Waterman Av. to Tippecanoe Av.	4	AM	9,441	**64.9**	**F**	9,448	**65.0**	**F**
				PM	9,872	**73.6**	**F**	9,892	**74.1**	**F**
		Tippecanoe Av. to Mountain View Av.	4	AM	8,960	**58.4**	**F**	8,967	**58.5**	**F**
				PM	8,362	**46.4**	**F**	8,382	**46.6**	**F**
		Mountain View Av. To California St.	4	AM	9,089	**53.2**	**F**	9,095	**53.3**	**F**
				PM	7,559	**38.6**	**E**	7,580	**38.8**	**E**
		California St. to Alabama St.	5	AM	9,773	**39.8**	**E**	9,780	**39.8**	**E**
				PM	7,927	27.4	D	7,948	27.5	D
		Alabama St. to Orange St.	4	AM	9,081	**56.0**	**F**	9,088	**56.1**	**F**
				PM	4,666	19.3	C	4,686	19.4	C
		Orange St. to Cypress Av.	4	AM	10,089	**78.6**	**F**	10,098	**80.5**	**F**
				PM	5,366	22.5	C	5,394	22.7	C
		Cypress Av. to Ford St.	4	AM	6,890	32.8	D	6,900	32.8	D
				PM	6,352	27.6	D	6,380	27.8	D
		Ford St. to Wabash Av.	4	AM	7,228	34.4	D	7,237	34.5	D
				PM	5,482	22.8	C	5,510	23.1	C
		Wabash Av. to Yucaipa Bl.	4	AM	7,326	**35.5**	**E**	7,335	**35.6**	**E**
				PM	6,146	27.4	D	6,174	27.6	D
		Yucaipa Bl. to Live Oak Canyon Rd.	4	AM	5,650	24.7	C	5,659	24.7	C
				PM	4,821	20.4	C	4,849	20.5	C
		Live Oak Canyon Rd. to W. County Line Rd.	3	AM	6,890	**58.7**	**F**	6,907	**59.1**	**F**
				PM	3,776	21.4	C	3,820	21.8	C
		W. County Line Rd. to Calimesa Bl.	3	AM	9,294	--	**F**	9,317	--	**F**
				PM	8,028	**104.1**	**F**	8,087	**108.4**	**F**
		Calimesa Bl. to Singleton Rd.	3	AM	8,504	**142.1**	**F**	8,532	**145.5**	**F**
				PM	8,472	**148.4**	**F**	8,541	**159.0**	**F**
		Singleton Rd. to Cherry Valley Bl.	3	AM	12,708	--	**F**	12,740	--	**F**
				PM	10,797	--	**F**	10,872	--	**F**
		Cherry Valley Bl. to Oak Valley Pkwy.	3	AM	11,702	--	**F**	11,755	--	**F**
				PM	10,470	--	**F**	10,496	--	**F**
		Oak Valley Pkwy to SR-60	3	AM	7,707	**86.9**	**F**	7,745	**88.9**	**F**
				PM	8,691	**196.6**	**F**	8,733	**207.3**	**F**
I-10 Freeway	Eastbound	1-215 to Waterman Av.	5	AM	8,972	33.7	D	8,987	33.8	D
				PM	9,261	**35.9**	**E**	9,271	**36.0**	**E**
		Waterman Av. to Tippecanoe Av.	4	AM	8,293	**43.6**	**E**	8,309	**43.8**	**E**
				PM	9,478	**62.7**	**F**	9,487	**63.0**	**F**
		Tippecanoe Av. to Mountain View Av.	4	AM	7,416	**35.7**	**E**	7,431	**35.8**	**E**
				PM	8,876	**55.3**	**F**	8,885	**55.5**	**F**
		Mountain View Av. To California St.	4	AM	8,581	**51.8**	**F**	8,596	**52.0**	**F**
				PM	8,913	**52.5**	**F**	8,922	**52.6**	**F**
		California St. to Alabama St.	4	AM	6,466	28.1	D	6,481	28.4	D
				PM	10,066	**77.9**	**F**	10,076	**78.3**	**F**
		Alabama St. to Orange St.	4	AM	5,981	25.5	C	5,996	25.5	C
				PM	9,867	**69.7**	**F**	9,876	**69.8**	**F**
		Orange St. to Cypress Av.	4	AM	6,690	31.3	D	6,711	31.4	D
				PM	8,877	**49.5**	**F**	8,890	**50.2**	**F**

Table 5: Horizon Year (2035) Conditions Basic Freeway Segment Analysis

Freeway	Direction	Mainline Segment	Lanes[1]	Time Period	Without Project			With Project		
					Volume[2]	Density[3]	LOS	Volume[2]	Density[3]	LOS
I-10 Freeway	Eastbound	Cypress Av. to Ford St.	4	AM	4,194	17.2	B	4,216	17.3	B
				PM	7,746	**38.0**	**E**	7,758	**38.1**	**E**
		Ford St. to Wabash Av.	4	AM	7,994	**40.8**	**E**	8,015	**41.0**	**E**
				PM	6,738	30.1	D	6,751	30.1	D
		Wabash Av. to Yucaipa Bl.	4	AM	7,994	**41.2**	**E**	8,015	**41.4**	**E**
				PM	6,738	30.5	D	6,751	30.6	D
		Yucaipa Bl. to Live Oak Canyon Rd.	4	AM	10,417	**99.4**	**F**	10,438	**100.5**	**F**
				PM	7,226	**36.1**	**E**	7,238	**36.2**	**E**
		Live Oak Canyon Rd. to W. County Line Rd.	3	AM	5,779	**38.7**	**E**	5,816	**39.1**	**E**
				PM	6,907	**58.3**	**F**	6,926	**59.6**	**F**
		W. County Line Rd. to Calimesa Bl.	3	AM	6,719	**53.2**	**F**	6,772	**54.4**	**F**
				PM	11,059	--	**F**	11,085	--	**F**
		Calimesa Bl. to Singleton Rd.	3	AM	6,719	**53.2**	**F**	6,782	**54.5**	**F**
				PM	11,059	--	**F**	11,090	--	**F**
		Singleton Rd. to Cherry Valley Bl.	3	AM	6,741	**53.7**	**F**	6,809	**55.9**	**F**
				PM	9,975	--	**F**	10,008	--	**E**
		Cherry Valley Bl. to Oak Valley Pkwy.	3	AM	6,336	**46.5**	**F**	6,360	**46.9**	**F**
				PM	8,611	**171.2**	**F**	8,671	**191.7**	**F**
		Oak Valley Pkwy to SR-60	3	AM	6,370	**47.0**	**F**	6,387	**47.4**	**F**
				PM	7,965	**99.8**	**F**	8,024	**103.7**	**F**
SR-60 Freeway	Westbound	I-215 to Day St.	2	AM	7,080	--	**F**	7,085	--	**F**
				PM	3,810	**37.2**	**E**	3,825	**37.8**	**E**
		Day St. to Frederick St./ Pigeon Pass Rd.	2	AM	5,290	**93.2**	**F**	5,295	**93.6**	**F**
				PM	3,818	**38.0**	**E**	3,833	**38.3**	**E**
		Frederick St. to Heacock St.	2	AM	3,570	32.9	D	3,575	33.0	D
				PM	4,110	**42.8**	**E**	4,125	**43.2**	**E**
		Heacock St. to Perris Bl.	2	AM	3,590	32.7	D	3,595	33.1	D
				PM	3,730	**35.5**	**E**	3,745	**35.7**	**E**
		Perris Bl. to Nason St.	2	AM	3,410	29.3	D	3,415	29.4	D
				PM	3,140	26.1	D	3,155	26.5	D
		Nason St. to Moreno Beach Dr.	2	AM	3,936	**43.1**	**E**	3,941	**43.2**	**E**
				PM	3,583	33.9	D	3,598	34.2	D
		Moreno Beach Dr. to Redlands Bl.	2	AM	3,250	29.1	D	3,255	29.2	D
				PM	3,010	26.0	D	3,025	26.2	D
		Redlands Bl. to Theodore St.	2	AM	4,290	**47.1**	**F**	4,295	**47.3**	**F**
				PM	3,780	**37.6**	**E**	3,795	**37.9**	**E**
		Theodore St. to Gilman Springs Rd.	2	AM	2,483	20.7	C	2,488	20.8	C
				PM	2,252	19.3	C	2,267	19.4	C
		Gilman Springs Rd. to Jack Rabbit Tr.	2	AM	3,460	31.3	D	3,470	31.5	D
				PM	2,670	22.7	C	2,696	23.0	C
		Jack Rabbit Tr. to I-10	2	AM	3,840	**36.7**	**E**	3,850	**36.9**	**E**
				PM	2,810	24.4	C	2,836	24.8	C
SR-60 Freeway	Eastbound	I-215 to Day St.	3	AM	3,690	20.5	C	3,701	20.6	C
				PM	5,986	**41.5**	**E**	5,993	**41.6**	**E**
		Day St. to Frederick St./ Pigeon Pass Rd.	2	AM	3,043	26.5	D	3,054	26.7	D
				PM	4,263	**48.0**	**F**	4,270	**48.2**	**F**
		Frederick St. to Heacock St.	2	AM	3,600	33.6	D	3,612	33.8	D
				PM	4,263	**48.0**	**F**	4,270	**48.2**	**F**

Table 5: Horizon Year (2035) Conditions Basic Freeway Segment Analysis

Freeway	Direction	Mainline Segment	Lanes[1]	Time Period	Without Project			With Project		
					Volume[2]	Density[3]	LOS	Volume[2]	Density[3]	LOS
SR-60 Freeway	Eastbound	Heacock St. to Perris Bl.	2	AM	3,540	32.2	D	3,552	32.4	D
				PM	4,220	**44.9**	**E**	4,227	**45.1**	**F**
		Perris Bl. to Nason St.	2	AM	3,210	26.9	D	3,222	27.1	D
				PM	3,590	31.7	D	3,597	32.1	D
		Nason St. to Moreno Beach Dr.	2	AM	2,369	20.4	C	2,380	20.5	C
				PM	2,682	22.6	C	2,689	22.7	C
		Moreno Beach Dr. to Redlands Bl.	2	AM	2,910	25.2	C	2,922	25.5	C
				PM	3,240	28.6	D	3,247	28.7	D
		Redlands Bl. to Theodore St.	2	AM	3,640	34.3	D	3,652	34.8	D
				PM	4,280	**48.5**	**F**	4,287	**48.7**	**F**
		Theodore St. to Gilman Springs Rd.	2	AM	1,853	15.8	B	1,865	15.9	B
				PM	2,771	23.7	C	2,778	23.7	C
		Gilman Springs Rd. to Jack Rabbit Tr.	2	AM	2,320	20.8	C	2,342	21.0	C
				PM	4,580	**59.3**	**F**	4,592	**59.7**	**F**
		Jack Rabbit Tr. to I-10	2	AM	2,390	21.3	C	2,412	21.5	C
				PM	4,950	**73.6**	**F**	4,962	**74.3**	**F**

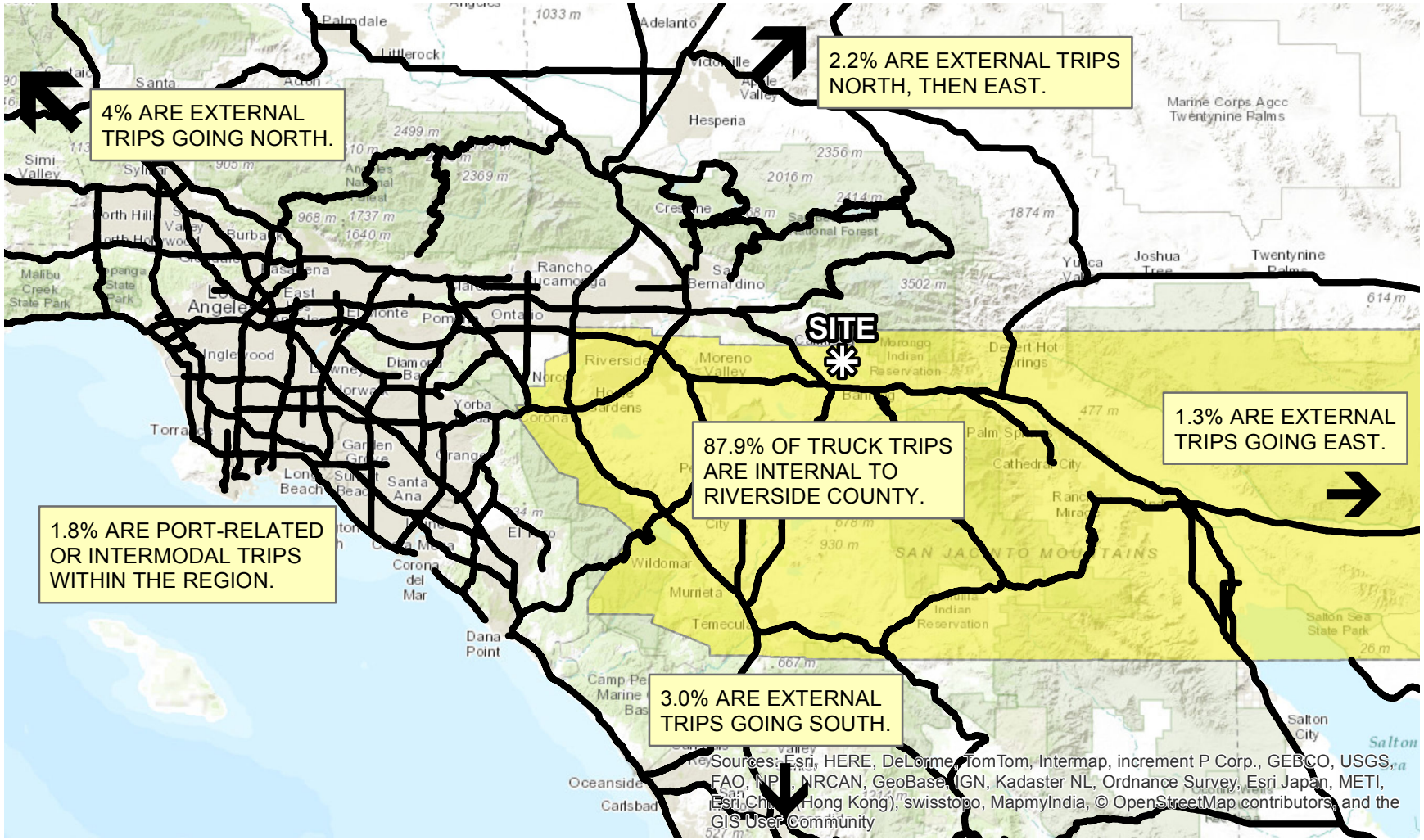
[1] Number of lanes are in the specified direction and is based on existing conditions.

[2] I-10 Eastbound and Westbound volumes from the I-215 Freeway to W. County Line Road shown on this table have been reduced to account for the proposed HOV lane in each direction.

[3] Density is measured by passenger cars per mile per lane (pc/mi/ln).

* **BOLD** = Unacceptable Level of Service

EXHIBIT 1: SCAG REGION TRUCK ROUTES



ATTACHMENT "A"
EXISTING (2014) CONDITIONS
BASIC FREEWAY SEGMENT ANALYSIS WORKSHEETS

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7035*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2017*	pc/h/ln
S	*62.3*	mph
D = v_p / S	*32.4*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Existing + ProjectDL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7844*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2249*	pc/h/ln
S	*57.2*	mph
D = v_p / S	*39.3*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*DL*	Highway/Direction of Travel	*I-10 Westbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*Tippecanoe to Mountain View*
Date Performed	*10/13/2014*	Jurisdiction	*Caltrans*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8207*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*4*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*70.0*	mph	FFS	*70.0*	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2375*	pc/h/ln	Design LOS	
S	*54.0*	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
D = v_p / S	*44.0*	pc/mi/ln	S	mph
LOS	*E*		D = v_p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3682*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1061*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6853*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1579*	pc/h/ln
S	*68.3*	mph
D = v_p / S	*23.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5759*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1659*	pc/h/ln
S	*67.6*	mph
D = v_p / S	*24.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6351*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1829*	pc/h/ln
S	*65.4*	mph
D = v_p / S	*28.0*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6351*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1829*	pc/h/ln
S	*65.4*	mph
D = v_p / S	*28.0*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4999*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1440*	pc/h/ln
S	*69.3*	mph
D = v_p / S	*20.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5067*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1466*	pc/h/ln
S	*69.2*	mph
D = v_p / S	*21.2*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3908*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1147*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.4*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3609*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1412*	pc/h/ln
S	*69.5*	mph
D = v_p / S	*20.3*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3025*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1184*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.9*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2769*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1084*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4137*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1581*	pc/h/ln
S	*68.3*	mph
D = v_p / S	*23.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3382*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1305*	pc/h/ln
S	*69.9*	mph
D = v_p / S	*18.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4584*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1769*	pc/h/ln
S	*66.2*	mph
D = v_p / S	*26.7*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6254*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1434*	pc/h/ln
S	*69.4*	mph
D = v_p / S	*20.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4994*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1432*	pc/h/ln
S	*69.4*	mph
D = v_p / S	*20.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4302*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1245*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8096*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2332*	pc/h/ln
S	*55.1*	mph
D = v_p / S	*42.3*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3304*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*952*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*13.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3128*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*901*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.9*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6312*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1818*	pc/h/ln
S	*65.6*	mph
D = v_p / S	*27.7*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2597*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*748*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*10.7*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4949*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1426*	pc/h/ln
S	*69.4*	mph
D = v_p / S	*20.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4949*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1432*	pc/h/ln
S	*69.4*	mph
D = v_p / S	*20.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6449*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1893*	pc/h/ln
S	*64.4*	mph
D = v_p / S	*29.4*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2188*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*856*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2189*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*857*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2189*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*857*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2195*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*843*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.0*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2026*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*782*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*11.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2037*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*786*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*11.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2617*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1493*	pc/h/ln
S	*69.0*	mph
D = v_p / S	*21.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2839*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1620*	pc/h/ln
S	*68.0*	mph
D = v_p / S	*23.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2271*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1296*	pc/h/ln
S	*69.9*	mph
D = v_p / S	*18.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1900*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1084*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*763*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*435*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*6.2*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3194*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1875*	pc/h/ln
S	*64.7*	mph
D = v_p / S	*29.0*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1741*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1022*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1699*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*997*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1309*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*768*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*11.0*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1427*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*838*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.0*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1276*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*749*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*10.7*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2994*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1139*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2469*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1409*	pc/h/ln
S	*69.5*	mph
D = v_p / S	*20.3*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2469*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1409*	pc/h/ln
S	*69.5*	mph
D = v_p / S	*20.3*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1918*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1095*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*735*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*419*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*6.0*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1922*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1128*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.1*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1739*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1021*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1708*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1003*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1475*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*866*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.4*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1281*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*752*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*11.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1259*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*739*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*11.4*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6505*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1865*	pc/h/ln
S	*64.9*	mph
D = v_p / S	*28.7*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6057*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1753*	pc/h/ln
S	*66.5*	mph
D = v_p / S	*26.4*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5867*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1698*	pc/h/ln
S	*67.1*	mph
D = v_p / S	*25.3*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6258*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1811*	pc/h/ln
S	*65.7*	mph
D = v_p / S	*27.6*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3833*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*883*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3070*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*884*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3961*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1130*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.1*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3961*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1130*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.1*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3607*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1029*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.7*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4044*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1187*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.0*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3172*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*931*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*13.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2529*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*990*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.1*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2613*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1008*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.4*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2758*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1064*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3515*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1350*	pc/h/ln
S	*69.7*	mph
D = v_p / S	*19.4*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3246*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1253*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.9*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2695*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1040*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.9*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7437*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1706*	pc/h/ln
S	*67.0*	mph
D = v_p / S	*25.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes
V - Hourly volume
v_p - Flow rate
LOS - Level of service
S - Speed
D - Density
FFS - Free-flow speed
BFFS - Base free-flow speed
DDHV - Directional design hour volume

Factor Location

E_R - Exhibits 11-10, 11-12
E_T - Exhibits 11-10, 11-11, 11-13
f_p - Page 11-18
LOS, S, FFS, v_p - Exhibits 11-2, 11-3
f_{LW} - Exhibit 11-8
f_{LC} - Exhibit 11-9
TRD - Page 11-11

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6146*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1762*	pc/h/ln
S	*66.3*	mph
D = v_p / S	*26.6*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7250*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2098*	pc/h/ln
S	*60.6*	mph
D = v_p / S	*34.6*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5044*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1460*	pc/h/ln
S	*69.2*	mph
D = v_p / S	*21.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6189*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1783*	pc/h/ln
S	*66.1*	mph
D = v_p / S	*27.0*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5056*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1456*	pc/h/ln
S	*69.2*	mph
D = v_p / S	*21.0*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4209*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1201*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4824*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1376*	pc/h/ln
S	*69.6*	mph
D = v_p / S	*19.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4197*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1198*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.1*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4197*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1215*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.4*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6818*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1973*	pc/h/ln
S	*63.1*	mph
D = v_p / S	*31.3*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4377*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1689*	pc/h/ln
S	*67.2*	mph
D = v_p / S	*25.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3601*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1390*	pc/h/ln
S	*69.6*	mph
D = v_p / S	*20.0*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3601*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1390*	pc/h/ln
S	*69.6*	mph
D = v_p / S	*20.0*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3248*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1236*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.7*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2591*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1000*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4267*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1647*	pc/h/ln
S	*67.7*	mph
D = v_p / S	*24.3*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2733*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1560*	pc/h/ln
S	*68.5*	mph
D = v_p / S	*22.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3098*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1768*	pc/h/ln
S	*66.3*	mph
D = v_p / S	*26.7*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2509*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1432*	pc/h/ln
S	*69.4*	mph
D = v_p / S	*20.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2238*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1277*	pc/h/ln
S	*69.9*	mph
D = v_p / S	*18.3*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*882*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*503*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*7.2*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2907*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1659*	pc/h/ln
S	*67.6*	mph
D = v_p / S	*24.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2237*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1277*	pc/h/ln
S	*69.9*	mph
D = v_p / S	*18.3*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2178*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1278*	pc/h/ln
S	*69.9*	mph
D = v_p / S	*18.3*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1827*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1072*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1554*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*912*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*13.0*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1843*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1082*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4857*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1848*	pc/h/ln
S	*65.1*	mph
D = v_p / S	*28.4*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3459*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1974*	pc/h/ln
S	*63.1*	mph
D = v_p / S	*31.3*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3459*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1974*	pc/h/ln
S	*63.1*	mph
D = v_p / S	*31.3*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2383*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1360*	pc/h/ln
S	*69.7*	mph
D = v_p / S	*19.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1005*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*574*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*8.2*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2176*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1242*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.7*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2166*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1236*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.7*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2210*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1297*	pc/h/ln
S	*69.9*	mph
D = v_p / S	*18.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1591*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*934*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*13.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1842*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1081*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*16.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*Existing (2014)*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1327*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*779*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*12.0*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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ATTACHMENT "B"
EXISTING PLUS PROJECT CONDITIONS
BASIC FREEWAY SEGMENT ANALYSIS WORKSHEETS

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7042*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2019*	pc/h/ln
S	*62.2*	mph
D = v_p / S	*32.4*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*Existing + ProjectDL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7851*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2251*	pc/h/ln
S	*57.2*	mph
D = v_p / S	*39.4*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8214*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2377*	pc/h/ln
S	*53.9*	mph
D = v_p / S	*44.1*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3689*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1063*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6860*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1581*	pc/h/ln
S	*68.3*	mph
D = v_p / S	*23.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5765*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1661*	pc/h/ln
S	*67.5*	mph
D = v_p / S	*24.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6360*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1832*	pc/h/ln
S	*65.4*	mph
D = v_p / S	*28.0*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6360*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1832*	pc/h/ln
S	*65.4*	mph
D = v_p / S	*28.0*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5008*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1443*	pc/h/ln
S	*69.3*	mph
D = v_p / S	*20.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5076*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1469*	pc/h/ln
S	*69.2*	mph
D = v_p / S	*21.2*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3917*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1150*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.4*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3625*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1418*	pc/h/ln
S	*69.4*	mph
D = v_p / S	*20.4*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3049*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1193*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.0*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2796*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1094*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4169*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1594*	pc/h/ln
S	*68.2*	mph
D = v_p / S	*23.4*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3435*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1325*	pc/h/ln
S	*69.8*	mph
D = v_p / S	*19.0*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4623*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1792*	pc/h/ln
S	*65.9*	mph
D = v_p / S	*27.2*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6270*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1438*	pc/h/ln
S	*69.3*	mph
D = v_p / S	*20.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5010*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1436*	pc/h/ln
S	*69.4*	mph
D = v_p / S	*20.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4318*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1256*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*18.0*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8112*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2337*	pc/h/ln
S	*55.0*	mph
D = v_p / S	*42.5*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3320*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*956*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*13.7*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3144*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*906*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.9*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6334*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1824*	pc/h/ln
S	*65.5*	mph
D = v_p / S	*27.9*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2618*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*758*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*10.8*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4971*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1432*	pc/h/ln
S	*69.4*	mph
D = v_p / S	*20.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4971*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1439*	pc/h/ln
S	*69.3*	mph
D = v_p / S	*20.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6471*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1899*	pc/h/ln
S	*64.3*	mph
D = v_p / S	*29.5*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2225*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*875*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2241*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*881*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2252*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*885*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2263*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*873*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2050*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*791*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*11.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2054*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*796*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*11.4*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2622*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1503*	pc/h/ln
S	*68.9*	mph
D = v_p / S	*21.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes
V - Hourly volume
v_p - Flow rate
LOS - Level of service
S - Speed
D - Density
FFS - Free-flow speed
BFFS - Base free-flow speed
DDHV - Directional design hour volume

Factor Location

E_R - Exhibits 11-10, 11-12
E_T - Exhibits 11-10, 11-11, 11-13
f_p - Page 11-18
LOS, S, FFS, v_p - Exhibits 11-2, 11-3
f_{LW} - Exhibit 11-8
f_{LC} - Exhibit 11-9
TRD - Page 11-11

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2844*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1631*	pc/h/ln
S	*67.8*	mph
D = v_p / S	*24.0*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2276*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1305*	pc/h/ln
S	*69.9*	mph
D = v_p / S	*18.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1905*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1092*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*768*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*440*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*6.3*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3199*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1878*	pc/h/ln
S	*64.7*	mph
D = v_p / S	*29.0*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1746*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1025*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1704*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1000*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1314*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*771*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*11.0*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1437*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*847*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.1*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1286*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*758*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*10.8*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3006*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1149*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.4*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2481*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1423*	pc/h/ln
S	*69.4*	mph
D = v_p / S	*20.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2481*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1423*	pc/h/ln
S	*69.4*	mph
D = v_p / S	*20.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1930*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1107*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*747*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*430*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*6.1*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1934*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1140*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1751*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1033*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1720*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1014*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1487*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*877*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1303*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*768*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*11.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1281*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*755*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*11.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6525*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1871*	pc/h/ln
S	*64.8*	mph
D = v_p / S	*28.9*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6077*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1759*	pc/h/ln
S	*66.4*	mph
D = v_p / S	*26.5*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5887*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1712*	pc/h/ln
S	*67.0*	mph
D = v_p / S	*25.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6278*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1817*	pc/h/ln
S	*65.6*	mph
D = v_p / S	*27.7*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3853*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*888*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.7*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3091*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*895*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3989*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1144*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3989*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1144*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3635*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1042*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.9*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4072*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1201*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3200*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*943*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*13.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2573*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1011*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.4*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2672*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1036*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2827*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1096*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.7*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3589*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1385*	pc/h/ln
S	*69.6*	mph
D = v_p / S	*19.9*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3272*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1263*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*18.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2736*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1061*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7446*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1708*	pc/h/ln
S	*67.0*	mph
D = v_p / S	*25.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6155*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1765*	pc/h/ln
S	*66.3*	mph
D = v_p / S	*26.6*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7259*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2101*	pc/h/ln
S	*60.6*	mph
D = v_p / S	*34.7*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5053*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1462*	pc/h/ln
S	*69.2*	mph
D = v_p / S	*21.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6198*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1785*	pc/h/ln
S	*66.0*	mph
D = v_p / S	*27.0*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5066*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1459*	pc/h/ln
S	*69.2*	mph
D = v_p / S	*21.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4222*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1210*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4837*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1387*	pc/h/ln
S	*69.6*	mph
D = v_p / S	*19.9*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4210*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1207*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4210*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1218*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.4*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6830*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1977*	pc/h/ln
S	*63.0*	mph
D = v_p / S	*31.4*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4397*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1697*	pc/h/ln
S	*67.1*	mph
D = v_p / S	*25.3*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3627*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1400*	pc/h/ln
S	*69.5*	mph
D = v_p / S	*20.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3632*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1401*	pc/h/ln
S	*69.5*	mph
D = v_p / S	*20.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3281*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1248*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2651*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1028*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.7*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4326*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1677*	pc/h/ln
S	*67.4*	mph
D = v_p / S	*24.9*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2748*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1576*	pc/h/ln
S	*68.4*	mph
D = v_p / S	*23.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3113*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1785*	pc/h/ln
S	*66.0*	mph
D = v_p / S	*27.0*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2524*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1447*	pc/h/ln
S	*69.3*	mph
D = v_p / S	*20.9*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2253*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1292*	pc/h/ln
S	*69.9*	mph
D = v_p / S	*18.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*897*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*517*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*7.4*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2922*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1675*	pc/h/ln
S	*67.4*	mph
D = v_p / S	*24.9*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2252*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1291*	pc/h/ln
S	*69.9*	mph
D = v_p / S	*18.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2193*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1293*	pc/h/ln
S	*69.9*	mph
D = v_p / S	*18.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1842*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1086*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*DL*	Highway/Direction of Travel	*SR-60 Westbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*Gilman Springs to Jack Rabbit*
Date Performed	*10/13/2014*	Jurisdiction	*Caltrans*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1580*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*932*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*13.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1869*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1102*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.7*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4864*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1859*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*28.6*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3466*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1987*	pc/h/ln
S	*62.8*	mph
D = v_p / S	*31.6*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3466*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1987*	pc/h/ln
S	*62.8*	mph
D = v_p / S	*31.6*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2390*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1370*	pc/h/ln
S	*69.7*	mph
D = v_p / S	*19.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1012*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*580*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*8.3*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2183*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1252*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.9*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2173*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1246*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2217*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1301*	pc/h/ln
S	*69.9*	mph
D = v_p / S	*18.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1598*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*938*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*13.4*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1854*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1088*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*16.7*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*Existing + Project*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1339*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*790*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*12.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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ATTACHMENT "C"
OPENING YEAR CUMULATIVE (2017) WITHOUT PROJECT CONDITIONS
BASIC FREEWAY SEGMENT ANALYSIS WORKSHEETS

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7410*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2124*	pc/h/ln
S	*60.1*	mph
D = v_p / S	*35.3*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8230*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2359*	pc/h/ln
S	*54.4*	mph
D = v_p / S	*43.3*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8492*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2469*	pc/h/ln
S	*51.3*	mph
D = v_p / S	*48.1*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4281*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1227*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7366*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1697*	pc/h/ln
S	*67.1*	mph
D = v_p / S	*25.3*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6280*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1809*	pc/h/ln
S	*65.7*	mph
D = v_p / S	*27.5*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6932*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1997*	pc/h/ln
S	*62.6*	mph
D = v_p / S	*31.9*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6565*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1891*	pc/h/ln
S	*64.5*	mph
D = v_p / S	*29.3*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5384*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1551*	pc/h/ln
S	*68.6*	mph
D = v_p / S	*22.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5457*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1579*	pc/h/ln
S	*68.3*	mph
D = v_p / S	*23.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4209*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1235*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4045*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1575*	pc/h/ln
S	*68.4*	mph
D = v_p / S	*23.0*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3552*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1383*	pc/h/ln
S	*69.6*	mph
D = v_p / S	*19.9*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3250*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1266*	pc/h/ln
S	*69.9*	mph
D = v_p / S	*18.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4856*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1856*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*28.6*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4038*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1558*	pc/h/ln
S	*68.5*	mph
D = v_p / S	*22.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4938*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1905*	pc/h/ln
S	*64.2*	mph
D = v_p / S	*29.7*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6728*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1543*	pc/h/ln
S	*68.6*	mph
D = v_p / S	*22.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5486*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1573*	pc/h/ln
S	*68.4*	mph
D = v_p / S	*23.0*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4751*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1375*	pc/h/ln
S	*69.6*	mph
D = v_p / S	*19.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8341*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2414*	pc/h/ln
S	*52.9*	mph
D = v_p / S	*45.6*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3716*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1065*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3507*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1005*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.4*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6503*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1873*	pc/h/ln
S	*64.7*	mph
D = v_p / S	*28.9*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2841*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*818*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*11.7*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5415*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1560*	pc/h/ln
S	*68.5*	mph
D = v_p / S	*22.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5415*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1567*	pc/h/ln
S	*68.4*	mph
D = v_p / S	*22.9*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7057*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2071*	pc/h/ln
S	*61.2*	mph
D = v_p / S	*33.8*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2568*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1000*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2569*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1001*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2569*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1001*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2576*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*985*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.1*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2361*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*911*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*13.0*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2397*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*925*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*13.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3017*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1722*	pc/h/ln
S	*66.8*	mph
D = v_p / S	*25.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3103*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1771*	pc/h/ln
S	*66.2*	mph
D = v_p / S	*26.7*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2423*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1383*	pc/h/ln
S	*69.6*	mph
D = v_p / S	*19.9*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2081*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1188*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.0*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*945*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*537*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*7.7*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3291*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1932*	pc/h/ln
S	*63.8*	mph
D = v_p / S	*30.3*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1903*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1117*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.0*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1939*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1133*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1434*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*838*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.0*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1619*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*946*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*13.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1493*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*872*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3085*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1179*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2544*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1459*	pc/h/ln
S	*69.2*	mph
D = v_p / S	*21.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2606*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1494*	pc/h/ln
S	*69.0*	mph
D = v_p / S	*21.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2093*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1194*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.1*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*907*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*515*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*7.4*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1980*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1162*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1872*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1099*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.7*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1903*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1112*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.9*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1524*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*895*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1394*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*818*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*12.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1380*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*810*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*12.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7029*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2015*	pc/h/ln
S	*62.3*	mph
D = v_p / S	*32.3*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6636*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1920*	pc/h/ln
S	*64.0*	mph
D = v_p / S	*30.0*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6306*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1825*	pc/h/ln
S	*65.5*	mph
D = v_p / S	*27.9*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6569*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1901*	pc/h/ln
S	*64.3*	mph
D = v_p / S	*29.6*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4345*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*997*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3330*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*959*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*13.7*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4227*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1206*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4330*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1235*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3913*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1116*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.9*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4387*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1287*	pc/h/ln
S	*69.9*	mph
D = v_p / S	*18.4*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3441*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1010*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.4*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2737*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1071*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3068*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1184*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.9*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3238*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1249*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4269*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1632*	pc/h/ln
S	*67.8*	mph
D = v_p / S	*24.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3833*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1472*	pc/h/ln
S	*69.1*	mph
D = v_p / S	*21.3*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3185*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1223*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7841*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1798*	pc/h/ln
S	*65.9*	mph
D = v_p / S	*27.3*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6681*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1915*	pc/h/ln
S	*64.1*	mph
D = v_p / S	*29.9*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7625*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2207*	pc/h/ln
S	*58.2*	mph
D = v_p / S	*37.9*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5591*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1618*	pc/h/ln
S	*68.0*	mph
D = v_p / S	*23.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6779*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1953*	pc/h/ln
S	*63.4*	mph
D = v_p / S	*30.8*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5684*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1630*	pc/h/ln
S	*67.9*	mph
D = v_p / S	*24.0*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4785*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1365*	pc/h/ln
S	*69.7*	mph
D = v_p / S	*19.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5274*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1505*	pc/h/ln
S	*68.9*	mph
D = v_p / S	*21.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4588*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1309*	pc/h/ln
S	*69.9*	mph
D = v_p / S	*18.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4588*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1328*	pc/h/ln
S	*69.8*	mph
D = v_p / S	*19.0*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7024*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2033*	pc/h/ln
S	*62.0*	mph
D = v_p / S	*32.8*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4773*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1842*	pc/h/ln
S	*65.2*	mph
D = v_p / S	*28.2*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4227*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1623*	pc/h/ln
S	*67.9*	mph
D = v_p / S	*23.9*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4227*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1623*	pc/h/ln
S	*67.9*	mph
D = v_p / S	*23.9*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4274*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*8*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1610*	pc/h/ln
S	*68.1*	mph
D = v_p / S	*23.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3204*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1225*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4665*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1800*	pc/h/ln
S	*65.8*	mph
D = v_p / S	*27.3*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2866*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*3*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.985*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1581*	pc/h/ln
S	*68.3*	mph
D = v_p / S	*23.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3192*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1830*	pc/h/ln
S	*65.4*	mph
D = v_p / S	*28.0*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2692*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1536*	pc/h/ln
S	*68.7*	mph
D = v_p / S	*22.4*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2407*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1374*	pc/h/ln
S	*69.6*	mph
D = v_p / S	*19.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1057*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*600*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*8.6*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2995*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1717*	pc/h/ln
S	*66.9*	mph
D = v_p / S	*25.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2334*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1338*	pc/h/ln
S	*69.8*	mph
D = v_p / S	*19.2*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2356*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1383*	pc/h/ln
S	*69.6*	mph
D = v_p / S	*19.9*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1882*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1105*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1679*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*985*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.1*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1957*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1149*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.4*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5004*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1913*	pc/h/ln
S	*64.1*	mph
D = v_p / S	*29.8*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3564*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2043*	pc/h/ln
S	*61.8*	mph
D = v_p / S	*33.1*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3564*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2043*	pc/h/ln
S	*61.8*	mph
D = v_p / S	*33.1*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2586*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1476*	pc/h/ln
S	*69.1*	mph
D = v_p / S	*21.4*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1205*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*684*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*9.8*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2242*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1285*	pc/h/ln
S	*69.9*	mph
D = v_p / S	*18.4*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2294*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1315*	pc/h/ln
S	*69.8*	mph
D = v_p / S	*18.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2429*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1419*	pc/h/ln
S	*69.4*	mph
D = v_p / S	*20.4*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1722*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1011*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.4*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2098*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1226*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*18.9*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1602*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*932*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*14.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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ATTACHMENT "D"
OPENING YEAR CUMULATIVE (2017) WITH PROJECT CONDITIONS
BASIC FREEWAY SEGMENT ANALYSIS WORKSHEETS

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7417*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2126*	pc/h/ln
S	*60.1*	mph
D = v_p / S	*35.4*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8237*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2361*	pc/h/ln
S	*54.4*	mph
D = v_p / S	*43.4*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*DL*	Highway/Direction of Travel	*I-10 Westbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*Tippecanoe to Mountain View*
Date Performed	*10/13/2014*	Jurisdiction	*Caltrans*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8499*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2471*	pc/h/ln
S	*51.3*	mph
D = v_p / S	*48.2*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4288*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1229*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7373*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1699*	pc/h/ln
S	*67.1*	mph
D = v_p / S	*25.3*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6287*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1811*	pc/h/ln
S	*65.7*	mph
D = v_p / S	*27.6*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6941*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1999*	pc/h/ln
S	*62.6*	mph
D = v_p / S	*31.9*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6574*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1894*	pc/h/ln
S	*64.4*	mph
D = v_p / S	*29.4*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5393*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1553*	pc/h/ln
S	*68.6*	mph
D = v_p / S	*22.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5466*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1582*	pc/h/ln
S	*68.3*	mph
D = v_p / S	*23.2*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4218*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1238*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.7*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4061*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1582*	pc/h/ln
S	*68.3*	mph
D = v_p / S	*23.2*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3575*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1392*	pc/h/ln
S	*69.6*	mph
D = v_p / S	*20.0*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3278*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1277*	pc/h/ln
S	*69.9*	mph
D = v_p / S	*18.3*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4886*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1868*	pc/h/ln
S	*64.8*	mph
D = v_p / S	*28.8*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4092*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1579*	pc/h/ln
S	*68.3*	mph
D = v_p / S	*23.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4976*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1929*	pc/h/ln
S	*63.8*	mph
D = v_p / S	*30.2*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6744*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1547*	pc/h/ln
S	*68.6*	mph
D = v_p / S	*22.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5502*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1577*	pc/h/ln
S	*68.4*	mph
D = v_p / S	*23.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4767*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1380*	pc/h/ln
S	*69.6*	mph
D = v_p / S	*19.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8357*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2419*	pc/h/ln
S	*52.8*	mph
D = v_p / S	*45.8*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3732*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1075*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.4*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3523*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1015*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6524*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1888*	pc/h/ln
S	*64.5*	mph
D = v_p / S	*29.3*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2862*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*824*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*11.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5436*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1566*	pc/h/ln
S	*68.4*	mph
D = v_p / S	*22.9*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5436*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1573*	pc/h/ln
S	*68.4*	mph
D = v_p / S	*23.0*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7078*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2077*	pc/h/ln
S	*61.1*	mph
D = v_p / S	*34.0*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2605*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1019*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2621*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1026*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.7*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2632*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1030*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.7*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2644*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1020*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2385*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*920*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*13.1*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2414*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*931*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*13.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3022*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1725*	pc/h/ln
S	*66.8*	mph
D = v_p / S	*25.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3108*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1774*	pc/h/ln
S	*66.2*	mph
D = v_p / S	*26.8*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2428*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1392*	pc/h/ln
S	*69.6*	mph
D = v_p / S	*20.0*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2086*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1190*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.0*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*950*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*540*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*7.7*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3296*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1944*	pc/h/ln
S	*63.6*	mph
D = v_p / S	*30.6*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1908*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1120*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.0*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1944*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1136*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1439*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*845*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.1*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1629*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*952*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*13.6*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1503*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*878*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3097*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1184*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.9*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2556*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1466*	pc/h/ln
S	*69.2*	mph
D = v_p / S	*21.2*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2618*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1501*	pc/h/ln
S	*68.9*	mph
D = v_p / S	*21.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes
V - Hourly volume
v_p - Flow rate
LOS - Level of service
S - Speed
D - Density
FFS - Free-flow speed
BFFS - Base free-flow speed
DDHV - Directional design hour volume

Factor Location

E_R - Exhibits 11-10, 11-12
E_T - Exhibits 11-10, 11-11, 11-13
f_p - Page 11-18
LOS, S, FFS, v_p - Exhibits 11-2, 11-3
f_{LW} - Exhibit 11-8
f_{LC} - Exhibit 11-9
TRD - Page 11-11

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2105*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1207*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*919*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*524*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*7.5*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1992*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1175*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1884*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1106*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1915*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1124*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.1*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1536*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*906*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*12.9*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1416*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*835*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*12.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1402*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*823*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*12.7*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7049*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2021*	pc/h/ln
S	*62.2*	mph
D = v_p / S	*32.5*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6656*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1926*	pc/h/ln
S	*63.9*	mph
D = v_p / S	*30.1*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6326*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1831*	pc/h/ln
S	*65.4*	mph
D = v_p / S	*28.0*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6589*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1916*	pc/h/ln
S	*64.1*	mph
D = v_p / S	*29.9*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4365*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1006*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.4*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3350*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*965*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*13.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes
V - Hourly volume
v_p - Flow rate
LOS - Level of service
S - Speed
D - Density
FFS - Free-flow speed
BFFS - Base free-flow speed
DDHV - Directional design hour volume

Factor Location

E_R - Exhibits 11-10, 11-12
E_T - Exhibits 11-10, 11-11, 11-13
f_p - Page 11-18
LOS, S, FFS, v_p - Exhibits 11-2, 11-3
f_{LW} - Exhibit 11-8
f_{LC} - Exhibit 11-9
TRD - Page 11-11

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4255*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1220*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.4*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4358*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1249*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3941*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1130*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.1*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4415*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1296*	pc/h/ln
S	*69.9*	mph
D = v_p / S	*18.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3469*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1018*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2781*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1088*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3127*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1207*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3307*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1276*	pc/h/ln
S	*69.9*	mph
D = v_p / S	*18.2*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4343*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1660*	pc/h/ln
S	*67.5*	mph
D = v_p / S	*24.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3872*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1494*	pc/h/ln
S	*69.0*	mph
D = v_p / S	*21.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3227*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1245*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7850*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1800*	pc/h/ln
S	*65.8*	mph
D = v_p / S	*27.3*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6690*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1918*	pc/h/ln
S	*64.0*	mph
D = v_p / S	*30.0*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7634*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2209*	pc/h/ln
S	*58.2*	mph
D = v_p / S	*38.0*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5600*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1621*	pc/h/ln
S	*67.9*	mph
D = v_p / S	*23.9*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6788*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1955*	pc/h/ln
S	*63.4*	mph
D = v_p / S	*30.8*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5693*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1632*	pc/h/ln
S	*67.8*	mph
D = v_p / S	*24.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4798*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1369*	pc/h/ln
S	*69.7*	mph
D = v_p / S	*19.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5287*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1509*	pc/h/ln
S	*68.9*	mph
D = v_p / S	*21.9*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4601*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1313*	pc/h/ln
S	*69.9*	mph
D = v_p / S	*18.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4601*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1332*	pc/h/ln
S	*69.8*	mph
D = v_p / S	*19.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7037*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2046*	pc/h/ln
S	*61.7*	mph
D = v_p / S	*33.2*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4793*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1849*	pc/h/ln
S	*65.1*	mph
D = v_p / S	*28.4*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4253*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1633*	pc/h/ln
S	*67.8*	mph
D = v_p / S	*24.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4258*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1635*	pc/h/ln
S	*67.8*	mph
D = v_p / S	*24.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4307*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1631*	pc/h/ln
S	*67.8*	mph
D = v_p / S	*24.0*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3264*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1254*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.9*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4724*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1831*	pc/h/ln
S	*65.4*	mph
D = v_p / S	*28.0*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2881*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*4*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.980*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1597*	pc/h/ln
S	*68.2*	mph
D = v_p / S	*23.4*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3207*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1839*	pc/h/ln
S	*65.3*	mph
D = v_p / S	*28.2*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2707*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1552*	pc/h/ln
S	*68.6*	mph
D = v_p / S	*22.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2422*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1389*	pc/h/ln
S	*69.6*	mph
D = v_p / S	*20.0*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1072*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*615*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*8.8*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3010*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1726*	pc/h/ln
S	*66.8*	mph
D = v_p / S	*25.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2349*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1347*	pc/h/ln
S	*69.7*	mph
D = v_p / S	*19.3*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2371*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1392*	pc/h/ln
S	*69.6*	mph
D = v_p / S	*20.0*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1897*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1119*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.0*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1705*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1001*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1983*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1169*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*16.7*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5011*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1915*	pc/h/ln
S	*64.1*	mph
D = v_p / S	*29.9*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3571*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2048*	pc/h/ln
S	*61.7*	mph
D = v_p / S	*33.2*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3571*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2048*	pc/h/ln
S	*61.7*	mph
D = v_p / S	*33.2*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2593*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1487*	pc/h/ln
S	*69.0*	mph
D = v_p / S	*21.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1212*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*692*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*9.9*	pc/mi/ln
LOS	*A*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2249*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1290*	pc/h/ln
S	*69.9*	mph
D = v_p / S	*18.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2301*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1319*	pc/h/ln
S	*69.8*	mph
D = v_p / S	*18.9*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2436*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1430*	pc/h/ln
S	*69.4*	mph
D = v_p / S	*20.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1729*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1015*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*14.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2110*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1233*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*19.0*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*OYC (2017) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1614*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*943*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*14.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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ATTACHMENT "E"
HORIZON YEAR (2035) WITHOUT PROJECT CONDITIONS
BASIC FREEWAY SEGMENT ANALYSIS WORKSHEETS

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8701*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2518*	pc/h/ln
S	*49.8*	mph
D = v_p / S	*50.5*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9441*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2745*	pc/h/ln
S	*42.3*	mph
D = v_p / S	*64.9*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8960*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.917*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2654*	pc/h/ln
S	*45.5*	mph
D = v_p / S	*58.4*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9089*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*8*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2569*	pc/h/ln
S	*48.3*	mph
D = v_p / S	*53.2*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9773*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2263*	pc/h/ln
S	*56.9*	mph
D = v_p / S	*39.8*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9081*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2616*	pc/h/ln
S	*46.7*	mph
D = v_p / S	*56.0*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*10089*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2892*	pc/h/ln
S	*36.8*	mph
D = v_p / S	*78.6*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6890*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2031*	pc/h/ln
S	*62.0*	mph
D = v_p / S	*32.8*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7228*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2092*	pc/h/ln
S	*60.8*	mph
D = v_p / S	*34.4*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7326*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2130*	pc/h/ln
S	*60.0*	mph
D = v_p / S	*35.5*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5650*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1666*	pc/h/ln
S	*67.5*	mph
D = v_p / S	*24.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6890*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2659*	pc/h/ln
S	*45.3*	mph
D = v_p / S	*58.7*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9294*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3519*	pc/h/ln
S	*7.6*	mph
D = v_p / S	*461.9*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8504*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3220*	pc/h/ln
S	*22.7*	mph
D = v_p / S	*142.1*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*12708*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*4812*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*11702*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*4494*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7707*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2960*	pc/h/ln
S	*34.1*	mph
D = v_p / S	*86.9*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8972*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2067*	pc/h/ln
S	*61.3*	mph
D = v_p / S	*33.7*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8293*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2366*	pc/h/ln
S	*54.2*	mph
D = v_p / S	*43.6*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7416*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2136*	pc/h/ln
S	*59.8*	mph
D = v_p / S	*35.7*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8581*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.917*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2542*	pc/h/ln
S	*49.1*	mph
D = v_p / S	*51.8*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6466*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1836*	pc/h/ln
S	*65.3*	mph
D = v_p / S	*28.1*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5981*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1707*	pc/h/ln
S	*67.0*	mph
D = v_p / S	*25.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6690*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1972*	pc/h/ln
S	*63.1*	mph
D = v_p / S	*31.3*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4194*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1202*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.2*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7994*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2292*	pc/h/ln
S	*56.2*	mph
D = v_p / S	*40.8*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7994*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2303*	pc/h/ln
S	*55.9*	mph
D = v_p / S	*41.2*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*10417*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3043*	pc/h/ln
S	*30.6*	mph
D = v_p / S	*99.4*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*DL*	Highway/Direction of Travel	*I-10 Eastbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*Live Oak Cyn to County Line Rd*
Date Performed	*10/13/2014*	Jurisdiction	*Caltrans*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5779*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2230*	pc/h/ln
S	*57.7*	mph
D = v_p / S	*38.7*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*DL*	Highway/Direction of Travel	*I-10 Eastbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*County Line Rd to Calimesa*
Date Performed	*10/13/2014*	Jurisdiction	*Caltrans*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6719*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2568*	pc/h/ln
S	*48.3*	mph
D = v_p / S	*53.2*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6719*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2568*	pc/h/ln
S	*48.3*	mph
D = v_p / S	*53.2*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6741*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2577*	pc/h/ln
S	*48.0*	mph
D = v_p / S	*53.7*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6336*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2433*	pc/h/ln
S	*52.4*	mph
D = v_p / S	*46.5*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6370*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2446*	pc/h/ln
S	*52.0*	mph
D = v_p / S	*47.0*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7080*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*6*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.971*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3963*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5290*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3004*	pc/h/ln
S	*32.2*	mph
D = v_p / S	*93.2*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3570*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2037*	pc/h/ln
S	*61.9*	mph
D = v_p / S	*32.9*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3590*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*8*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2029*	pc/h/ln
S	*62.0*	mph
D = v_p / S	*32.7*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3410*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*4*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.980*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1890*	pc/h/ln
S	*64.5*	mph
D = v_p / S	*29.3*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3936*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*20*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.909*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2353*	pc/h/ln
S	*54.6*	mph
D = v_p / S	*43.1*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3250*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1881*	pc/h/ln
S	*64.6*	mph
D = v_p / S	*29.1*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4290*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2448*	pc/h/ln
S	*51.9*	mph
D = v_p / S	*47.1*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2483*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1437*	pc/h/ln
S	*69.3*	mph
D = v_p / S	*20.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3460*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1974*	pc/h/ln
S	*63.1*	mph
D = v_p / S	*31.3*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3840*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*8*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2170*	pc/h/ln
S	*59.1*	mph
D = v_p / S	*36.7*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3690*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1424*	pc/h/ln
S	*69.4*	mph
D = v_p / S	*20.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3043*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1761*	pc/h/ln
S	*66.3*	mph
D = v_p / S	*26.5*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3600*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2064*	pc/h/ln
S	*61.3*	mph
D = v_p / S	*33.6*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3540*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2010*	pc/h/ln
S	*62.4*	mph
D = v_p / S	*32.2*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3210*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*4*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.980*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1779*	pc/h/ln
S	*66.1*	mph
D = v_p / S	*26.9*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2369*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*20*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.909*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1416*	pc/h/ln
S	*69.5*	mph
D = v_p / S	*20.4*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2910*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1692*	pc/h/ln
S	*67.2*	mph
D = v_p / S	*25.2*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3640*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2087*	pc/h/ln
S	*60.9*	mph
D = v_p / S	*34.3*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1853*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*19*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.913*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1103*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.8*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2320*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1349*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*20.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2390*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1383*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*21.3*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9618*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2757*	pc/h/ln
S	*41.9*	mph
D = v_p / S	*65.8*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9872*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2844*	pc/h/ln
S	*38.6*	mph
D = v_p / S	*73.6*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8362*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2431*	pc/h/ln
S	*52.4*	mph
D = v_p / S	*46.4*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7559*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2229*	pc/h/ln
S	*57.7*	mph
D = v_p / S	*38.6*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7927*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1801*	pc/h/ln
S	*65.8*	mph
D = v_p / S	*27.4*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4666*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1344*	pc/h/ln
S	*69.8*	mph
D = v_p / S	*19.3*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5366*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1546*	pc/h/ln
S	*68.6*	mph
D = v_p / S	*22.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6352*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1812*	pc/h/ln
S	*65.7*	mph
D = v_p / S	*27.6*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5482*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1564*	pc/h/ln
S	*68.5*	mph
D = v_p / S	*22.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6146*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1804*	pc/h/ln
S	*65.8*	mph
D = v_p / S	*27.4*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4821*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1415*	pc/h/ln
S	*69.5*	mph
D = v_p / S	*20.4*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3776*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1478*	pc/h/ln
S	*69.1*	mph
D = v_p / S	*21.4*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8028*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3069*	pc/h/ln
S	*29.5*	mph
D = v_p / S	*104.1*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8472*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3238*	pc/h/ln
S	*21.8*	mph
D = v_p / S	*148.4*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*10797*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*4127*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*10470*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*4021*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8691*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3338*	pc/h/ln
S	*17.0*	mph
D = v_p / S	*196.6*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9261*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2144*	pc/h/ln
S	*59.7*	mph
D = v_p / S	*35.9*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9478*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2717*	pc/h/ln
S	*43.3*	mph
D = v_p / S	*62.7*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8876*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2605*	pc/h/ln
S	*47.1*	mph
D = v_p / S	*55.3*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8913*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2555*	pc/h/ln
S	*48.7*	mph
D = v_p / S	*52.5*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*10066*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2886*	pc/h/ln
S	*37.0*	mph
D = v_p / S	*77.9*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9867*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2802*	pc/h/ln
S	*40.2*	mph
D = v_p / S	*69.7*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8877*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*7*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.966*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2497*	pc/h/ln
S	*50.5*	mph
D = v_p / S	*49.5*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7746*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2210*	pc/h/ln
S	*58.2*	mph
D = v_p / S	*38.0*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6738*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1923*	pc/h/ln
S	*63.9*	mph
D = v_p / S	*30.1*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6738*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1941*	pc/h/ln
S	*63.6*	mph
D = v_p / S	*30.5*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7226*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*19*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.913*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2150*	pc/h/ln
S	*59.5*	mph
D = v_p / S	*36.1*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6907*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2653*	pc/h/ln
S	*45.5*	mph
D = v_p / S	*58.3*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*11059*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*8*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*4167*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*11059*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*8*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*4167*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9975*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*8*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3759*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8611*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3292*	pc/h/ln
S	*19.2*	mph
D = v_p / S	*171.2*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7965*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3045*	pc/h/ln
S	*30.5*	mph
D = v_p / S	*99.8*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3810*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2185*	pc/h/ln
S	*58.7*	mph
D = v_p / S	*37.2*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3818*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2210*	pc/h/ln
S	*58.2*	mph
D = v_p / S	*38.0*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4110*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2345*	pc/h/ln
S	*54.8*	mph
D = v_p / S	*42.8*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3730*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2129*	pc/h/ln
S	*60.0*	mph
D = v_p / S	*35.5*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3140*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*4*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.980*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1741*	pc/h/ln
S	*66.6*	mph
D = v_p / S	*26.1*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3583*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2074*	pc/h/ln
S	*61.1*	mph
D = v_p / S	*33.9*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3010*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1734*	pc/h/ln
S	*66.7*	mph
D = v_p / S	*26.0*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3780*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2198*	pc/h/ln
S	*58.4*	mph
D = v_p / S	*37.6*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2252*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*20*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.909*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1346*	pc/h/ln
S	*69.8*	mph
D = v_p / S	*19.3*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2670*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1553*	pc/h/ln
S	*68.6*	mph
D = v_p / S	*22.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2810*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1649*	pc/h/ln
S	*67.7*	mph
D = v_p / S	*24.4*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5986*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2310*	pc/h/ln
S	*55.7*	mph
D = v_p / S	*41.5*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4263*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2467*	pc/h/ln
S	*51.4*	mph
D = v_p / S	*48.0*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4263*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2467*	pc/h/ln
S	*51.4*	mph
D = v_p / S	*48.0*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4220*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2397*	pc/h/ln
S	*53.4*	mph
D = v_p / S	*44.9*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3590*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*4*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.980*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1990*	pc/h/ln
S	*62.8*	mph
D = v_p / S	*31.7*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2682*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1552*	pc/h/ln
S	*68.6*	mph
D = v_p / S	*22.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3240*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1858*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*28.6*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4280*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2477*	pc/h/ln
S	*51.1*	mph
D = v_p / S	*48.5*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2771*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1611*	pc/h/ln
S	*68.0*	mph
D = v_p / S	*23.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4580*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2614*	pc/h/ln
S	*44.1*	mph
D = v_p / S	*59.3*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) NP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4950*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*7*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.966*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2784*	pc/h/ln
S	*37.8*	mph
D = v_p / S	*73.6*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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ATTACHMENT "F"
HORIZON YEAR (2035) WITH PROJECT CONDITIONS
BASIC FREEWAY SEGMENT ANALYSIS WORKSHEETS

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8707*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2532*	pc/h/ln
S	*49.4*	mph
D = v_p / S	*51.2*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9448*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2747*	pc/h/ln
S	*42.2*	mph
D = v_p / S	*65.0*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8967*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.917*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2656*	pc/h/ln
S	*45.4*	mph
D = v_p / S	*58.5*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9095*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*8*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2570*	pc/h/ln
S	*48.2*	mph
D = v_p / S	*53.3*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9780*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2264*	pc/h/ln
S	*56.9*	mph
D = v_p / S	*39.8*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9088*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2618*	pc/h/ln
S	*46.7*	mph
D = v_p / S	*56.1*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*10098*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2909*	pc/h/ln
S	*36.1*	mph
D = v_p / S	*80.5*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6900*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2034*	pc/h/ln
S	*61.9*	mph
D = v_p / S	*32.8*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7237*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2094*	pc/h/ln
S	*60.7*	mph
D = v_p / S	*34.5*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7335*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2133*	pc/h/ln
S	*59.9*	mph
D = v_p / S	*35.6*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*DL*	Highway/Direction of Travel	*I-10 Westbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*Yucaipa to Live Oak Canyon*
Date Performed	*10/13/2014*	Jurisdiction	*Caltrans*
Analysis Time Period	*AM Peak Hour*	Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5659*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1668*	pc/h/ln
S	*67.5*	mph
D = v_p / S	*24.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6907*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2665*	pc/h/ln
S	*45.1*	mph
D = v_p / S	*59.1*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9317*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3528*	pc/h/ln
S	*7.1*	mph
D = v_p / S	*494.6*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8532*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3230*	pc/h/ln
S	*22.2*	mph
D = v_p / S	*145.5*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*12740*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*4847*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*11755*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*4515*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7745*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2975*	pc/h/ln
S	*33.5*	mph
D = v_p / S	*88.9*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8987*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2071*	pc/h/ln
S	*61.2*	mph
D = v_p / S	*33.8*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8309*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2371*	pc/h/ln
S	*54.1*	mph
D = v_p / S	*43.8*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7431*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2140*	pc/h/ln
S	*59.8*	mph
D = v_p / S	*35.8*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8596*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*18*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.917*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2546*	pc/h/ln
S	*49.0*	mph
D = v_p / S	*52.0*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6481*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1849*	pc/h/ln
S	*65.1*	mph
D = v_p / S	*28.4*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5996*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1711*	pc/h/ln
S	*67.0*	mph
D = v_p / S	*25.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6711*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1979*	pc/h/ln
S	*63.0*	mph
D = v_p / S	*31.4*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4216*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1214*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*17.3*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8015*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2298*	pc/h/ln
S	*56.0*	mph
D = v_p / S	*41.0*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8015*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2309*	pc/h/ln
S	*55.7*	mph
D = v_p / S	*41.4*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*10438*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3049*	pc/h/ln
S	*30.3*	mph
D = v_p / S	*100.5*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5816*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2244*	pc/h/ln
S	*57.4*	mph
D = v_p / S	*39.1*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6772*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2589*	pc/h/ln
S	*47.6*	mph
D = v_p / S	*54.4*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6782*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2592*	pc/h/ln
S	*47.5*	mph
D = v_p / S	*54.5*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6809*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2615*	pc/h/ln
S	*46.8*	mph
D = v_p / S	*55.9*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6360*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2443*	pc/h/ln
S	*52.1*	mph
D = v_p / S	*46.9*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6387*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2453*	pc/h/ln
S	*51.8*	mph
D = v_p / S	*47.4*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7085*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*6*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.971*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3966*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5295*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3007*	pc/h/ln
S	*32.1*	mph
D = v_p / S	*93.6*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3575*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2040*	pc/h/ln
S	*61.8*	mph
D = v_p / S	*33.0*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3595*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2042*	pc/h/ln
S	*61.8*	mph
D = v_p / S	*33.1*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3415*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*4*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.980*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1893*	pc/h/ln
S	*64.4*	mph
D = v_p / S	*29.4*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3941*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*20*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.909*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2356*	pc/h/ln
S	*54.5*	mph
D = v_p / S	*43.2*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3255*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1884*	pc/h/ln
S	*64.6*	mph
D = v_p / S	*29.2*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4295*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2451*	pc/h/ln
S	*51.8*	mph
D = v_p / S	*47.3*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2488*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1440*	pc/h/ln
S	*69.3*	mph
D = v_p / S	*20.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3470*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1980*	pc/h/ln
S	*62.9*	mph
D = v_p / S	*31.5*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3850*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*8*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2176*	pc/h/ln
S	*59.0*	mph
D = v_p / S	*36.9*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3701*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1428*	pc/h/ln
S	*69.4*	mph
D = v_p / S	*20.6*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3054*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1768*	pc/h/ln
S	*66.3*	mph
D = v_p / S	*26.7*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3612*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2071*	pc/h/ln
S	*61.2*	mph
D = v_p / S	*33.8*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3552*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2017*	pc/h/ln
S	*62.3*	mph
D = v_p / S	*32.4*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3222*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*4*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.980*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1786*	pc/h/ln
S	*66.0*	mph
D = v_p / S	*27.1*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2380*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*20*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.909*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1423*	pc/h/ln
S	*69.4*	mph
D = v_p / S	*20.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2922*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1707*	pc/h/ln
S	*67.0*	mph
D = v_p / S	*25.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3652*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2104*	pc/h/ln
S	*60.5*	mph
D = v_p / S	*34.8*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*1865*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*20*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.909*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1115*	pc/h/ln
S	*70.0*	mph
D = v_p / S	*15.9*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2342*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1362*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*21.0*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2412*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1396*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*21.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9639*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2776*	pc/h/ln
S	*41.2*	mph
D = v_p / S	*67.4*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9892*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2849*	pc/h/ln
S	*38.5*	mph
D = v_p / S	*74.1*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8382*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2437*	pc/h/ln
S	*52.3*	mph
D = v_p / S	*46.6*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7580*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2235*	pc/h/ln
S	*57.6*	mph
D = v_p / S	*38.8*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7948*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1806*	pc/h/ln
S	*65.7*	mph
D = v_p / S	*27.5*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4686*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1350*	pc/h/ln
S	*69.7*	mph
D = v_p / S	*19.4*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5394*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1554*	pc/h/ln
S	*68.5*	mph
D = v_p / S	*22.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6380*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1820*	pc/h/ln
S	*65.5*	mph
D = v_p / S	*27.8*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5510*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1580*	pc/h/ln
S	*68.3*	mph
D = v_p / S	*23.1*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6174*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1812*	pc/h/ln
S	*65.7*	mph
D = v_p / S	*27.6*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4849*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1423*	pc/h/ln
S	*69.4*	mph
D = v_p / S	*20.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*DL*	Highway/Direction of Travel	*I-10 Westbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*Live Oak Cyn to County Line Rd*
Date Performed	*10/13/2014*	Jurisdiction	*Caltrans*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3820*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1502*	pc/h/ln
S	*68.9*	mph
D = v_p / S	*21.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*County Line Rd to Calimesa*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8087*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3091*	pc/h/ln
S	*28.5*	mph
D = v_p / S	*108.4*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8541*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3265*	pc/h/ln
S	*20.5*	mph
D = v_p / S	*159.0*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*10872*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*4156*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*10496*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*4031*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Westbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8733*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3354*	pc/h/ln
S	*16.2*	mph
D = v_p / S	*207.3*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*I-215 Fwy to Waterman*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9271*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*5*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2146*	pc/h/ln
S	*59.6*	mph
D = v_p / S	*36.0*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Waterman to Tippecanoe*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9487*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2720*	pc/h/ln
S	*43.2*	mph
D = v_p / S	*63.0*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Tippecanoe to Mountain View*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8885*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*16*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.926*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2608*	pc/h/ln
S	*47.0*	mph
D = v_p / S	*55.5*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Mountain View to California*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8922*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2558*	pc/h/ln
S	*48.6*	mph
D = v_p / S	*52.6*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*California to Alabama*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*10076*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2889*	pc/h/ln
S	*36.9*	mph
D = v_p / S	*78.3*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Alabama to Orange*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*9876*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2804*	pc/h/ln
S	*40.2*	mph
D = v_p / S	*69.8*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Orange to Cypress*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8890*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*8*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.962*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2512*	pc/h/ln
S	*50.0*	mph
D = v_p / S	*50.2*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cypress to Ford*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7758*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2214*	pc/h/ln
S	*58.1*	mph
D = v_p / S	*38.1*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Ford to Wabash*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6751*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1926*	pc/h/ln
S	*63.9*	mph
D = v_p / S	*30.1*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Wabash to Yucaipa*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6751*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1945*	pc/h/ln
S	*63.6*	mph
D = v_p / S	*30.6*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Yucaipa to Live Oak Canyon*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*7238*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*19*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.913*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2154*	pc/h/ln
S	*59.4*	mph
D = v_p / S	*36.2*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Live Oak Cyn to County Line Rd*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*6926*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2673*	pc/h/ln
S	*44.8*	mph
D = v_p / S	*59.6*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*DL*	Highway/Direction of Travel	*I-10 Eastbound*
Agency or Company	*Urban Crossroads, Inc.*	From/To	*County Line Rd to Calimesa*
Date Performed	*10/13/2014*	Jurisdiction	*Caltrans*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*11085*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*7*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.966*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*4157*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Calimesa to Singleton*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*11090*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*7*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.966*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*4159*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Singleton to Cherry Valley*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*10008*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3789*	pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Cherry Valley to Oak Valley*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8671*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3330*	pc/h/ln
S	*17.4*	mph
D = v_p / S	*191.7*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*I-10 Eastbound*
From/To	*Oak Valley to SR-60 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*8024*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*3067*	pc/h/ln
S	*29.6*	mph
D = v_p / S	*103.7*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3825*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2204*	pc/h/ln
S	*58.3*	mph
D = v_p / S	*37.8*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3833*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2219*	pc/h/ln
S	*58.0*	mph
D = v_p / S	*38.3*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4125*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2354*	pc/h/ln
S	*54.6*	mph
D = v_p / S	*43.2*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3745*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2137*	pc/h/ln
S	*59.8*	mph
D = v_p / S	*35.7*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3155*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*5*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.976*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1758*	pc/h/ln
S	*66.4*	mph
D = v_p / S	*26.5*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3598*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2083*	pc/h/ln
S	*61.0*	mph
D = v_p / S	*34.2*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3025*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*12*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.943*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1743*	pc/h/ln
S	*66.6*	mph
D = v_p / S	*26.2*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3795*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2207*	pc/h/ln
S	*58.2*	mph
D = v_p / S	*37.9*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2267*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*20*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.909*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1355*	pc/h/ln
S	*69.7*	mph
D = v_p / S	*19.4*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2696*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*15*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.930*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1575*	pc/h/ln
S	*68.4*	mph
D = v_p / S	*23.0*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Westbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2836*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*17*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.922*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1672*	pc/h/ln
S	*67.4*	mph
D = v_p / S	*24.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*I-215 Fwy to Day*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5993*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2313*	pc/h/ln
S	*55.6*	mph
D = v_p / S	*41.6*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Day to Frederick/Pigeon Pass*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4270*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2471*	pc/h/ln
S	*51.3*	mph
D = v_p / S	*48.2*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Frederick to Heacock*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4270*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2471*	pc/h/ln
S	*51.3*	mph
D = v_p / S	*48.2*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Heacock to Perris*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4227*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*9*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.957*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2401*	pc/h/ln
S	*53.3*	mph
D = v_p / S	*45.1*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Perris to Nason*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3597*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*5*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.976*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2004*	pc/h/ln
S	*62.5*	mph
D = v_p / S	*32.1*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Nason to Moreno Beach*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2689*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1556*	pc/h/ln
S	*68.5*	mph
D = v_p / S	*22.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Moreno Beach to Redlands*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3247*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*11*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.948*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1862*	pc/h/ln
S	*64.9*	mph
D = v_p / S	*28.7*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Redlands to Theodore*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4287*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*13*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.939*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2481*	pc/h/ln
S	*51.0*	mph
D = v_p / S	*48.7*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Theodore to Gilman Springs*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2778*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*14*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.935*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*70.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*70.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1615*	pc/h/ln
S	*68.0*	mph
D = v_p / S	*23.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Gilman Springs to Jack Rabbit*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4592*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*10*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.952*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2620*	pc/h/ln
S	*43.9*	mph
D = v_p / S	*59.7*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*DL*
Agency or Company	*Urban Crossroads, Inc.*
Date Performed	*10/13/2014*
Analysis Time Period	*PM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-60 Eastbound*
From/To	*Jack Rabbit to I-10 Fwy*
Jurisdiction	*Caltrans*
Analysis Year	*HY (2035) WP*

Project Description *I-10 Gateway Industrial (PM 36093) TIA (JN 08312)*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4962*	veh/h	Peak-Hour Factor, PHF	*0.92*
AADT		veh/day	%Trucks and Buses, P_T	*7*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.966*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2791*	pc/h/ln
S	*37.6*	mph
D = v_p / S	*74.3*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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I.3 - Supplemental Traffic Analysis—Roberts Road

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URBAN CROSSROADS

41 Corporate Park | Suite 300 | Irvine, CA 92606 | (949) 660-1994
www.urbanXroads.com

April 2, 2015

Mr. Oscar Uranga
TSG Cherry Valley, L.P.
1900 Quail Street
Newport Beach, CA 92660

SUBJECT: SAN GORGONIO CROSSING SUPPLEMENTAL TRAFFIC ANALYSIS

Dear Mr. Oscar Uranga:

INTRODUCTION

This Supplemental Traffic Analysis for the proposed San Gorgonio Crossing ("Project") seeks to evaluate potential traffic impacts under Horizon Year (2035) traffic conditions for the future Roberts Road / Cherry Valley Boulevard intersection. The Project was recently assessed for traffic impacts in the *San Gorgonio Crossing (Parcel Map 36093) Traffic Impact Analysis* (prepared by Urban Crossroads, dated November 5, 2014, referred to as "Traffic Study"). The Project is proposed to consist of 1,860,760 square feet of high-cube distribution warehouse.

SUMMARY OF FINDINGS

Horizon Year (2035) traffic forecasts for the future Roberts Road / Cherry Valley Boulevard intersection were developed based on Riverside County Traffic Analysis Model (RivTAM). The intersection of Roberts Road / Cherry Valley Boulevard is anticipated to operate at deficient level of service (LOS) under Horizon Year (2035) Without Project traffic conditions. The intersection would continue to operate at a deficient LOS with the addition of Project traffic. In addition, the future Roberts Road / Cherry Valley Boulevard intersection is anticipated to meet traffic signal warrant based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets.

Table 1 lists the recommended improvements necessary to reduce the identified intersection LOS deficiency for Horizon Year (2035) With Project traffic conditions. In addition, Table 1 also indicates those improvements currently included in existing fee programs. The Project's "fair share" percentage has also been calculated where applicable.

PROJECTED FUTURE TRAFFIC

Traffic projections for Horizon Year (2035) Without Project conditions were derived from RivTAM using accepted procedures for model forecast refinement and smoothing. The traffic forecasts reflect the area-wide growth anticipated between Existing conditions, and Horizon Year conditions.

The future Horizon Year peak hour turning movements were then reviewed by Urban Crossroads for reasonableness, and were adjusted to achieve flow conservation, reasonable growth, and reasonable diversion between parallel routes. Flow conservation checks ensure that traffic flow between two closely spaced intersections, such as two freeway ramp locations, is verified in order to make certain that vehicles leaving one intersection are entering the adjacent intersection and that there are no unexplained loss of vehicles. The result of this traffic forecasting procedure is a series of traffic volumes which are suitable for traffic operations analysis. Horizon Year (2035) With Project traffic volumes was calculated by adding the Project traffic from the Traffic Study to the Horizon Year (2035) Without Project traffic volumes.

Post processing worksheets and volume development worksheets for Horizon Year (2035) traffic conditions are provided in Attachment "A".

INTERSECTION OPERATIONS ANALYSIS

Level of service (LOS) calculations were conducted for the study intersection to evaluate its operations under Horizon Year (2035) Without and With Project traffic conditions. As shown in Table 2, the future Roberts Road / Cherry Valley Boulevard intersection is anticipated to operate at an unacceptable LOS (LOS "F") under Horizon Year (2035) Without and With Project traffic conditions.

The intersection operations analysis worksheets for Horizon Year (2035) Without and With Project traffic conditions are included in Attachment "B".

TRAFFIC SIGNAL WARRANTS

Future unsignalized intersection has been assessed regarding the potential need for a new traffic signal based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets. For Horizon Year (2035) without Project conditions, a traffic signal appears to be warranted at the future Roberts Road / Cherry Valley Boulevard intersection (See Attachment "C").

It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should also be noted that signal warrants do not necessarily correlate with level of service. An intersection may

satisfy a signal warrant condition and operate at or above LOS "C" or operate below LOS "C" and not meet a signal warrant.

RECOMMENDED IMPROVEMENTS

The following improvements are necessary to reduce peak hour delay and improve the associated LOS to acceptable levels at the future Roberts Road / Cherry Valley Boulevard intersection for Horizon Year (2035) traffic conditions:

- Install a traffic signal
- Construct a southbound left turn lane
- Construct an eastbound left turn lane
- Construct 2nd eastbound through lane
- Construct 2nd westbound through lane
- Construct westbound right turn lane

The effectiveness of the recommended improvement strategies necessary to address Horizon Year With Project traffic deficiencies are presented in Table 3.

The intersection operations analysis worksheets for Horizon Year With Project traffic conditions, with improvements, are included in Attachment "D".

PROJECT FAIR SHARE

As shown on Table 4, the Project's fair share has been calculated for the impacted intersection based on Horizon Year (2035) With Project traffic conditions assessed in this supplemental analysis.

If you have any questions, please contact me directly at (949) 660-1994, extension 204.

Respectfully submitted,

URBAN CROSSROADS, INC.

Aric Evatt, PTP
Principal

Pranesh Tarikere. PE
Senior Engineer

Attachments

Table 1

Summary of Intersection Improvements

#	Intersection Location	Jurisdiction	Recommended Improvements Horizon Year (2035) Traffic Conditions	Improvements in TUMF or DIF[1]?	Fair Share %[2]
10	Roberts Road / Cherry Valley Boulevard	County of Riverside	- Traffic Signal	No	11.2%
			- SB left turn lane	No	
			- EB left turn lane	No	
			- 2nd EB through lane	Yes (TUMF)	
			- 2nd WB through lane	Yes (TUMF)	
			- WB right turn lane	No	

[1] Improvements are identified as being included in the Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF) program or as a County of Riverside DIF facility.

[2] Program improvements constructed by project may be eligible for fee credit, at discretion of County of Riverside. See Table 4 for Fair Share Calculations.

Table 2

Intersection Analysis for Horizon Year (2035) Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												2035 Without Project				2035 With Project			
			Northbound			Southbound			Eastbound			Westbound			Delay[2] (secs.)		Level of Service		Delay[2] (secs.)		Level of Service	
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM	AM	PM
10	Calimesa Boulevard / Cherry Valley Bl.	CSS	0	0	0	0	1	0	0	1	0	0	1	0	**>100.0**	**>100.0**	**F**	**F**	**>100.0**	**>100.0**	**F**	**F**

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; > = Right-Turn Overlap Phasing; d = Defacto Right Turn Lane; **1** = Improvement

[2] Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[3] CSS = Cross-street Stop

Table 3

Recommended Improvements for Horizon Year (2035) With Project Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
10	Calimesa Boulevard / Cherry Valley Bl.																	
	- Without Improvements	CSS	0	0	0	0	1	0	0	1	0	0	1	0	**>100.0**	**>100.0**	**F**	**F**
	- With Improvements	**TS**	0	0	0	**1**	**0**	**1**	**1**	**2**	0	0	**2**	**1**	32.3	24.7	C	C

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; > = Right-Turn Overlap Phasing; d= Defacto Right Turn Lane; >> = Free Right Turn Lane; **1** = Improvement

[2] Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. The signalized I-10 ramp locations at Cherry Valley Boulevard have been analyzed using the Synchro software.

[3] CSS = Cross-street Stop; TS = Traffic Signal; RA = Roundabout

Table 4

Project Fair Share Calculations

#	Intersection	Existing	Project	Year 2035 WP	Total New Traffic	Project % of New[1]
10	Roberts Road / Cherry Valley Boulevard					
	AM:	647	258	2,956	2,309	**11.2%**
	PM:	618	304	3,861	3,243	9.4%

[1] Project percentage of new traffic between Existing (2014) and Horizon Year (2035) With Project conditions.

BOLD = Higher of the two peak hours.

ATTACHMENT A:
POST PROCESSING AND VOLUME DEVELOPMENT WORKSHEETS

INPUT DATA

Project:	==========>	San Gorgonio Crossing TIA	<===	Job #:	08312
Scenario:	==========>	2035 Without Project	<===	Analyst:	PT
Existing Conditions Model Run ID:	==>	2008 RivTAM	<===	Date:	3/30/15
Future Conditions Model Run ID:	==>	2035 RivTAM	<===		

LOCATION: **Roberts Road / Cherry Valley Boulevard**

AM PEAK HOUR	**PM PEAK HOUR**
FUTURE MODEL YEAR:	FUTURE MODEL YEAR:
2035	2035
279 **561**	**547** **831**
v ^	v ^
899 < IN = 2160 < **1096**	**912** < IN = 3045 < **1348**
785 > OUT = 2160 > **700**	**1150** > OUT = 3045 > **1302**
v ^	v ^
0 **0**	**0** **0**
REFINED FUTURE ADTs BY LEG:	REFINED FUTURE ADTs BY LEG:
2035	2035
9,874	9,874
N	N
20,806 W **LEG** E **24,100**	20,806 W + E 24,100
S	S
0	0

U:\UcJobs_08100-08500_08300\08312\Post Processing\08312-15\Semi Count Based\[Roberts Road_Cherry Valley.xls]Input (1)

CVAR_12596

Project: San Gorgonio Crossing TIA
Scenario: 2035 Without Project

Job #: 08312
Analyst: PT
Date: 3/30/15

LOCATION: Roberts Road / Cherry Valley Boulevard

EXISTING COUNTED INBOUND AND OUTBOUND VOLUME CALCULATION

AM

EXISTING COUNT YEAR: 2012

		2	2			
		v	^			
4	<	IN =	10	<	4	
4	>	OUT =	10	>	4	
		v	^			
		0	0			

GROWTH CALCULATION DECISION RULE
MIN = Minimum Count Growth Approach
ADD = Additive (Growth Increment) Approach
MUL = Multiplicative (Ratio) Approach

		MUL	MUL			
		v	^			
MUL	<			<	MUL	
MUL	>			>	MUL	
		v	^			
		ADD	ADD			

MINIMUM GROWTH %s 2008 TO 2035

		0%	0%			
		v	^			
0%	<			<	0%	
0%	>			>	0%	
		v	^			
		0%	0%			

REFINED GROWTH: 2008 TO 2035

		278	558			
		v	^			
896	<			<	1096	
786	>			>	696	
		v	^			
		0	0			

PRORATED GROWTH: 2012 TO 2035
23 YEARS

		240	480			
		v	^			
760	<			<	930	
670	>			>	590	
		v	^			
		0	0			

NEW PROJECTED VOLUMES: 2035

		240	483			
		v	^			
764	<	IN =	1840	<	930	
670	>	OUT =	1840	>	593	
		v	^	*		
		0	0			

PM

EXISTING COUNT YEAR: 2012

		2	2			
		v	^			
4	<	IN =	10	<	4	
4	>	OUT =	10	>	4	
		v	^			
		0	0			

MIN = Minimum Count Growth Approach
ADD = Additive (Growth Increment) Approach
MUL = Multiplicative (Ratio) Approach

		MUL	MUL			
		v	^			
MUL	<			<	MUL	
MUL	>			>	MUL	
		v	^			
		ADD	ADD			

		0%	0%			
		v	^			
0%	<			<	0%	
0%	>			>	0%	
		v	^			
		0%	0%			

ADJUSTED GROWTH: 2008 TO 2035

		548	828			
		v	^			
906	<			<	1346	
1146	>			>	1296	
		v	^			
		0	0			

PRORATED GROWTH: 2012 TO 2035
23 YEARS

		470	710			
		v	^			
770	<			<	1150	
980	>			>	1100	
		v	^			
		0	0			

NEW PROJECTED VOLUMES: 2035

		470	716			
		v	^			
776	<	IN =	2600	<	1150	
980	>	OUT =	2600	>	1109	
		v	^	*		
		0	0			

* NOTE: Outbound future volume may be factored (increased) to match inbound if inbound is greater than outbound.

U:\UcJobs_08100-08500_08300\08312\Post Processing\08312-15\Semi Count Based\[Roberts Road_Cherry Valley.xls] Growth Summary (2)

Project:	San Gorgonio Crossing TIA	Job #:	08312
Scenario:	2035 Without Project	Analyst:	PT
		Date:	3/30/15

LOCATION: Roberts Road / Cherry Valley Boulevard
FORECAST YEAR: 2035

INDIVIDUAL TURN VOLUME GROWTH REVIEW

		AM PEAK HOUR INPUT DATA				PM PEAK HOUR INPUT DATA			
APPROACH	TURNING MOVEMENT	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE	EXISTING COUNT	FUTURE VOLUME	DIFF-ERENCE	% CHANGE
NORTH BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	NB Total	0	0	0	#DIV/0!	0	0	0	#DIV/0!
SOUTH BOUND	Left	1	122	121	12100%	1	344	343	34300%
	Through	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Right	1	118	117	11700%	1	127	126	12600%
	SB Total	2	240	238	11900%	2	471	469	23450%
EAST BOUND	Left	1	200	199	19900%	1	218	217	21700%
	Through	3	471	468	15600%	3	765	762	25400%
	Right	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	EB Total	4	671	667	16675%	4	983	979	24475%
WEST BOUND	Left	0	0	0	#DIV/0!	0	0	0	#DIV/0!
	Through	3	646	643	21433%	3	649	646	21533%
	Right	1	283	282	28200%	1	498	497	49700%
	WB Total	4	929	925	23125%	4	1,147	1,143	28575%
TOTAL ENTERING VOLUME		10	1,840	1830	18300%	10	2,601	2591	25910%

FORECAST PEAK HOUR TO ADT COMPARISON

		VOLUMES		PERCENT OF ADT		
		AM	PM	AM	PM	ADT
North Leg	Inbound	240	471			
North Leg	Outbound	483	716			
North Leg	**TOTAL**	**723**	**1,187**	**7%**	**12%**	**9,874**
South Leg	Inbound	0	0			
South Leg	Outbound	0	0			
South Leg	**TOTAL**	**0**	**0**	**#DIV/0!**	**#DIV/0!**	**-**
East Leg	Inbound	929	1,147			
East Leg	Outbound	593	1,109			
East Leg	**TOTAL**	**1,522**	**2,256**	**6%**	**9%**	**24,100**
West Leg	Inbound	671	983			
West Leg	Outbound	764	776			
West Leg	**TOTAL**	**1,435**	**1,759**	**7%**	**8%**	**20,806**
OVERALL TOTAL		***3,680***	***5,202***	***7%***	***9%***	***54,780***

U:\UcJobs_08100-08500_08300\08312\Post Processing\08312-15\Semi Count Based\[Roberts Road_Cherry Valley.xls]Output (3)

Volume Development
AM Peak Hour

10. Roberts Road / Cherry Valley Boulevard

PHF: 0.920

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
2014 PCE:	0	0	0	0	0	0	0	201	0	0	446	0	647
Project	0	0	0	0	0	0	0	178	0	0	80	0	258
2035 PP	0	0	0	122	0	118	200	471	0	0	646	283	1,840
2035 NP	**0**	**0**	**0**	**122**	**0**	**118**	**200**	**933**	**0**	**0**	**1,042**	**283**	**2,698**
2035 WP	**0**	**0**	**0**	**122**	**0**	**118**	**200**	**1,111**	**0**	**0**	**1,122**	**283**	**2,956**
Growth:	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1.08	#DIV/0!	#DIV/0!	1.04	#DIV/0!	1.07
35 NP ADT:		0			**9,874**			**23,170**			**26,801**		
Project ADT:		0			0			4,517			4,517		
35 WP ADT:		0			9,874			27,687			31,318		
35 Pk-Daily:		**#DIV/0!**			**7%**			**9%**			**8%**		

Volume Development
PM Peak Hour

10. Roberts Road / Cherry Valley Boulevard

PHF: 0.920

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
2014 PCE:	0	0	0	0	0	0	0	404	0	0	214	0	618
Project	0	0	0	0	0	0	0	94	0	0	210	0	304
2035 PP	0	0	0	344	0	127	218	765	0	0	649	498	2,601
2035 NP	**0**	**0**	**0**	**344**	**0**	**127**	**218**	**1,360**	**0**	**0**	**1,010**	**498**	**3,557**
2035 WP	**0**	**0**	**0**	**344**	**0**	**127**	**218**	**1,454**	**0**	**0**	**1,220**	**498**	**3,861**
Growth:	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1.06	#DIV/0!	#DIV/0!	1.08	#DIV/0!	1.08
35 NP ADT:		0			**9,874**			**23,170**			**26,801**		
Project ADT:		0			0			4,517			4,517		
35 WP ADT:		0			9,874			27,687			31,318		
35 Pk-Daily:		**#DIV/0!**			**12%**			**11%**			**11%**		

ATTACHMENT B:
HORIZON YEAR (2035) CONDITIONS
INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

Intersection	
Int Delay, s/veh	233.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	200	933	1042	283	122	118
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	217	1014	1133	308	133	128

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1440	0	-	0	2735	1286
Stage 1	-	-	-	-	1286	-
Stage 2	-	-	-	-	1449	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	477	-	-	-	~ 23	203
Stage 1	-	-	-	-	262	-
Stage 2	-	-	-	-	218	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	477	-	-	-	~ 23	203
Mov Cap-2 Maneuver	-	-	-	-	~ 23	-
Stage 1	-	-	-	-	262	-
Stage 2	-	-	-	-	218	-

Approach	EB	WB	SB
HCM Control Delay, s	3.3	0	$ 2606
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	477	-	-	-	41
HCM Lane V/C Ratio	0.456	-	-	-	6.363
HCM Control Delay (s)	18.7	0	-	-	$ 2606
HCM Lane LOS	C	A	-	-	F
HCM 95th %tile Q(veh)	2.3	-	-	-	30.7

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	2564.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	218	1360	1010	498	344	127
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	237	1478	1098	541	374	138

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1639	0	-	0	3320	1368
Stage 1	-	-	-	-	1368	-
Stage 2	-	-	-	-	1952	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	401	-	-	-	~ 9	181
Stage 1	-	-	-	-	~ 239	-
Stage 2	-	-	-	-	~ 123	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	401	-	-	-	~ 9	181
Mov Cap-2 Maneuver	-	-	-	-	~ 9	-
Stage 1	-	-	-	-	~ 239	-
Stage 2	-	-	-	-	~ 123	-

Approach	EB	WB	SB
HCM Control Delay, s	3.6	0	$ 19355.7
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	401	-	-	-	12
HCM Lane V/C Ratio	0.591	-	-	-	42.663
HCM Control Delay (s)	26.1	0	-	$	19355.7
HCM Lane LOS	D	A	-	-	F
HCM 95th %tile Q(veh)	3.7	-	-	-	65.4

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	340.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	200	1111	1122	283	122	118
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	217	1208	1220	308	133	128

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1527	0	-	0	3015	1373
Stage 1	-	-	-	-	1373	-
Stage 2	-	-	-	-	1642	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	442	-	-	-	~ 15	180
Stage 1	-	-	-	-	238	-
Stage 2	-	-	-	-	175	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	442	-	-	-	~ 15	180
Mov Cap-2 Maneuver	-	-	-	-	~ 15	-
Stage 1	-	-	-	-	238	-
Stage 2	-	-	-	-	175	-

Approach	EB	WB	SB
HCM Control Delay, s	3.2	0	$ 4179.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	442	-	-	-	27
HCM Lane V/C Ratio	0.492	-	-	-	9.662
HCM Control Delay (s)	20.8	0	-		$ 4179.6
HCM Lane LOS	C	A	-	-	F
HCM 95th %tile Q(veh)	2.7	-	-	-	32.3

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	3570.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	218	1454	1220	498	344	127
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	237	1580	1326	541	374	138

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1867	0	-	0	3651	1597
Stage 1	-	-	-	-	1597	-
Stage 2	-	-	-	-	2054	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	327	-	-	-	~ 6	~ 133
Stage 1	-	-	-	-	~ 185	-
Stage 2	-	-	-	-	~ 109	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	327	-	-	-	~ 6	~ 133
Mov Cap-2 Maneuver	-	-	-	-	~ 6	-
Stage 1	-	-	-	-	~ 185	-
Stage 2	-	-	-	-	~ 109	-

Approach	EB	WB	SB
HCM Control Delay, s	5.2	0	$ 29252.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	327	-	-	-	8
HCM Lane V/C Ratio	0.725	-	-	-	63.995
HCM Control Delay (s)	40.2	0	-	$	29252.6
HCM Lane LOS	E	A	-	-	F
HCM 95th %tile Q(veh)	5.4	-	-	-	65.9

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

ATTACHMENT C:
HORIZON YEAR (2035) CONDITIONS
TRAFFIC SIGNAL WARRANT WORKSHEETS

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

DIST	CO	RTE	PM		TRAFFIC CONDITIONS		2035 NP
				CALC	PT	DATE	03/31/15
Jurisdiction:	**County of Riverside**			CHK	PT	DATE	03/31/15
Major Street:	**Cherry Valley Boulevard**				Critical Approach Speed (Major)		55 mph
Minor Street:	**Roberts Road**				Critical Approach Speed (Minor)		35 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **26,801** vpd Minor Street Future ADT = **9,874** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); ..... √

or

In built up area of isolated community of < 10,000 population .....

RURAL (R)

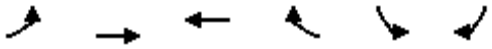
(Based on Estimated Average Daily Traffic - See Note)

URBAN	RURAL	Minimum Requirements EADT			
	XX				
CONDITION A - Minimum Vehicular Volume		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied	Not Satisfied	Urban	Rural	Urban	Rural
XX					
Number of lanes for moving traffic on each approach					
Major Street	Minor Street				
1 **26,801**	*1* **9,874**	8,000	5,600 *	2,400	1,680 *
2 +	*1*	9,600	6,720	2,400	1,680
2 +	*2* +	9,600	6,720	3,200	2,240
1	*2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied	Not Satisfied	Urban	Rural	Urban	Rural
XX					
Number of lanes for moving traffic on each approach					
Major Street	Minor Street				
1 **26,801**	*1* **9,874**	12,000	8,400 *	1,200	850 *
2 +	*1*	14,400	10,080	1,200	850
2 +	*2* +	14,400	10,080	1,600	1,120
1	*2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B					
Satisfied	Not Satisfied				
XX		2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more	**A** 100% **B** 100%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

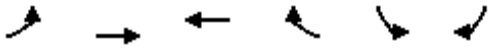
ATTACHMENT D:
HORIZON YEAR (2035) WITH PROJECT CONDITIONS, WITH IMPROVEMENTS
INTERSECTION OPERATIONS ANALYSIS WORKSHEETS



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	200	1111	1122	283	122	118
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	217	1208	1220	308	133	128
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	252	2254	1631	730	559	499
Arrive On Green	0.05	0.21	0.45	0.45	0.31	0.31
Sat Flow, veh/h	1810	3705	3705	1615	1810	1615
Grp Volume(v), veh/h	217	1208	1220	308	133	128
Grp Sat Flow(s),veh/h/ln	1810	1805	1805	1615	1810	1615
Q Serve(g_s), s	14.3	35.8	33.6	15.5	6.6	7.1
Cycle Q Clear(g_c), s	14.3	35.8	33.6	15.5	6.6	7.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	252	2254	1631	730	559	499
V/C Ratio(X)	0.86	0.54	0.75	0.42	0.24	0.26
Avail Cap(c_a), veh/h	407	2708	1775	794	559	499
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.1	32.1	27.2	22.3	30.9	31.1
Incr Delay (d2), s/veh	9.2	0.2	1.6	0.4	1.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	7.8	18.0	17.0	7.0	3.4	7.4
LnGrp Delay(d),s/veh	65.3	32.3	28.9	22.7	31.9	32.4
LnGrp LOS	E	C	C	C	C	C
Approach Vol, veh/h		1425	1528		261	
Approach Delay, s/veh		37.3	27.6		32.1	
Approach LOS		D	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				78.9		41.1	20.7	58.2
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				90.0		22.0	27.0	59.0
Max Q Clear Time (g_c+I1), s				37.8		9.1	16.3	35.6
Green Ext Time (p_c), s				33.3		0.6	0.4	18.6

Intersection Summary	
HCM 2010 Ctrl Delay	32.3
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	218	1454	1220	498	344	127
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	237	1580	1326	541	374	138
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	262	2167	1523	681	603	538
Arrive On Green	0.29	1.00	0.42	0.42	0.33	0.33
Sat Flow, veh/h	1810	3705	3705	1615	1810	1615
Grp Volume(v), veh/h	237	1580	1326	541	374	138
Grp Sat Flow(s),veh/h/ln	1810	1805	1805	1615	1810	1615
Q Serve(g_s), s	15.1	0.0	40.3	34.9	20.9	7.5
Cycle Q Clear(g_c), s	15.1	0.0	40.3	34.9	20.9	7.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	262	2167	1523	681	603	538
V/C Ratio(X)	0.90	0.73	0.87	0.79	0.62	0.26
Avail Cap(c_a), veh/h	332	2316	1534	686	603	538
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.78	0.78	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.8	0.0	31.7	30.2	33.6	29.2
Incr Delay (d2), s/veh	19.1	0.9	5.7	6.4	4.8	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	8.9	0.3	21.3	16.7	11.2	7.8
LnGrp Delay(d),s/veh	60.8	0.9	37.4	36.5	38.4	30.3
LnGrp LOS	E	A	D	D	D	C
Approach Vol, veh/h		1817	1867		512	
Approach Delay, s/veh		8.7	37.1		36.2	
Approach LOS		A	D		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				76.0		44.0	21.4	54.6
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				77.0		35.0	22.0	51.0
Max Q Clear Time (g_c+I1), s				2.0		22.9	17.1	42.3
Green Ext Time (p_c), s				56.8		1.4	0.3	8.3

Intersection Summary	
HCM 2010 Ctrl Delay	24.7
HCM 2010 LOS	C

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I.4 - Alternatives Trip Generation

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www.urbanXroads.com

May 1, 2015

Mr. Oscar Uranga
TSG Cherry Valley, L.P.
4080 Lemon Street
Riverside, CA 92501

SUBJECT: SAN GORGONIO CROSSING ALTERNATIVES TRIP GENERATION EVALUATION

Dear Mr. Oscar Uranga:

The firm of Urban Crossroads, Inc. is pleased to submit the following Alternatives Trip Generation Evaluation for the San Gorgonio Crossing ("Project"). The Project was recently assessed for traffic impacts in the *San Gorgonio Crossing (Parcel Map 36093) Traffic Impact Analysis* (prepared by Urban Crossroads, dated November 5, 2014, referred to as "Traffic Study"). The Project is proposed to consist of 1,860,760 square feet of high-cube warehouse. The purpose of this trip generation analysis is to compare the trip generation for each of the alternatives to that previously assumed and analyzed for the Project in the Traffic Study.

DESCRIPTION OF ALTERNATIVES

The following development alternatives are analyzed as part of this trip generation evaluation:

- Alternative 1 (No Project – General Plan Build Alternative): 216 single-family homes.
- Alternative 2 (Residential Alternative): 331 single-family homes, 240 apartments and 221townhomes for a total of 792 residential units.
- Alternative 3 (Reduced Intensity Alternative): 1,302,532 square feet of high-cube distribution warehouse.
- Alternative 4 (Light Industrial / Business Park Alternative): 1,012,760 square feet of high-cube warehouse and 400,000 square feet of business park.

PROJECT AND ALTERNATIVES TRIP GENERATION

Trip generation represents the amount of traffic which is both attracted to and produced by a development. Determining traffic generation for a specific project is therefore based upon forecasting the amount of traffic that is expected to be both attracted to and produced by the specific land uses being proposed for a given development. The trip generation rates used for this assessment are based upon information collected by the Institute of Transportation Engineers (ITE) as provided in their *Trip Generation* manual, 9th Edition, 2012.

ITE land use codes 152 (High-Cube Warehousing), 210 (Single Family Detached Residential), 220 (Apartment), 230, (Residential Condominium / Townhouse) and 770 (Business Park) have been utilized to derive specific trip generation estimates for the proposed Project and the four alternatives.

Refinements to these raw trip generation estimates have been made to provide a more detailed breakdown of trips by vehicle mix. The vehicle mix percentages were obtained from data collected by the South Coast Air Quality Management District (SCAQMD) and applied to ITE truck trip generation rates for land use code 152 (High-Cube Warehousing). In addition, Passenger Car Equivalents (PCE) factors have been applied to the trip generation rates for heavy trucks (large 2-axles, 3-axles, 4+-axles). PCE factors have been utilized due to the expected heavy truck component for the proposed industrial uses. PCE factors allow the typical "real-world" mix of vehicle types to be represented as a single, standardized unit, such as the passenger car, for the purposes of capacity and level of service analyses. These PCE factors are consistent with the values recommended by the San Bernardino Associated Governments (SANBAG) and are accepted factors in the County of Riverside.

PROPOSED PROJECT TRIP GENERATION

Daily and peak hour trip generation for the proposed Project is shown in Table 1. The Project is estimated to generate a net total of approximately 4,905 net passenger car equivalent (PCE) trip-ends per day on a typical weekday with approximately 288 PCE net AM peak hour trips and 335 PCE net PM peak hour trips.

TABLE 1: PROPOSED PROJECT TRIP GENERATION SUMMARY

Land Use[1]	Units[2]	ITE LU Code	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
High-Cube Warehouse[3,4]	TSF	152	0.076	0.034	0.110	0.037	0.083	0.120	1.680
Passenger Cars			0.055	0.025	0.080	0.025	0.055	0.080	1.040
2-Axle Trucks (PCE = 1.5)			0.007	0.003	0.010	0.004	0.009	0.013	0.211
3-Axle Trucks (PCE = 2.0)			0.007	0.003	0.011	0.004	0.010	0.014	0.226
4-Axle+ Trucks (PCE = 3.0)			0.037	0.017	0.054	0.022	0.050	0.072	1.158

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Ninth Edition (2012).

[2] TSF = thousand square feet

[3] Vehicle Mix Source: Total truck percentage source from ITE Trip Generation manual. Truck mix (by axle type) source from SCAQMD.
AM peak hour = 72.7% passenger cars, 6.01% 2-Axle trucks, 4.83% 3-Axle trucks, 16.46% 4-Axle trucks
PM peak hour = 66.7% passenger cars, 7.33% 2-Axle trucks, 5.89% 3-Axle trucks, 20.08% 4-Axle trucks
ADT = 61.9% passenger cars, 8.38% 2-Axle trucks, 6.74% 3-Axle trucks, 22.98% 4-Axle trucks

[4] PCE rates are per SANBAG.

Land Use	Quantity	Units[1]	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
High-Cube Warehouse	1,860.760	TSF							
Passenger Cars:			103	46	149	46	103	149	1,935
Truck Trips:									
2-axle:			13	6	18	8	17	25	393
3-axle:			14	6	20	8	18	26	421
4+-axle:			70	31	101	42	93	135	2,155
- Net Truck Trips (PCE)[2]			*96*	*43*	*139*	*57*	*128*	*185*	*2,969*
TOTAL NET TRIPS (PCE)[3]			***199***	***89***	***288***	***104***	***231***	***335***	***4,905***

[1] TSF = thousand square feet

[2] Vehicle Mix Source: Total truck percentage source from ITE Trip Generation manual. Truck mix (by axle type) source from SCAQMD for high-cube warehouse use.

[3] TOTAL NET TRIPS (PCE) = Passenger Cars + Net Truck Trips (PCE).

ALTERNATIVE 1(NO PROJECT – GENERAL PLAN BUILD ALTERNATIVE) TRIP GENERATION

Table 2 summarizes the resulting trip generation estimates based on No Project – General Plan Alternative, and is calculated to generate a net total of approximately 2,056 trip-ends per day with 162 AM peak hour trips and 216 PM peak hour trips. As shown on Table 3, the No Project-General Plan Build Alternative is anticipated to generate fewer trips than the proposed Project.

TABLE 2: ALTERNATIVE 1 (NO PROJECT-GENERAL PLAN BUILD) TRIP GENERATION SUMMARY

Land Use	Units[1]	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Trip Generation Rates:[2]									
Single Family Detached Residential	DU	210	0.19	0.56	0.75	0.63	0.37	1.00	9.52
Land Use	**Units[1]**	**Quantity**	**AM Peak Hour**			**PM Peak Hour**			**Daily**
			In	**Out**	**Total**	**In**	**Out**	**Total**	
Trip Generation Summary:									
Single Family Detached Residential	DU	216	41	121	162	136	80	216	2,056
Total	**DU**	**216**	**41**	**121**	**162**	**136**	**80**	**216**	**2,056**
Proposed Project (PCE)			**199**	**89**	**288**	**104**	**231**	**335**	**4,905**
Variance			**-158**	**32**	**-126**	**32**	**-151**	**-119**	**-2,848**

[1] DU = Dwelling Units

[2] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Ninth Edition (2012).

ALTERNATIVE 2 (RESIDENTIAL ALTERNATIVE) TRIP GENERATION

Table 3 summarizes the resulting trip generation estimates based on Residential Alternative, and is calculated to generate a net total of approximately 2,056 trip-ends per day with 162 AM peak hour trips and 216 PM peak hour trips. As shown on Table 3, the Residential Alternative is anticipated to generate more trips than the proposed Project.

TABLE 3: ALTERNATIVE 2 (RESIDENTIAL) TRIP GENERATION SUMMARY

Land Use	Units[1]	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Trip Generation Rates:[2]									
Single Family Detached Residential	DU	210	0.19	0.56	0.75	0.63	0.37	1.00	9.52
Apartment	DU	220	0.10	0.41	0.51	0.40	0.22	0.62	6.65
Condominium/Townhouse	DU	230	0.07	0.37	0.44	0.35	0.17	0.52	5.81
Land Use	**Units[1]**	**Quantity**	**AM Peak Hour**			**PM Peak Hour**			**Daily**
			In	**Out**	**Total**	**In**	**Out**	**Total**	
Trip Generation Summary:									
Single Family Detached Residential	DU	331	63	185	248	209	122	331	3,151
Apartment	DU	240	46	134	180	151	89	240	2,285
Condominium/Townhouse	DU	221	42	124	166	139	82	221	2,104
Total	**DU**	**792**	**150**	**444**	**594**	**499**	**293**	**792**	**7,540**
Proposed Project (PCE)			**199**	**89**	**288**	**104**	**231**	**335**	**4,905**
Variance			**-48**	**354**	**306**	**395**	**62**	**457**	**2,635**

[1] DU = Dwelling Units

[2] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Ninth Edition (2012).

ALTERNATIVE 3 (REDUCED INTENSITY ALTERNATIVE) TRIP GENERATION

Table 4 summarizes the resulting trip generation estimates based on Reduced Intensity Alternative, and is calculated to generate a net total of approximately 3,433 net passenger car equivalent (PCE) trip-ends per day on a typical weekday with approximately 202 PCE net AM peak hour trips and 235 PCE net PM peak hour trips. As shown on Table 4, the Reduced Intensity Alternative is anticipated to generate fewer trips than the proposed Project.

TABLE 4: ALTERNATIVE 3 (REDUCED INTENSITY ALTERNATIVE) TRIP GENERATION SUMMARY F

Land Use[1]	Units[2]	ITE LU Code	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
High-Cube Warehouse[3,4]	TSF	152	0.076	0.034	0.110	0.037	0.083	0.120	1.680
Passenger Cars			0.055	0.025	0.080	0.025	0.055	0.080	1.040
2-Axle Trucks (PCE = 1.5)			0.007	0.003	0.010	0.004	0.009	0.013	0.211
3-Axle Trucks (PCE = 2.0)			0.007	0.003	0.011	0.004	0.010	0.014	0.226
4-Axle+ Trucks (PCE = 3.0)			0.037	0.017	0.054	0.022	0.050	0.072	1.158

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Ninth Edition (2012).

[2] TSF = thousand square feet

[3] Vehicle Mix Source: Total truck percentage source from ITE Trip Generation manual. Truck mix (by axle type) source from SCAQMD.

AM peak hour = 72.7% passenger cars, 6.01% 2-Axle trucks, 4.83% 3-Axle trucks, 16.46% 4-Axle trucks

PM peak hour = 66.7% passenger cars, 7.33% 2-Axle trucks, 5.89% 3-Axle trucks, 20.08% 4-Axle trucks

ADT = 61.9% passenger cars, 8.38% 2-Axle trucks, 6.74% 3-Axle trucks, 22.98% 4-Axle trucks

[4] PCE rates are per SANBAG.

Land Use	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
High-Cube Warehouse	1,302.532	TSF							
Passenger Cars:			72	32	104	32	72	104	1,355
Truck Trips:									
2-axle:			9	4	13	5	12	17	275
3-axle:			10	4	14	6	13	18	295
4+-axle:			49	22	71	29	65	94	1,509
- Net Truck Trips (PCE)[2]			*67*	*30*	*98*	*40*	*90*	*130*	*2,079*
TOTAL NET TRIPS (PCE)[3]			***139***	***63***	***202***	***73***	***161***	***235***	***3,433***
Proposed Project (PCE)			**199**	**89**	**288**	**104**	**231**	**335**	**4,905**
Variance			**-60**	**-27**	**-86**	**-31**	**-69**	**-100**	**-1,471**

[1] TSF = thousand square feet

[2] Vehicle Mix Source: Total truck percentage source from ITE Trip Generation manual. Truck mix (by axle type) source from SCAQMD for high-cube warehouse use and from the City of Fontana Truck Trip Generation Study for warehousing and general light industrial uses.

[3] TOTAL NET TRIPS (PCE) = Passenger Cars + Net Truck Trips (PCE).

ALTERNATIVE 4 (LIGHT INDUSTRIAL / BUSINESS PARK ALTERNATIVE) TRIP GENERATION

Table 5 summarizes the resulting trip generation estimates based on Light Industrial / Business Park Alternative. This alternative would consist of 1,012,760 square feet of high-cube warehouse building and 400,000 square feet of multiple flex-type buildings that lends itself to a variety of light industrial, office and retail uses.

Light Industrial Business Park Alternative is calculated to generate a net total of approximately 7,645 net passenger car equivalent (PCE) trip-ends per day on a typical weekday with approximately 717 PCE net AM peak hour trips and 686 PCE net PM peak hour trips.

As shown on Table 5, the Reduced Intensity Alternative is anticipated to generate more trips than the proposed Project.

TABLE 5: ALTERNATIVE 4 (LIGHT INDUSTRIAL / BUSINESS PARK) TRIP GENERATION SUMMARY

Land Use[1]	Units[2]	ITE LU Code	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
High-Cube Warehouse[3,4]	TSF	152	0.076	0.034	0.110	0.037	0.083	0.120	1.680
Passenger Cars			0.055	0.025	0.080	0.025	0.055	0.080	1.040
2-Axle Trucks (PCE = 1.5)			0.007	0.003	0.010	0.004	0.009	0.013	0.211
3-Axle Trucks (PCE = 2.0)			0.007	0.003	0.011	0.004	0.010	0.014	0.226
4-Axle+ Trucks (PCE = 3.0)			0.037	0.017	0.054	0.022	0.050	0.072	1.158
Business Park	TSF	770	1.190	0.210	1.400	0.330	0.930	1.260	12.440

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Ninth Edition (2012).

[2] TSF = thousand square feet

[3] Vehicle Mix Source: Total truck percentage source from ITE Trip Generation manual. Truck mix (by axle type) source from SCAQMD.
AM peak hour = 72.7% passenger cars, 6.01% 2-Axle trucks, 4.83% 3-Axle trucks, 16.46% 4-Axle trucks
PM peak hour = 66.7% passenger cars, 7.33% 2-Axle trucks, 5.89% 3-Axle trucks, 20.08% 4-Axle trucks
ADT = 61.9% passenger cars, 8.38% 2-Axle trucks, 6.74% 3-Axle trucks, 22.98% 4-Axle trucks

[4] PCE rates are per SANBAG.

Land Use	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
High-Cube Warehouse/Distribution Center	1,012.760	TSF							
Passenger Cars:			56	25	81	25	56	81	1,053
Truck Trips:									
2-axle:			7	3	10	4	9	13	214
3-axle:			7	3	11	4	10	14	229
4+-axle:			38	17	55	23	51	73	1,173
- Net Truck Trips (PCE)[2]			*52*	*24*	*76*	*31*	*70*	*101*	*1,616*
TOTAL NET TRIPS (PCE)[3]			*108*	*49*	*157*	*56*	*126*	*182*	*2,669*
Business Park	400.000	TSF	476	84	560	132	372	504	4,976
TOTAL (PCE)			**584**	**133**	**717**	**188**	**498**	**686**	**7,645**
Proposed Project (PCE)			**199**	**89**	**288**	**104**	**231**	**335**	**4,905**
Variance			**385**	**43**	**429**	**85**	**267**	**351**	**2,741**

[1] TSF = thousand square feet

[2] Vehicle Mix Source: Total truck percentage source from ITE Trip Generation manual. Truck mix (by axle type) source from SCAQMD for high-cube warehouse use and from the City of Fontana Truck Trip Generation Study for warehousing and general light industrial uses.

[3] TOTAL NET TRIPS (PCE) = Passenger Cars + Net Truck Trips (PCE).

TRIP GENERATION COMPARISON

Alternative 1 (No Project – General Plan Build Alternative) and Alternative 3 (Reduced Intensity Alternative) are calculated to generate fewer trip-ends per day and fewer AM peak hour and PM peak hour trips as compared to the proposed Project.

Alternative 2 (Residential Alternative) and Alternative 4 (Light Industrial / Business Park Alternative) are calculated to generate more trip-ends per day and more AM peak hour and PM peak hour trips as compared to the proposed Project.

If you have any questions, please contact me directly at (949) 336-5978.

Respectfully submitted,

URBAN CROSSROADS, INC.

Aric Evatt, PTP
Principal

Pranesh Tarikere, PE
Senior Engineer

I.5 - Interim Improvements Analysis

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www.urbanXroads.com

June 9, 2016 (Revised)

Mr. Lonnie Ellisor
TSG Cherry Valley, L.P.
2 Park Plaza, Suite 700
Irvine, CA 92614

SUBJECT: SAN GORGONIO CROSSING SUPPLEMENTAL TRAFFIC ANALYSIS

Dear Mr. Lonnie Ellisor:

The firm of Urban Crossroads, Inc. is pleased to submit the following Supplemental Traffic Analysis for the San Gorgonio Crossing ("Project"). The Project was recently assessed for traffic impacts in the *San Gorgonio Crossing (Parcel Map 36093) Traffic Impact Analysis* (prepared by Urban Crossroads, dated November 5, 2014, referred to as "Traffic Study"). The Project is proposed to consist of 1,860,760 square feet of high-cube warehouse.

The Traffic Study found that the I-10 Freeway at Cherry Valley Boulevard interchange ("interchange") ramp intersections currently operate at an unacceptable level of service (LOS "F") under Existing (2014) traffic conditions. Based on discussions with Caltrans District 8 staff, it is our understanding that ultimate improvement plans have not yet been finalized for the interchange, however a roundabout concept is being proposed by the City of Calimesa. As timing of future improvements to the interchange are uncertain, the purpose of this supplemental traffic analysis is to assess whether interim traffic signals at the interchange ramps can reduce the delay and improve the associated LOS grade to acceptable levels under Existing plus Ambient Growth plus Project (EAP 2017), Near-term (2019) and Near-term (2019) plus Sunny-Cal traffic conditions. In addition, vehicle queues will also be considered along with potential impact to operations of the adjacent Calimesa Boulevard at Cherry Valley Boulevard intersection.

Based on discussions with County of Riverside staff, the intersection operations and queuing analyses have been done using passenger car equivalent (PCE) volumes consistent with the Traffic Study.

SUMMARY OF FINDINGS

The Project proposes to fund the construction of interim improvements at the I-10 at Cherry Valley interchange, which are listed below:

- Traffic signals at I-10 eastbound and westbound ramp intersections at Cherry Valley Boulevard
- Restripe to provide eastbound and westbound left turn pockets within the existing width of the Cherry Valley Boulevard bridge
- Add a southbound right turn lane on the off ramp at the intersection of I-10 EB ramps at Cherry Valley Boulevard

- Add a westbound right turn lane at the intersection of I-10 WB ramps at Cherry Valley Boulevard
- Realign Calimesa Boulevard approximately 550 feet east of I-10 westbound ramps at Cherry Valley Boulevard intersection.
- Add an eastbound left turn lane at the intersection of Calimesa Boulevard at Cherry Valley Boulevard

The new traffic signals will significantly increase the capacity of the I-10 at Cherry Valley interchange ramp intersections during the peak hours such that even with the addition of project traffic, delay and level of service will be greatly improved as compared to the current conditions.

The intersection of Calimesa Boulevard at Cherry Valley Boulevard is currently operating at an acceptable LOS (i.e., LOS "D" or better), and is anticipated to continue to operate at an acceptable LOS with the addition of ambient growth and Project traffic. However, Calimesa Boulevard is located approximately 150 feet from the intersection of I-10 WB ramps and Cherry Valley Boulevard which could have potential queueing issues with the installation of traffic signals. The intersection of Calimesa Boulevard is proposed to be realigned approximately 550 feet to the east, which would increase the distance between Calimesa Boulevard and the I-10 WB ramp, and mitigate potential queueing issues for westbound traffic towards the interchange. Peak hour queuing assessment for near-term with Project traffic conditions indicates 95th percentile queues can be accommodated within available stacking distance on Cherry Valley Boulevard and I-10 Freeway off-ramps with the proposed improvements.

Based on the concept plans currently being considered for the roundabout interchange alternative, the intersection of Calimesa Boulevard and Cherry Valley Boulevard will ultimately require realignment to the east to accommodate the planned future interchange ramp configuration. It is recommended that the applicant coordinate with City of Calimesa and the County of Riverside to relocate Calimesa Boulevard at an alignment consistent with the planned ultimate improvements at the I-10 Freeway at Cherry Valley Boulevard interchange. By placing the realigned intersection at its ultimate location the costs associated with these improvements could be eligible for reimbursement when the ultimate interchange project is constructed.

IMPROVEMENT RECOMMENDATIONS

I-10 AT CHERRY VALLEY INTERCHANGE

Based on the review of the interchange conducted in December 2015, the following improvements for the installation of interim traffic signals has been proposed:

- Traffic signals with turn pockets provided within the existing width of the Cherry Valley Boulevard Bridge.

Concept striping plan for the improvements at the interchange is shown on Exhibit 1. Note that the concept is for the purpose of discussion with the stakeholders and a detailed survey will have to be conducted during the final design.

In addition to the traffic signals, the following additional lane improvements are recommended in order to improve the LOS above existing conditions and also accommodate the 95th percentile queues on the ramps:

- Add a westbound left turn lane at the intersection of I-10 EB ramps at Cherry Valley Boulevard
- Add a southbound right turn lane on the off-ramp at the intersection of I-10 EB ramps at Cherry Valley Boulevard
- Add an eastbound left turn lane at the intersection of I-10 WB ramps at Cherry Valley Boulevard
- Add a westbound right turn lane at the intersection of I-10 WB ramps at Cherry Valley Boulevard

CALIMESA BOULEVARD / CHERRY VALLEY BOULEVARD INTERSECTION

Concept striping plan has been provided for the following improvements at the intersection of Calimesa Boulevard at Cherry Valley Boulevard:

- Realign Calimesa Boulevard approximately 550 feet east of I-10 westbound ramps at Cherry Valley Boulevard intersection.
- Add an eastbound left turn lane at the intersection of Calimesa Boulevard at Cherry Valley Boulevard

Concept striping plan for improvements at intersection of Calimesa Boulevard and Cherry Valley Boulevard is shown on Exhibit 2. Note that the concept is for the purpose of discussion with the stakeholders and a detailed survey will have to be conducted during the final design.

INTERSECTION OPERATIONS ANALYSIS

Weekday AM and PM peak hour intersection capacity analysis was conducted at the I-10 Freeway at Cherry Valley Boulevard interchange intersections based on Highway Capacity Manual (HCM) 2010 methodology. The capacity analysis was conducted to assess if the interim traffic signals could improve the delay and LOS at the interchange under the following traffic conditions.

EAP (2017) conditions, consistent with the scenario evaluated in the Traffic Study included the following traffic volumes:

- Existing (2014) traffic
- Growth of 6% to account for three years of ambient growth
- Project traffic

Near-term (2019) conditions included the following traffic volumes:

- Existing (2014) traffic
- Growth of 10% to account for five years of ambient growth
- Project traffic

An additional scenario with near-term (2019) conditions plus traffic from the proposed Sunny-Cal development consisting of 497 Single Family Detached Residential was also analyzed.

Near-term (2019) plus Sunny-Cal conditions included the following traffic volumes:

- Existing (2014) traffic
- Growth of 10% to account for five years of ambient growth
- Project traffic
- Sunny-Cal Residential traffic

The intersection analysis results for EAP (2017), near-term (2019) and near-term (2019) plus Sunny-Cal traffic conditions are summarized in Table 1 which indicates that with the installation of traffic signals, the I-10 Freeway at Cherry Valley Boulevard interchange intersections are anticipated to operate at acceptable LOS (i.e., LOS "D" or better) under all the scenarios.

ADJACENT INTERSECTIONS

The following closely spaced adjacent intersections to the interchange could be affected by the installation of traffic signals at the ramps:

Roberts Road / Cherry Valley Boulevard: The Roberts Road at Cherry Valley Boulevard intersection located to the immediate west of the I-10 WB ramps is currently controlled by an all-way stop. The southern leg of the intersection was closed to traffic during field review conducted in December 2015.

It is our understanding that Roberts Road is proposed to be realigned further west from its current location on Cherry Valley Boulevard. With the installation of traffic signal at I-10 WB ramps at Cherry Valley Boulevard, the all-way stop at Roberts Road at Cherry Valley Boulevard intersection has to be converted to a cross-street stop until the ultimate realignment of Roberts Road. The intersection is anticipated to operate under acceptable LOS (LOS "D" or better) under EAP (2017), near-term (2019) and near-term (2019) plus Sunny-Cal traffic conditions with a cross-street stop control.

Calimesa Boulevard / Cherry Valley Boulevard: The Calimesa Boulevard at Cherry Valley Boulevard intersection located to the immediate east of the I-10 WB ramps is currently controlled by a cross-street stop. The intersection of Calimesa Boulevard at Cherry Valley Boulevard is currently operating at an acceptable LOS (i.e., LOS "D" or better), and is anticipated to continue to operate at an acceptable LOS (LOS "D" or better) under EAP (2017), near-term (2019) and near-term (2019) plus Sunny-Cal traffic conditions.

The intersection of Calimesa Boulevard at Cherry Valley Boulevard is proposed to be realigned to the east, which would increase the distance between Calimesa Boulevard and the I-10 westbound ramp, and mitigate potential queuing issues east of the interchange. Based on the concept plans currently being considered for the roundabout interchange alternative, the intersection of Calimesa Boulevard and

Cherry Valley Boulevard will ultimately require realignment to the east to accommodate the planned future interchange ramp configuration. It is recommended that the applicant coordinate with City of Calimesa and the County of Riverside to relocate Calimesa Boulevard at an alignment consistent with the planned ultimate improvements at the I-10 Freeway at Cherry Valley Boulevard interchange. By placing the realigned intersection at its ultimate location the costs associated with these improvements could be eligible for reimbursement when the ultimate interchange project is constructed. An eastbound left turn lane with 300 feet of storage has been assumed for this alternative.

The intersection analysis results for the intersection of Calimesa Boulevard at Cherry Valley Boulevard, with improvements are also summarized in Table 1 which indicates that the intersection is anticipated to operate at acceptable LOS (LOS "D" or better) under EAP (2017), near-term (2019) and near-term (2019) plus Sunny-Cal traffic conditions with Calimesa Boulevard realignment and a cross-street stop control.

Worksheets for EAP (2017) traffic conditions analysis is provided in Attachments "A", worksheets for near-term (2019) traffic conditions analysis is provided in Attachment "B" and worksheet for near-term (2019) plus Sunny-Cal traffic conditions analysis is provided in Attachment "C".

QUEUING ANALYSIS

SimTraffic software has been utilized to assess peak hour queuing on Cherry Valley Boulevard for EAP (2017), near-term (2019) and near-term (2019) plus Sunny-Cal traffic conditions. SimTraffic is designed to model networks of signalized and unsignalized intersections, with the primary purpose of checking and fine tuning signal operations. SimTraffic uses the input parameters from Synchro to generate random simulations. The 95th percentile queue is not necessarily ever observed; it is simply based on statistical calculations (or Average Queue plus 1.65 standard deviations).

The random simulations generated by SimTraffic have been utilized to determine the 95th percentile queue lengths observed for each turn lane. A SimTraffic simulation has been recorded 5 times, during the weekday AM and weekday PM peak hours, and has been seeded for 30-minute periods with 60-minute recording intervals.

The available stacking length and the 95th percentile queues are summarized in Table 2. As shown in Table 2, 95th percentile queues can be accommodated within available stacking distance under EAP (2017), near-term (2019) and near-term (2019) plus Sunny-Cal traffic conditions with the recommended improvements.

The 95th percentile queues for eastbound left turn lane and eastbound through lane on Cherry Valley Boulevard at I-10 WB ramps decrease with the addition of Sunny-Cal traffic in the AM peak hour. This is due to the change in actuated signal splits in SimTraffic with the increase in westbound volumes.

The queuing analysis worksheets for EAP (2017) traffic conditions are provided in Attachment "D", the queuing analysis worksheets for near-term (2019) traffic conditions are provided in Attachment "E" and the queuing analysis worksheets for near-term (2019) plus Sunny-Cal traffic conditions are provided in Attachment "F".

If you have any questions, please contact me directly at (949) 336-5978.

Respectfully submitted,

URBAN CROSSROADS, INC.

Aric Evatt, PTP
President

Pranesh Tarikere, PE
Senior Engineer

Table 1

Intersection Analysis With Interim Improvements

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay[2] (secs.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	I-10 EB Ramps / Cherry Valley Bl.																	
	- Existing	CSS	0	0	0	0	1	0	0	1	0	0	1	0	19.3	**89.9**	C	**F**
	- EAP (2017) with Improvements	**TS**	0	0	0	0	1	**1**	0	1	0	**1**	1	0	25.4	24.1	C	C
	- Near Term (2019) with Improvements	**TS**	0	0	0	0	1	**1**	0	1	0	**1**	1	0	25.4	24.4	C	C
	- Near Term (2019) plus Sunny-Cal with Improvements	**TS**	0	0	0	0	1	**1**	0	1	0	**1**	1	0	25.9	28.7	C	C
2	I-10 WB Ramps / Cherry Valley Bl.																	
	- Existing	CSS	0	1	0	0	0	0	0	1	0	0	1	0	**>100.0**	28.8	**F**	D
	- EAP (2017) with Improvements	**TS**	0	1	0	0	0	0	**1**	1	0	0	1	0	28.6	18.2	C	B
	- Near Term (2019) with Improvements	**TS**	0	1	0	0	0	0	**1**	1	0	0	1	0	29.5	18.4	C	B
	- Near Term (2019) plus Sunny-Cal with Improvements	**TS**	0	1	0	0	0	0	**1**	1	0	0	1	0	37.8	20.1	D	C
3	Calimesa Bl. / Cherry Valley Bl.																	
	- Existing	CSS	0	0	0	0	1	0	0	1	0	0	1	0	13.8	13.0	B	B
	- EAP (2017) with Improvements	CSS	0	0	0	0	1	0	**1**	1	0	0	1	0	14.6	14.5	B	B
	- Near Term (2019) with Improvements	CSS	0	0	0	0	1	0	**1**	1	0	0	1	0	14.9	14.7	B	B
	- Near Term (2019) plus Sunny-Cal with Improvements	CSS	0	0	0	0	1	0	**1**	1	0	0	1	0	17.9	19.2	C	C[4]

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; **1** = Improvement

[2] Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. The intersections have been analyzed using the Synchro software.

[3] CSS = Cross-street Stop; TS = Traffic Signal

[4] With the proposed widening of Cherry Valley Boulevard to provide the eastbound left turn lane, it is anticipated that storage for up to two vehicles will be available in the painted median. Two-stage gap acceptance with up to 2 vehicles in median storage assumed for SBL turns from Calimesa Blvd.

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

Table 2

Peak Hour Queuing Summary With Interim Improvements

Intersection	Movement	Available Stacking Distance (Feet)	EAP (2017)				Near Term (2019)				Near Term (2019) plus Sunny-Cal			
			95th Percentile Queue (Feet)		Acceptable? [1]		95th Percentile Queue (Feet)		Acceptable? [1]		95th Percentile Queue (Feet)		Acceptable? [1]	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
I-10 EB Ramps / Cherry Valley Bl.	WBL	**150**	89	121	Yes	Yes	84	133	Yes	Yes	121	153	Yes	Yes [2]
	WBT	560	40	86	Yes	Yes	40	87	Yes	Yes	35	103	Yes	Yes
	SBL/T	1,145	202	295	Yes	Yes	200	296	Yes	Yes	242	513	Yes	Yes
	SBR	**350**	74	206	Yes	Yes	83	227	Yes	Yes	89	309	Yes	Yes
I-10 WB Ramps / Cherry Valley Bl.	EBL	**250**	245	166	Yes	Yes	252	177	Yes [2]	Yes	221	169	Yes	Yes
	EBT	560	141	58	Yes	Yes	114	90	Yes	Yes	39	104	Yes	Yes
	NBL/T/R	1,030	106	169	Yes	Yes	96	149	Yes	Yes	129	213	Yes	Yes
	WBT	545	101	97	Yes	Yes	105	101	Yes	Yes	347	108	Yes	Yes
	WBR	**375**	219	92	Yes	Yes	253	92	Yes	Yes	366	213	Yes	Yes
Calimesa Boulevard / Cherry Valley Bl.	EBL	**300**	29	29	Yes	Yes	31	35	Yes	Yes	37	30	Yes	Yes

[1] Stacking Distance is acceptable if the required stacking distance is less than or equal to the stacking distance provided.

[2] It should be noted that the additional 15 feet could be accomodated in the turn pocket transition.



LEGEND:

EXISTING STRIPING & MARKINGS TO REMAIN.

EXISTING STRIPING & MARKINGS TO BE REMOVED.

PROPOSED STRIPING & MARKINGS TO BE INSTALLED.

SCALE: 1" = 40'

0 20 40 80 120 160

EXHIBIT 1 - CHERRY VALLEY BOULEVARD AND I-10 RAMPS CONCEPT STRIPING WITH PROTECTED LEFT TURN PHASING

URBAN CROSSROADS
41 CORPORATE PARK, SUITE 300
IRVINE, CA 92606
TELEPHONE # 949-660-1994

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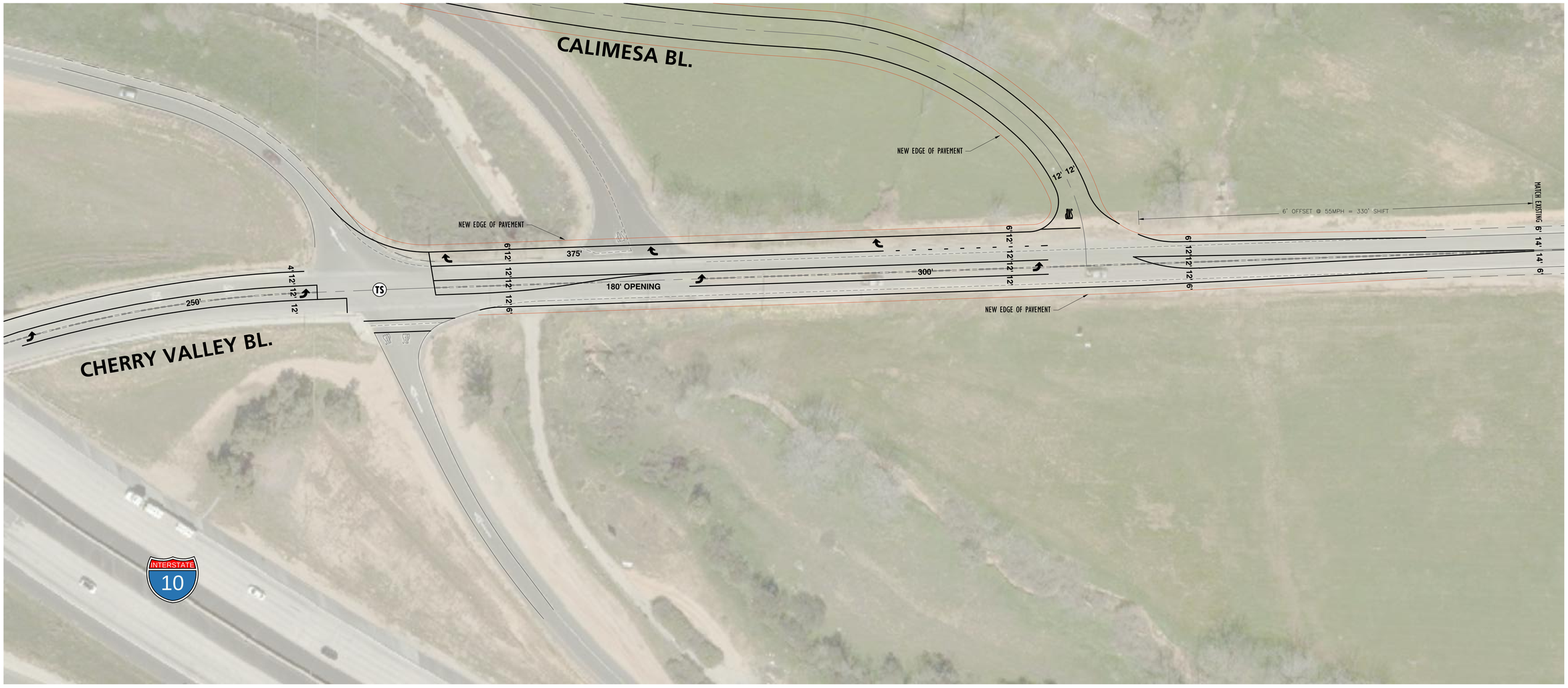
CVAR_12632



LEGEND:

EXISTING STRIPING & MARKINGS TO REMAIN.

EXISTING STRIPING & MARKINGS TO BE REMOVED.

PROPOSED STRIPING & MARKINGS TO BE INSTALLED.

SCALE: 1" = 40'

0 20 40 80 120 160

EXHIBIT 2 - REALIGNED CALIMESA BOULEVARD AND CHERRY VALLEY BOULEVARD CONCEPT STRIPING

URBAN CROSSROADS
41 CORPORATE PARK, SUITE 300
IRVINE, CA 92606
TELEPHONE # 949-660-1994

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CVAR_12633

ATTACHMENT A:
EAP (2017) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS, WITH RECOMMENDED IMPROVEMENTS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	588	70	56	89	0	0	0	0	222	1	89
Future Volume (veh/h)	0	588	70	56	89	0	0	0	0	222	1	89
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900	1900	1900	0				1900	1900	1900
Adj Flow Rate, veh/h	0	661	67	63	100	0				249	1	51
Adj No. of Lanes	0	1	0	1	1	0				0	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89				0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Cap, veh/h	0	905	92	101	1246	0				381	2	337
Arrive On Green	0.00	0.53	0.53	0.06	0.66	0.00				0.21	0.21	0.21
Sat Flow, veh/h	0	1697	172	1810	1900	0				1803	7	1596
Grp Volume(v), veh/h	0	0	728	63	100	0				250	0	51
Grp Sat Flow(s),veh/h/ln	0	0	1869	1810	1900	0				1810	0	1596
Q Serve(g_s), s	0.0	0.0	26.8	3.1	1.7	0.0				11.4	0.0	2.3
Cycle Q Clear(g_c), s	0.0	0.0	26.8	3.1	1.7	0.0				11.4	0.0	2.3
Prop In Lane	0.00		0.09	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	0	997	101	1246	0				382	0	337
V/C Ratio(X)	0.00	0.00	0.73	0.63	0.08	0.00				0.65	0.00	0.15
Avail Cap(c_a), veh/h	0	0	997	131	1246	0				382	0	337
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.98	0.98	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	16.1	41.6	5.6	0.0				32.5	0.0	28.9
Incr Delay (d2), s/veh	0.0	0.0	4.7	2.3	0.1	0.0				8.5	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	21.4	2.9	1.7	0.0				10.8	0.0	2.0
LnGrp Delay(d),s/veh	0.0	0.0	20.8	43.9	5.8	0.0				41.0	0.0	29.9
LnGrp LOS			C	D	A					D		C
Approach Vol, veh/h		728			163						301	
Approach Delay, s/veh		20.8			20.5						39.1	
Approach LOS		C			C						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	11.0	54.0		25.0		65.0		
Change Period (Y+Rc), s	6.0	* 6		6.0		6.0		
Max Green Setting (Gmax), s	6.5	* 48		19.0		59.0		
Max Q Clear Time (g_c+I1), s	5.1	28.8		13.4		3.7		
Green Ext Time (p_c), s	0.0	3.2		0.5		0.3		

Intersection Summary	
HCM 2010 Ctrl Delay	25.4
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	508	303	0	0	117	445	28	0	87	0	0	0
Future Volume (veh/h)	508	303	0	0	117	445	28	0	87	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.95			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	591	352	0	0	136	261	33	0	65			
Adj No. of Lanes	1	1	0	0	1	1	0	1	0			
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	844	1541	0	0	528	445	30	0	60			
Arrive On Green	0.47	0.81	0.00	0.00	0.28	0.28	0.06	0.00	0.06			
Sat Flow, veh/h	1810	1900	0	0	1900	1600	547	0	1076			
Grp Volume(v), veh/h	591	352	0	0	136	261	98	0	0			
Grp Sat Flow(s),veh/h/ln	1810	1900	0	0	1900	1600	1623	0	0			
Q Serve(g_s), s	23.3	3.9	0.0	0.0	5.0	12.7	5.0	0.0	0.0			
Cycle Q Clear(g_c), s	23.3	3.9	0.0	0.0	5.0	12.7	5.0	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.34		0.66			
Lane Grp Cap(c), veh/h	844	1541	0	0	528	445	90	0	0			
V/C Ratio(X)	0.70	0.23	0.00	0.00	0.26	0.59	1.09	0.00	0.00			
Avail Cap(c_a), veh/h	875	1541	0	0	528	445	90	0	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.64	0.64	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	19.0	2.0	0.0	0.0	25.3	28.0	42.5	0.0	0.0			
Incr Delay (d2), s/veh	1.3	0.2	0.0	0.0	1.2	5.6	120.3	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0			
%ile BackOfQ(95%),veh/ln	6.3	3.7	0.0	0.0	5.0	10.4	9.4	0.0	0.0			
LnGrp Delay(d),s/veh	20.3	2.2	0.0	0.0	26.5	33.6	163.0	0.0	0.0			
LnGrp LOS	C	A			C	C	F					
Approach Vol, veh/h		943			397			98				
Approach Delay, s/veh		13.5			31.2			163.0				
Approach LOS		B			C			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		11.0		79.0			48.0	31.0
Change Period (Y+Rc), s		6.0		6.0			6.0	* 6
Max Green Setting (Gmax), s		5.0		73.0			43.5	* 25
Max Q Clear Time (g_c+I1), s		7.0		5.9			25.3	14.7
Green Ext Time (p_c), s		0.0		2.2			2.1	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	28.6
HCM 2010 LOS	C

Notes

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	18	372	542	11	19	20
Future Vol, veh/h	18	372	542	11	19	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	21	428	623	13	22	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	636	0	-	0	1098	629
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	469	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	957	-	-	-	238	486
Stage 1	-	-	-	-	535	-
Stage 2	-	-	-	-	634	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	957	-	-	-	233	486
Mov Cap-2 Maneuver	-	-	-	-	368	-
Stage 1	-	-	-	-	535	-
Stage 2	-	-	-	-	620	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	957	-	-	-	420
HCM Lane V/C Ratio	0.022	-	-	-	0.107
HCM Control Delay (s)	8.8	-	-	-	14.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection	
Int Delay, s/veh	0.2

Movement	SEL	SER	NEL	NET	SWT	SWR
Traffic Vol, veh/h	4	6	5	653	175	2
Future Vol, veh/h	4	6	5	653	175	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	1	2	0
Mvmt Flow	4	7	5	718	192	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	922	193	195	0	-	0
Stage 1	193	-	-	-	-	-
Stage 2	729	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	302	854	1390	-	-	-
Stage 1	845	-	-	-	-	-
Stage 2	481	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	300	854	1390	-	-	-
Mov Cap-2 Maneuver	300	-	-	-	-	-
Stage 1	845	-	-	-	-	-
Stage 2	478	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	12.5	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1390	-	491	-	-
HCM Lane V/C Ratio	0.004	-	0.022	-	-
HCM Control Delay (s)	7.6	0	12.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	241	52	108	126	0	0	0	0	413	1	452
Future Volume (veh/h)	0	241	52	108	126	0	0	0	0	413	1	452
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900	1900	1900	0				1900	1900	1900
Adj Flow Rate, veh/h	0	256	40	115	134	0				439	1	232
Adj No. of Lanes	0	1	0	1	1	0				0	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Cap, veh/h	0	576	90	143	929	0				682	2	606
Arrive On Green	0.00	0.36	0.36	0.16	0.98	0.00				0.38	0.38	0.38
Sat Flow, veh/h	0	1603	250	1810	1900	0				1806	4	1604
Grp Volume(v), veh/h	0	0	296	115	134	0				440	0	232
Grp Sat Flow(s),veh/h/ln	0	0	1853	1810	1900	0				1810	0	1604
Q Serve(g_s), s	0.0	0.0	11.0	5.5	0.2	0.0				18.0	0.0	9.5
Cycle Q Clear(g_c), s	0.0	0.0	11.0	5.5	0.2	0.0				18.0	0.0	9.5
Prop In Lane	0.00		0.14	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	0	666	143	929	0				684	0	606
V/C Ratio(X)	0.00	0.00	0.44	0.80	0.14	0.00				0.64	0.00	0.38
Avail Cap(c_a), veh/h	0	0	666	251	929	0				684	0	606
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.99	0.99	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	22.0	37.2	0.5	0.0				23.0	0.0	20.4
Incr Delay (d2), s/veh	0.0	0.0	2.1	3.9	0.3	0.0				4.6	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	10.0	5.2	0.3	0.0				14.9	0.0	8.0
LnGrp Delay(d),s/veh	0.0	0.0	24.1	41.0	0.8	0.0				27.6	0.0	22.2
LnGrp LOS			C	D	A					C		C
Approach Vol, veh/h		296			249						672	
Approach Delay, s/veh		24.1			19.4						25.8	
Approach LOS		C			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	11.6	38.4		40.0		50.0		
Change Period (Y+Rc), s	4.5	6.0		6.0		6.0		
Max Green Setting (Gmax), s	12.5	27.0		34.0		44.0		
Max Q Clear Time (g_c+I1), s	7.5	13.0		20.0		2.2		
Green Ext Time (p_c), s	0.0	1.3		2.0		1.5		

Intersection Summary	
HCM 2010 Ctrl Delay	24.1
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	205	449	0	0	146	297	87	0	67	0	0	0
Future Volume (veh/h)	205	449	0	0	146	297	87	0	67	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	223	488	0	0	159	183	95	0	47			
Adj No. of Lanes	1	1	0	0	1	1	0	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	402	1372	0	0	823	696	167	0	83			
Arrive On Green	0.22	0.72	0.00	0.00	0.43	0.43	0.14	0.00	0.14			
Sat Flow, veh/h	1810	1900	0	0	1900	1606	1157	0	572			
Grp Volume(v), veh/h	223	488	0	0	159	183	142	0	0			
Grp Sat Flow(s),veh/h/ln	1810	1900	0	0	1900	1606	1729	0	0			
Q Serve(g_s), s	9.8	8.6	0.0	0.0	4.7	6.6	6.9	0.0	0.0			
Cycle Q Clear(g_c), s	9.8	8.6	0.0	0.0	4.7	6.6	6.9	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.67		0.33			
Lane Grp Cap(c), veh/h	402	1372	0	0	823	696	250	0	0			
V/C Ratio(X)	0.55	0.36	0.00	0.00	0.19	0.26	0.57	0.00	0.00			
Avail Cap(c_a), veh/h	432	1372	0	0	823	696	250	0	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.88	0.88	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	31.0	4.7	0.0	0.0	15.8	16.3	35.9	0.0	0.0			
Incr Delay (d2), s/veh	0.5	0.6	0.0	0.0	0.5	0.9	9.1	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	8.4	8.1	0.0	0.0	4.6	5.5	7.0	0.0	0.0			
LnGrp Delay(d),s/veh	31.6	5.3	0.0	0.0	16.3	17.2	45.0	0.0	0.0			
LnGrp LOS	C	A			B	B	D					
Approach Vol, veh/h		711			342			142				
Approach Delay, s/veh		13.5			16.8			45.0				
Approach LOS		B			B			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		19.0		71.0			26.0	45.0
Change Period (Y+Rc), s		6.0		6.0			6.0	* 6
Max Green Setting (Gmax), s		13.0		65.0			21.5	* 39
Max Q Clear Time (g_c+I1), s		8.9		10.6			11.8	8.6
Green Ext Time (p_c), s		0.2		2.2			1.7	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	18.2
HCM 2010 LOS	B

Notes

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	22	494	422	15	28	21
Future Vol, veh/h	22	494	422	15	28	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	25	561	480	17	32	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	497	0	-	0	1099	488
Stage 1	-	-	-	-	488	-
Stage 2	-	-	-	-	611	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1077	-	-	-	237	584
Stage 1	-	-	-	-	621	-
Stage 2	-	-	-	-	546	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1077	-	-	-	231	584
Mov Cap-2 Maneuver	-	-	-	-	366	-
Stage 1	-	-	-	-	621	-
Stage 2	-	-	-	-	533	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	14.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1077	-	-	-	436
HCM Lane V/C Ratio	0.023	-	-	-	0.128
HCM Control Delay (s)	8.4	-	-	-	14.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection	
Int Delay, s/veh	0.1

Movement	SEL	SER	NEL	NET	SWT	SWR
Traffic Vol, veh/h	1	3	2	290	576	1
Future Vol, veh/h	1	3	2	290	576	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	3	2	312	619	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	936	620	620	0	-	0
Stage 1	620	-	-	-	-	-
Stage 2	316	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	297	492	970	-	-	-
Stage 1	540	-	-	-	-	-
Stage 2	744	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	296	492	970	-	-	-
Mov Cap-2 Maneuver	296	-	-	-	-	-
Stage 1	540	-	-	-	-	-
Stage 2	743	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	13.6	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	970	-	422	-	-
HCM Lane V/C Ratio	0.002	-	0.01	-	-
HCM Control Delay (s)	8.7	0	13.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

ATTACHMENT B:
NEAR-TERM (2019) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS, WITH RECOMMENDED IMPROVEMENTS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	611	73	57	92	0	0	0	0	227	1	92
Future Volume (veh/h)	0	611	73	57	92	0	0	0	0	227	1	92
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900	1900	1900	0				1900	1900	1900
Adj Flow Rate, veh/h	0	687	70	64	103	0				255	1	54
Adj No. of Lanes	0	1	0	1	1	0				0	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89				0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Cap, veh/h	0	904	92	131	1277	0				401	2	355
Arrive On Green	0.00	0.53	0.53	0.07	0.67	0.00				0.22	0.22	0.22
Sat Flow, veh/h	0	1696	173	1810	1900	0				1803	7	1597
Grp Volume(v), veh/h	0	0	757	64	103	0				256	0	54
Grp Sat Flow(s),veh/h/ln	0	0	1869	1810	1900	0				1810	0	1597
Q Serve(g_s), s	0.0	0.0	28.6	3.1	1.7	0.0				11.5	0.0	2.5
Cycle Q Clear(g_c), s	0.0	0.0	28.6	3.1	1.7	0.0				11.5	0.0	2.5
Prop In Lane	0.00		0.09	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	0	997	131	1277	0				402	0	355
V/C Ratio(X)	0.00	0.00	0.76	0.49	0.08	0.00				0.64	0.00	0.15
Avail Cap(c_a), veh/h	0	0	997	131	1277	0				402	0	355
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.97	0.97	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	16.5	40.2	5.1	0.0				31.7	0.0	28.2
Incr Delay (d2), s/veh	0.0	0.0	5.4	1.0	0.1	0.0				7.5	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	22.6	2.8	1.7	0.0				10.8	0.0	2.1
LnGrp Delay(d),s/veh	0.0	0.0	21.9	41.2	5.2	0.0				39.2	0.0	29.1
LnGrp LOS			C	D	A					D		C
Approach Vol, veh/h		757			167						310	
Approach Delay, s/veh		21.9			19.0						37.4	
Approach LOS		C			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	12.5	54.0		26.0		66.5		
Change Period (Y+Rc), s	6.0	* 6		6.0		6.0		
Max Green Setting (Gmax), s	5.5	* 48		20.0		58.0		
Max Q Clear Time (g_c+I1), s	5.1	30.6		13.5		3.7		
Green Ext Time (p_c), s	0.0	3.2		0.6		0.3		

Intersection Summary	
HCM 2010 Ctrl Delay	25.4
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	527	310	0	0	120	460	29	0	88	0	0	0
Future Volume (veh/h)	527	310	0	0	120	460	29	0	88	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.95			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	613	360	0	0	140	279	34	0	66			
Adj No. of Lanes	1	1	0	0	1	1	0	1	0			
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	844	1541	0	0	528	445	31	0	60			
Arrive On Green	0.47	0.81	0.00	0.00	0.28	0.28	0.06	0.00	0.06			
Sat Flow, veh/h	1810	1900	0	0	1900	1600	552	0	1072			
Grp Volume(v), veh/h	613	360	0	0	140	279	100	0	0			
Grp Sat Flow(s),veh/h/ln	1810	1900	0	0	1900	1600	1624	0	0			
Q Serve(g_s), s	24.6	4.0	0.0	0.0	5.2	13.7	5.0	0.0	0.0			
Cycle Q Clear(g_c), s	24.6	4.0	0.0	0.0	5.2	13.7	5.0	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.34		0.66			
Lane Grp Cap(c), veh/h	844	1541	0	0	528	445	90	0	0			
V/C Ratio(X)	0.73	0.23	0.00	0.00	0.27	0.63	1.11	0.00	0.00			
Avail Cap(c_a), veh/h	875	1541	0	0	528	445	90	0	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.60	0.60	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	19.4	2.0	0.0	0.0	25.3	28.4	42.5	0.0	0.0			
Incr Delay (d2), s/veh	1.5	0.2	0.0	0.0	1.2	6.6	127.1	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	7.1	3.8	0.0	0.0	5.2	11.1	9.7	0.0	0.0			
LnGrp Delay(d),s/veh	20.9	2.2	0.0	0.0	26.6	35.0	169.6	0.0	0.0			
LnGrp LOS	C	A			C	C	F					
Approach Vol, veh/h		973			419			100				
Approach Delay, s/veh		13.9			32.2			169.6				
Approach LOS		B			C			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		11.0		79.0			48.0	31.0
Change Period (Y+Rc), s		6.0		6.0			6.0	* 6
Max Green Setting (Gmax), s		5.0		73.0			43.5	* 25
Max Q Clear Time (g_c+I1), s		7.0		6.0			26.6	15.7
Green Ext Time (p_c), s		0.0		2.3			2.2	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	29.5
HCM 2010 LOS	C

Notes

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	19	379	560	11	20	21
Future Vol, veh/h	19	379	560	11	20	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	22	436	644	13	23	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	656	0	-	0	1129	650
Stage 1	-	-	-	-	650	-
Stage 2	-	-	-	-	479	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	941	-	-	-	228	473
Stage 1	-	-	-	-	523	-
Stage 2	-	-	-	-	627	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	941	-	-	-	223	473
Mov Cap-2 Maneuver	-	-	-	-	358	-
Stage 1	-	-	-	-	523	-
Stage 2	-	-	-	-	612	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	941	-	-	-	409
HCM Lane V/C Ratio	0.023	-	-	-	0.115
HCM Control Delay (s)	8.9	-	-	-	14.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection	
Int Delay, s/veh	0.2

Movement	SEL	SER	NEL	NET	SWT	SWR
Traffic Vol, veh/h	4	7	6	680	182	2
Future Vol, veh/h	4	7	6	680	182	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	1	2	0
Mvmt Flow	4	8	7	747	200	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	961	201	202	0	-	0
Stage 1	201	-	-	-	-	-
Stage 2	760	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	287	845	1382	-	-	-
Stage 1	838	-	-	-	-	-
Stage 2	465	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	284	845	1382	-	-	-
Mov Cap-2 Maneuver	284	-	-	-	-	-
Stage 1	838	-	-	-	-	-
Stage 2	461	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	12.5	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1382	-	492	-	-
HCM Lane V/C Ratio	0.005	-	0.025	-	-
HCM Control Delay (s)	7.6	0	12.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	250	54	108	130	0	0	0	0	427	1	469
Future Volume (veh/h)	0	250	54	108	130	0	0	0	0	427	1	469
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900	1900	1900	0				1900	1900	1900
Adj Flow Rate, veh/h	0	266	42	115	138	0				454	1	250
Adj No. of Lanes	0	1	0	1	1	0				0	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Cap, veh/h	0	575	91	143	929	0				682	2	606
Arrive On Green	0.00	0.36	0.36	0.16	0.98	0.00				0.38	0.38	0.38
Sat Flow, veh/h	0	1600	253	1810	1900	0				1806	4	1604
Grp Volume(v), veh/h	0	0	308	115	138	0				455	0	250
Grp Sat Flow(s),veh/h/ln	0	0	1853	1810	1900	0				1810	0	1604
Q Serve(g_s), s	0.0	0.0	11.5	5.5	0.2	0.0				18.8	0.0	10.3
Cycle Q Clear(g_c), s	0.0	0.0	11.5	5.5	0.2	0.0				18.8	0.0	10.3
Prop In Lane	0.00		0.14	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	0	666	143	929	0				684	0	606
V/C Ratio(X)	0.00	0.00	0.46	0.80	0.15	0.00				0.67	0.00	0.41
Avail Cap(c_a), veh/h	0	0	666	251	929	0				684	0	606
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.99	0.99	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	22.1	37.2	0.5	0.0				23.3	0.0	20.6
Incr Delay (d2), s/veh	0.0	0.0	2.3	3.9	0.3	0.0				5.1	0.0	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	10.5	5.2	0.3	0.0				15.6	0.0	8.6
LnGrp Delay(d),s/veh	0.0	0.0	24.4	41.0	0.8	0.0				28.3	0.0	22.7
LnGrp LOS			C	D	A					C		C
Approach Vol, veh/h		308			253						705	
Approach Delay, s/veh		24.4			19.1						26.3	
Approach LOS		C			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	11.6	38.4		40.0		50.0		
Change Period (Y+Rc), s	4.5	6.0		6.0		6.0		
Max Green Setting (Gmax), s	12.5	27.0		34.0		44.0		
Max Q Clear Time (g_c+I1), s	7.5	13.5		20.8		2.2		
Green Ext Time (p_c), s	0.0	1.3		2.1		1.6		

Intersection Summary	
HCM 2010 Ctrl Delay	24.4
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	212	464	0	0	148	304	90	0	68	0	0	0
Future Volume (veh/h)	212	464	0	0	148	304	90	0	68	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	230	504	0	0	161	190	98	0	48			
Adj No. of Lanes	1	1	0	0	1	1	0	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	402	1372	0	0	823	696	168	0	82			
Arrive On Green	0.22	0.72	0.00	0.00	0.43	0.43	0.14	0.00	0.14			
Sat Flow, veh/h	1810	1900	0	0	1900	1606	1161	0	569			
Grp Volume(v), veh/h	230	504	0	0	161	190	146	0	0			
Grp Sat Flow(s),veh/h/ln	1810	1900	0	0	1900	1606	1730	0	0			
Q Serve(g_s), s	10.2	9.0	0.0	0.0	4.7	6.8	7.1	0.0	0.0			
Cycle Q Clear(g_c), s	10.2	9.0	0.0	0.0	4.7	6.8	7.1	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.67		0.33			
Lane Grp Cap(c), veh/h	402	1372	0	0	823	696	250	0	0			
V/C Ratio(X)	0.57	0.37	0.00	0.00	0.20	0.27	0.58	0.00	0.00			
Avail Cap(c_a), veh/h	432	1372	0	0	823	696	250	0	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.87	0.87	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	31.2	4.7	0.0	0.0	15.8	16.4	36.0	0.0	0.0			
Incr Delay (d2), s/veh	0.7	0.7	0.0	0.0	0.5	1.0	9.6	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	8.7	8.2	0.0	0.0	4.6	5.8	7.3	0.0	0.0			
LnGrp Delay(d),s/veh	31.9	5.4	0.0	0.0	16.3	17.4	45.6	0.0	0.0			
LnGrp LOS	C	A			B	B	D					
Approach Vol, veh/h		734			351			146				
Approach Delay, s/veh		13.7			16.9			45.6				
Approach LOS		B			B			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		19.0		71.0			26.0	45.0
Change Period (Y+Rc), s		6.0		6.0			6.0	* 6
Max Green Setting (Gmax), s		13.0		65.0			21.5	* 39
Max Q Clear Time (g_c+I1), s		9.1		11.0			12.2	8.8
Green Ext Time (p_c), s		0.2		2.3			1.7	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	18.4
HCM 2010 LOS	B

Notes

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	23	509	430	15	29	22
Future Vol, veh/h	23	509	430	15	29	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	26	578	489	17	33	25

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	506	0	-	0	1128	497
Stage 1	-	-	-	-	497	-
Stage 2	-	-	-	-	631	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1069	-	-	-	228	577
Stage 1	-	-	-	-	615	-
Stage 2	-	-	-	-	534	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1069	-	-	-	222	577
Mov Cap-2 Maneuver	-	-	-	-	358	-
Stage 1	-	-	-	-	615	-
Stage 2	-	-	-	-	521	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	14.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1069	-	-	-	428
HCM Lane V/C Ratio	0.024	-	-	-	0.135
HCM Control Delay (s)	8.5	-	-	-	14.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

Intersection	
Int Delay, s/veh	0.1

Movement	SEL	SER	NEL	NET	SWT	SWR
Traffic Vol, veh/h	1	3	2	303	598	1
Future Vol, veh/h	1	3	2	303	598	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	3	2	326	643	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	974	644	644	0	-	0
Stage 1	644	-	-	-	-	-
Stage 2	330	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	282	476	951	-	-	-
Stage 1	527	-	-	-	-	-
Stage 2	733	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	281	476	951	-	-	-
Mov Cap-2 Maneuver	281	-	-	-	-	-
Stage 1	527	-	-	-	-	-
Stage 2	731	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	14	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	951	-	406	-	-
HCM Lane V/C Ratio	0.002	-	0.011	-	-
HCM Control Delay (s)	8.8	0	14	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

ATTACHMENT C:
NEAR-TERM (2019) PLUS SUNNY-CAL CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS, WITH RECOMMENDED IMPROVEMENTS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	616	73	92	107	0	0	0	0	259	1	92
Future Volume (veh/h)	0	616	73	92	107	0	0	0	0	259	1	92
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900	1900	1900	0				1900	1900	1900
Adj Flow Rate, veh/h	0	692	70	103	120	0				291	1	54
Adj No. of Lanes	0	1	0	1	1	0				0	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89				0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Cap, veh/h	0	905	92	497	1662	0				381	1	337
Arrive On Green	0.00	0.53	0.53	0.37	1.00	0.00				0.21	0.21	0.21
Sat Flow, veh/h	0	1697	172	1810	1900	0				1804	6	1596
Grp Volume(v), veh/h	0	0	762	103	120	0				292	0	54
Grp Sat Flow(s),veh/h/ln	0	0	1869	1810	1900	0				1810	0	1596
Q Serve(g_s), s	0.0	0.0	28.9	3.5	0.0	0.0				13.7	0.0	2.5
Cycle Q Clear(g_c), s	0.0	0.0	28.9	3.5	0.0	0.0				13.7	0.0	2.5
Prop In Lane	0.00		0.09	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	0	997	497	1662	0				382	0	337
V/C Ratio(X)	0.00	0.00	0.76	0.21	0.07	0.00				0.76	0.00	0.16
Avail Cap(c_a), veh/h	0	0	997	497	1662	0				382	0	337
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.93	0.93	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	16.5	21.8	0.0	0.0				33.4	0.0	29.0
Incr Delay (d2), s/veh	0.0	0.0	5.6	0.1	0.1	0.0				13.5	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	23.0	3.1	0.1	0.0				13.0	0.0	2.1
LnGrp Delay(d),s/veh	0.0	0.0	22.1	21.9	0.1	0.0				46.9	0.0	30.0
LnGrp LOS			C	C	A					D		C
Approach Vol, veh/h		762			223						346	
Approach Delay, s/veh		22.1			10.2						44.3	
Approach LOS		C			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	30.8	54.0		25.0		84.8		
Change Period (Y+Rc), s	6.0	* 6		6.0		6.0		
Max Green Setting (Gmax), s	6.5	* 48		19.0		59.0		
Max Q Clear Time (g_c+I1), s	5.5	30.9		15.7		2.0		
Green Ext Time (p_c), s	0.0	3.3		0.4		0.4		

Intersection Summary	
HCM 2010 Ctrl Delay	25.9
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	527	347	0	0	169	547	29	0	101	0	0	0
Future Volume (veh/h)	527	347	0	0	169	547	29	0	101	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.95			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	613	403	0	0	197	380	34	0	81			
Adj No. of Lanes	1	1	0	0	1	1	0	1	0			
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	844	1541	0	0	528	445	26	0	63			
Arrive On Green	0.47	0.81	0.00	0.00	0.28	0.28	0.06	0.00	0.06			
Sat Flow, veh/h	1810	1900	0	0	1900	1600	477	0	1136			
Grp Volume(v), veh/h	613	403	0	0	197	380	115	0	0			
Grp Sat Flow(s),veh/h/ln	1810	1900	0	0	1900	1600	1613	0	0			
Q Serve(g_s), s	24.6	4.6	0.0	0.0	7.5	20.2	5.0	0.0	0.0			
Cycle Q Clear(g_c), s	24.6	4.6	0.0	0.0	7.5	20.2	5.0	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.30		0.70			
Lane Grp Cap(c), veh/h	844	1541	0	0	528	445	90	0	0			
V/C Ratio(X)	0.73	0.26	0.00	0.00	0.37	0.85	1.28	0.00	0.00			
Avail Cap(c_a), veh/h	875	1541	0	0	528	445	90	0	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.54	0.54	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	19.4	2.0	0.0	0.0	26.2	30.8	42.5	0.0	0.0			
Incr Delay (d2), s/veh	1.4	0.2	0.0	0.0	2.0	18.6	189.0	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	16.9	4.3	0.0	0.0	7.6	16.6	12.5	0.0	0.0			
LnGrp Delay(d),s/veh	20.7	2.3	0.0	0.0	28.2	49.3	231.5	0.0	0.0			
LnGrp LOS	C	A			C	D	F					
Approach Vol, veh/h		1016			577			115				
Approach Delay, s/veh		13.4			42.1			231.5				
Approach LOS		B			D			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		11.0		79.0			48.0	31.0
Change Period (Y+Rc), s		6.0		6.0			6.0	* 6
Max Green Setting (Gmax), s		5.0		73.0			43.5	* 25
Max Q Clear Time (g_c+I1), s		7.0		6.6			26.6	22.2
Green Ext Time (p_c), s		0.0		2.5			2.4	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	37.8
HCM 2010 LOS	D

Notes

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	19	429	696	26	25	21
Future Vol, veh/h	19	429	696	26	25	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	22	493	800	30	29	24

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	830	0	-	0	1352	815
Stage 1	-	-	-	-	815	-
Stage 2	-	-	-	-	537	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	811	-	-	-	167	381
Stage 1	-	-	-	-	439	-
Stage 2	-	-	-	-	590	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	811	-	-	-	162	381
Mov Cap-2 Maneuver	-	-	-	-	299	-
Stage 1	-	-	-	-	439	-
Stage 2	-	-	-	-	574	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	17.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	811	-	-	-	332
HCM Lane V/C Ratio	0.027	-	-	-	0.159
HCM Control Delay (s)	9.6	-	-	-	17.9
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Intersection	
Int Delay, s/veh	0.2

Movement	SEL	SER	NEL	NET	SWT	SWR
Traffic Vol, veh/h	4	7	6	685	197	2
Future Vol, veh/h	4	7	6	685	197	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	0	0	1	2	0
Mvmt Flow	4	8	7	753	216	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	984	218	219	0	-	0
Stage 1	218	-	-	-	-	-
Stage 2	766	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	278	827	1362	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	462	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	275	827	1362	-	-	-
Mov Cap-2 Maneuver	275	-	-	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	458	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	12.7	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	1362	-	478	-	-
HCM Lane V/C Ratio	0.005	-	0.025	-	-
HCM Control Delay (s)	7.7	0	12.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	267	54	133	140	0	0	0	0	528	1	469
Future Volume (veh/h)	0	267	54	133	140	0	0	0	0	528	1	469
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00				1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900	1900	1900	0				1900	1900	1900
Adj Flow Rate, veh/h	0	284	42	141	149	0				562	1	250
Adj No. of Lanes	0	1	0	1	1	0				0	1	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Cap, veh/h	0	556	82	171	929	0				682	1	606
Arrive On Green	0.00	0.34	0.34	0.19	0.98	0.00				0.38	0.38	0.38
Sat Flow, veh/h	0	1616	239	1810	1900	0				1806	3	1604
Grp Volume(v), veh/h	0	0	326	141	149	0				563	0	250
Grp Sat Flow(s),veh/h/ln	0	0	1855	1810	1900	0				1810	0	1604
Q Serve(g_s), s	0.0	0.0	12.6	6.7	0.2	0.0				25.3	0.0	10.3
Cycle Q Clear(g_c), s	0.0	0.0	12.6	6.7	0.2	0.0				25.3	0.0	10.3
Prop In Lane	0.00		0.13	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	0	638	171	929	0				684	0	606
V/C Ratio(X)	0.00	0.00	0.51	0.82	0.16	0.00				0.82	0.00	0.41
Avail Cap(c_a), veh/h	0	0	638	251	929	0				684	0	606
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	0.98	0.98	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	23.5	35.7	0.5	0.0				25.3	0.0	20.6
Incr Delay (d2), s/veh	0.0	0.0	2.9	8.3	0.4	0.0				10.8	0.0	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	11.3	6.8	0.3	0.0				20.8	0.0	8.6
LnGrp Delay(d),s/veh	0.0	0.0	26.4	44.1	0.9	0.0				36.1	0.0	22.7
LnGrp LOS			C	D	A					D		C
Approach Vol, veh/h		326			290						813	
Approach Delay, s/veh		26.4			21.9						32.0	
Approach LOS		C			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	13.0	37.0		40.0		50.0		
Change Period (Y+Rc), s	4.5	6.0		6.0		6.0		
Max Green Setting (Gmax), s	12.5	27.0		34.0		44.0		
Max Q Clear Time (g_c+I1), s	8.7	14.6		27.3		2.2		
Green Ext Time (p_c), s	0.1	1.4		1.8		1.7		

Intersection Summary	
HCM 2010 Ctrl Delay	28.7
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	212	582	0	0	183	366	90	0	108	0	0	0
Future Volume (veh/h)	212	582	0	0	183	366	90	0	108	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1900	1900	0	0	1900	1900	1900	1900	1900			
Adj Flow Rate, veh/h	230	633	0	0	199	258	98	0	91			
Adj No. of Lanes	1	1	0	0	1	1	0	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0			
Cap, veh/h	402	1372	0	0	823	696	127	0	118			
Arrive On Green	0.22	0.72	0.00	0.00	0.43	0.43	0.14	0.00	0.14			
Sat Flow, veh/h	1810	1900	0	0	1900	1606	879	0	816			
Grp Volume(v), veh/h	230	633	0	0	199	258	189	0	0			
Grp Sat Flow(s),veh/h/ln	1810	1900	0	0	1900	1606	1695	0	0			
Q Serve(g_s), s	10.2	12.5	0.0	0.0	6.0	9.8	9.7	0.0	0.0			
Cycle Q Clear(g_c), s	10.2	12.5	0.0	0.0	6.0	9.8	9.7	0.0	0.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.52		0.48			
Lane Grp Cap(c), veh/h	402	1372	0	0	823	696	245	0	0			
V/C Ratio(X)	0.57	0.46	0.00	0.00	0.24	0.37	0.77	0.00	0.00			
Avail Cap(c_a), veh/h	432	1372	0	0	823	696	245	0	0			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.80	0.80	0.00	0.00	1.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	31.2	5.2	0.0	0.0	16.1	17.2	37.1	0.0	0.0			
Incr Delay (d2), s/veh	0.7	0.9	0.0	0.0	0.7	1.5	20.7	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	8.5	10.5	0.0	0.0	5.9	8.1	9.9	0.0	0.0			
LnGrp Delay(d),s/veh	31.9	6.1	0.0	0.0	16.8	18.7	57.8	0.0	0.0			
LnGrp LOS	C	A			B	B	E					
Approach Vol, veh/h		863			457			189				
Approach Delay, s/veh		13.0			17.9			57.8				
Approach LOS		B			B			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		19.0		71.0			26.0	45.0
Change Period (Y+Rc), s		6.0		6.0			6.0	* 6
Max Green Setting (Gmax), s		13.0		65.0			21.5	* 39
Max Q Clear Time (g_c+I1), s		11.7		14.5			12.2	11.8
Green Ext Time (p_c), s		0.1		3.1			2.2	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	20.1
HCM 2010 LOS	C

Notes

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	23	667	528	25	46	22
Future Vol, veh/h	23	667	528	25	46	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	2	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	26	758	600	28	52	25

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	628	0	-	0	1424	614
Stage 1	-	-	-	-	614	-
Stage 2	-	-	-	-	810	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	964	-	-	-	151	496
Stage 1	-	-	-	-	544	-
Stage 2	-	-	-	-	441	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	964	-	-	-	147	496
Mov Cap-2 Maneuver	-	-	-	-	285	-
Stage 1	-	-	-	-	544	-
Stage 2	-	-	-	-	429	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	19.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	964	-	-	-	330
HCM Lane V/C Ratio	0.027	-	-	-	0.234
HCM Control Delay (s)	8.8	-	-	-	19.2
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9

Intersection	
Int Delay, s/veh	0.1

Movement	SEL	SER	NEL	NET	SWT	SWR
Traffic Vol, veh/h	1	3	2	320	608	1
Future Vol, veh/h	1	3	2	320	608	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	3	2	344	654	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1002	654	655	0	-	0
Stage 1	654	-	-	-	-	-
Stage 2	348	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	271	470	942	-	-	-
Stage 1	521	-	-	-	-	-
Stage 2	719	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	270	470	942	-	-	-
Mov Cap-2 Maneuver	270	-	-	-	-	-
Stage 1	521	-	-	-	-	-
Stage 2	717	-	-	-	-	-

Approach	SE	NE	SW
HCM Control Delay, s	14.2	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET	SELn1	SWT	SWR
Capacity (veh/h)	942	-	397	-	-
HCM Lane V/C Ratio	0.002	-	0.011	-	-
HCM Control Delay (s)	8.8	0	14.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

ATTACHMENT D:
EAP (2017) CONDITIONS SIMTRAFFIC QUEUEING ANALYSIS WORKSHEETS, WITH RECOMMENDED IMPROVEMENTS

Intersection: 1: I-10 EB Ramps & Cherry Valley Blvd

Movement	EB	WB	WB	SB	SB
Directions Served	TR	L	T	LT	R
Maximum Queue (ft)	150	103	49	251	102
Average Queue (ft)	125	44	13	119	33
95th Queue (ft)	162	89	40	202	74
Link Distance (ft)	66		600	809	
Upstream Blk Time (%)	26				
Queuing Penalty (veh)	170				
Storage Bay Dist (ft)		150			250
Storage Blk Time (%)		0		1	
Queuing Penalty (veh)		0		1	

Intersection: 2: I-10 WB Ramps & Cherry Valley Blvd

Movement	EB	EB	WB	WB	NB
Directions Served	L	T	T	R	LTR
Maximum Queue (ft)	284	164	116	252	149
Average Queue (ft)	133	20	56	131	53
95th Queue (ft)	245	141	101	219	106
Link Distance (ft)		600	544		562
Upstream Blk Time (%)		0			
Queuing Penalty (veh)		0			
Storage Bay Dist (ft)	250			250	
Storage Blk Time (%)	1			0	
Queuing Penalty (veh)	5			0	

Intersection: 3: Cherry Valley Blvd & Calimesa Blvd

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	31	51
Average Queue (ft)	7	22
95th Queue (ft)	29	44
Link Distance (ft)		515
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	300	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: I-10 EB Ramps & Cherry Valley Blvd

Movement	EB	WB	WB	SB	SB
Directions Served	TR	L	T	LT	R
Maximum Queue (ft)	136	136	106	366	274
Average Queue (ft)	102	69	39	177	102
95th Queue (ft)	154	121	86	295	206
Link Distance (ft)	66		600	809	
Upstream Blk Time (%)	22				
Queuing Penalty (veh)	65				
Storage Bay Dist (ft)		150			250
Storage Blk Time (%)		0		2	0
Queuing Penalty (veh)		1		8	0

Intersection: 2: I-10 WB Ramps & Cherry Valley Blvd

Movement	EB	EB	WB	WB	NB
Directions Served	L	T	T	R	LTR
Maximum Queue (ft)	203	84	118	119	209
Average Queue (ft)	92	20	47	52	89
95th Queue (ft)	166	58	97	92	169
Link Distance (ft)		600	544		562
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	250			250	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Cherry Valley Blvd & Calimesa Blvd

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	35	60
Average Queue (ft)	7	28
95th Queue (ft)	29	51
Link Distance (ft)		515
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	300	
Storage Blk Time (%)		
Queuing Penalty (veh)		

ATTACHMENT E:
NEAR-TERM (2019) CONDITIONS SIMTRAFFIC QUEUEING ANALYSIS WORKSHEETS, WITH RECOMMENDED IMPROVEMENTS

Intersection: 1: I-10 EB Ramps & Cherry Valley Blvd

Movement	EB	WB	WB	SB	SB
Directions Served	TR	L	T	LT	R
Maximum Queue (ft)	154	98	48	226	143
Average Queue (ft)	128	43	14	123	33
95th Queue (ft)	160	84	40	200	83
Link Distance (ft)	66		600	809	
Upstream Blk Time (%)	28				
Queuing Penalty (veh)	193				
Storage Bay Dist (ft)		150			250
Storage Blk Time (%)				0	0
Queuing Penalty (veh)				0	0

Intersection: 2: I-10 WB Ramps & Cherry Valley Blvd

Movement	EB	EB	WB	WB	NB
Directions Served	L	T	T	R	LTR
Maximum Queue (ft)	295	173	125	297	122
Average Queue (ft)	144	20	58	160	53
95th Queue (ft)	252	114	105	253	96
Link Distance (ft)		600	544		562
Upstream Blk Time (%)		0			
Queuing Penalty (veh)		0			
Storage Bay Dist (ft)	250			250	
Storage Blk Time (%)	1			1	
Queuing Penalty (veh)	4			1	

Intersection: 3: Cherry Valley Blvd & Calimesa Blvd

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	31	46
Average Queue (ft)	8	25
95th Queue (ft)	31	46
Link Distance (ft)		515
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	300	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: I-10 EB Ramps & Cherry Valley Blvd

Movement	EB	WB	WB	SB	SB
Directions Served	TR	L	T	LT	R
Maximum Queue (ft)	136	144	105	370	275
Average Queue (ft)	108	77	39	178	110
95th Queue (ft)	156	133	87	296	227
Link Distance (ft)	66		600	809	
Upstream Blk Time (%)	27				
Queuing Penalty (veh)	81				
Storage Bay Dist (ft)		150			250
Storage Blk Time (%)		1	0	2	0
Queuing Penalty (veh)		1	0	10	0

Intersection: 2: I-10 WB Ramps & Cherry Valley Blvd

Movement	EB	EB	WB	WB	NB
Directions Served	L	T	T	R	LTR
Maximum Queue (ft)	231	170	136	116	174
Average Queue (ft)	97	27	50	52	87
95th Queue (ft)	177	90	101	92	149
Link Distance (ft)		600	544		562
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	250			250	
Storage Blk Time (%)	0				
Queuing Penalty (veh)	0				

Intersection: 3: Cherry Valley Blvd & Calimesa Blvd

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	44	58
Average Queue (ft)	10	25
95th Queue (ft)	35	48
Link Distance (ft)		515
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	300	
Storage Blk Time (%)		
Queuing Penalty (veh)		

ATTACHMENT F:
NEAR-TERM (2019) PLUS SUNNY-CAL CONDITIONS SIMTRAFFIC QUEUEING ANALYSIS WORKSHEETS, WITH RECOMMENDED IMPROVEMENTS

Intersection: 1: I-10 EB Ramps & Cherry Valley Blvd

Movement	EB	WB	WB	SB	SB
Directions Served	TR	L	T	LT	R
Maximum Queue (ft)	156	127	48	276	104
Average Queue (ft)	131	72	11	142	39
95th Queue (ft)	160	121	35	242	89
Link Distance (ft)	66		600	809	
Upstream Blk Time (%)	29				
Queuing Penalty (veh)	201				
Storage Bay Dist (ft)		150			250
Storage Blk Time (%)		0		1	
Queuing Penalty (veh)		0		1	

Intersection: 2: I-10 WB Ramps & Cherry Valley Blvd

Movement	EB	EB	WB	WB	NB
Directions Served	L	T	T	R	LTR
Maximum Queue (ft)	281	62	473	350	160
Average Queue (ft)	128	12	134	230	67
95th Queue (ft)	221	39	347	366	129
Link Distance (ft)		600	544		562
Upstream Blk Time (%)			0		
Queuing Penalty (veh)			2		
Storage Bay Dist (ft)	250			250	
Storage Blk Time (%)	0		0	15	
Queuing Penalty (veh)	1		0	26	

Intersection: 3: Cherry Valley Blvd & Calimesa Blvd

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	36	36	64
Average Queue (ft)	12	2	29
95th Queue (ft)	37	19	54
Link Distance (ft)		487	515
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	300		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 1: I-10 EB Ramps & Cherry Valley Blvd

Movement	EB	WB	WB	SB	SB
Directions Served	TR	L	T	LT	R
Maximum Queue (ft)	136	174	154	703	275
Average Queue (ft)	114	91	46	275	154
95th Queue (ft)	161	153	103	513	309
Link Distance (ft)	66		600	809	
Upstream Blk Time (%)	30			0	
Queuing Penalty (veh)	95			0	
Storage Bay Dist (ft)		150			250
Storage Blk Time (%)		3	0	8	0
Queuing Penalty (veh)		4	0	37	1

Intersection: 2: I-10 WB Ramps & Cherry Valley Blvd

Movement	EB	EB	WB	WB	NB
Directions Served	L	T	T	R	LTR
Maximum Queue (ft)	199	169	122	146	248
Average Queue (ft)	93	40	57	66	118
95th Queue (ft)	169	104	108	118	213
Link Distance (ft)		600	544		562
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	250			250	
Storage Blk Time (%)		0			
Queuing Penalty (veh)		0			

Intersection: 3: Cherry Valley Blvd & Calimesa Blvd

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	36	71
Average Queue (ft)	8	31
95th Queue (ft)	31	55
Link Distance (ft)		515
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	300	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Appendix J:
Fiscal Impact Analysis

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J.1 - Gross Fiscal Impact and Economic Benefit Analysis

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THE SAN GORGONIO CROSSING

FISCAL IMPACT & ECONOMIC BENEFIT ANALYSIS
RIVERSIDE COUNTY, CA

Prepared For:

TSG CHERRY VALLEY, L.P.
2 Park Plaza, Suite 700
Irvine, CA 92614
Telephone: (949) 231–5068

Prepared By:

KOSMONT COMPANIES
865 S. Figueroa Street, #3500
Los Angeles, CA 90017
Telephone: (213) 417-3300
www.kosmont.com

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The analyses, projections, assumptions, rates of return, and any examples presented herein are for illustrative purposes and are not a guarantee of actual and/or future results. Project pro forma and tax analyses are projections only. Actual results may differ materially from those expressed in this analysis.

1.0 Executive Summary

1.1 Background & Purpose

TSG Cherry Valley, L.P. ("Client") is currently engaged in discussions with public entity and other stakeholders regarding feasibility and entitlements for its San Gorgonio Crossing Project ("Project"). Kosmont Companies ("Kosmont") previously (January 2009, July 2013) prepared analyses to estimate the gross fiscal impacts and economic benefits of the Project to Riverside County ("County") and the greater local region, respectively. Client has requested that Kosmont prepare an updated Fiscal Impact and Economic Benefit Analysis ("Analysis") based on an updated development plan and County feedback regarding the estimation of primary fiscal expenditures in addition to primary fiscal revenues.

1.2 Project Description

The Project is comprised of approximately 1.8 million square feet of logistics / distribution warehouse industrial space located on approximately 228 acres of land near the intersection of Cherry Valley Road and Roberts Road ("Site") in unincorporated County territory, directly south-adjacent to the San Gorgonio Water Agency pipeline and within the vicinity of the City of Calimesa, City of Beaumont, and Cherry Valley Census-Designated Place ("CDP"). The area directly surrounding the Project is comprised primarily of single family homes.

The Project will include surface parking spaces to serve Project employees and ancillary parking for tractor-trailers. The quantity of spaces will be determined through Client's future site design efforts. The Site encompasses assessor parcel numbers ("APN") 407-220-004, 007, 008, 009, 014, 016, and 017. Project value at build-out and stabilization is estimated at approximately $106 million.

1.3 Summary of Annual Primary Fiscal Impacts

The Project is estimated to generate approximately $463,300 annually in primary County fiscal revenues and approximately $212,100 in primary fiscal expenditures, yielding an annual net fiscal impact of approximately $251,200 as detailed in Table 1.1. The 30-year present value of the net fiscal impact generated by the Project (discounted at 6.0%) is approximately $3.9 million.

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Table 1.1: Overview of Primary Fiscal Impacts

	Estimated Annual Total	30-Year Nominal Total	30-Year Present Value
Estimated Primary Fiscal Revenues	$463,300	$19,123,900	$8,029,700
Estimated Primary Fiscal Expenditures	$212,100	$10,090,700	$4,082,100
Estimated Net Fiscal Impact	**$251,200**	**$9,033,200**	**$3,947,600**
Revenue/Cost Ratio	*2.18*	*1.90*	*1.97*

Note: 30-Year projections upon full Project build-out and stabilization (2015 dollars).

1.4 Summary of Economic Benefits from Project Construction

Project construction-related expenditures are expected to create short-term construction-related benefits for the local economy. Using a proprietary economic impact model ("IMPLAN"), the Analysis estimates that Project construction will generate approximately 577 jobs, approximately $28.8 million in labor income (i.e. earnings), and approximately $67.5 million in total economic output through direct, indirect, and induced economic activity as detailed in Table 1.2.

Table 1.2: Overview of Economic Benefits from Project Construction

Economic Benefits from Construction

Impact Type	Employment	Labor Income	Output
Direct Effect	400	$21,640,336	$46,200,000
Indirect Effect	73	$3,198,574	$9,049,938
Induced Effect	104	$3,998,238	$12,295,421
Total Countywide	**577**	**$28,837,148**	**$67,545,360**
Estimated Calimesa Capture	18	$719,681	$2,134,536

Notes: Cumulative impacts during construction period. Values in 2015 dollars.

1.5 Summary of Economic Benefits from Ongoing Operation

Upon build-out and stabilization, ongoing operation of the Project is estimated by IMPLAN to generate approximately 748 jobs (including 507 permanent on-site full-time equivalent or "FTE" jobs and 241 off-site indirect and induced jobs), $31.9 million in annual labor income, and $67.9 million in annual economic output (includes approximately $42.6 million in direct on-site output and approximately $25.4 million in off-site indirect and induced industry output) as detailed in Table 1.3.

Table 1.3: Overview of Economic Benefits from Ongoing Operation

Economic Benefits from Ongoing Operation

Impact Type	Employment	Labor Income	Output
Direct Effect	518	$23,199,482	$42,554,004
Indirect Effect	116	$4,286,442	$11,782,256
Induced Effect	115	$4,410,044	$13,573,251
Total Countywide	**748**	**$31,895,968**	**$67,909,512**
Estimated Calimesa Capture	23	$869,649	$2,535,551

Notes: Annual impacts upon build-out and stabilization. Values in 2015 dollars.

2.0 Introduction

2.1 Background & Purpose

Client is currently engaged in discussions with public entity and other stakeholders regarding feasibility and entitlements for the Project. Kosmont previously (January 2009, July 2013) prepared an analysis to estimate the gross fiscal impacts and economic benefits of the Project to the County and the greater local region, respectively. Client has requested that Kosmont prepare an updated Analysis based on an updated development plan and County feedback regarding the estimation of primary fiscal expenditures in addition to primary fiscal revenues.

2.2 Project Description

The Project is comprised of approximately 1.8 million square feet of logistics / distribution warehouse industrial space located on approximately 228 acres of land near the intersection of Cherry Valley Road and Roberts Road in unincorporated County territory, directly south-adjacent to the San Gorgonio Water Agency pipeline and within the vicinity of the City of Calimesa, City of Beaumont, and Cherry Valley CDP (see exhibit 2.2). The area directly surrounding the Project is comprised primarily of single family homes.

The Project will include surface parking spaces to serve Project employees and ancillary parking for tractor trailers. The quantity of spaces will be determined through Client's future site design efforts. The Site encompasses APNs 407-220-004, 007, 008, 009, 014, 016, and 017. Project value at build-out and stabilization is estimated at approximately $106 million.

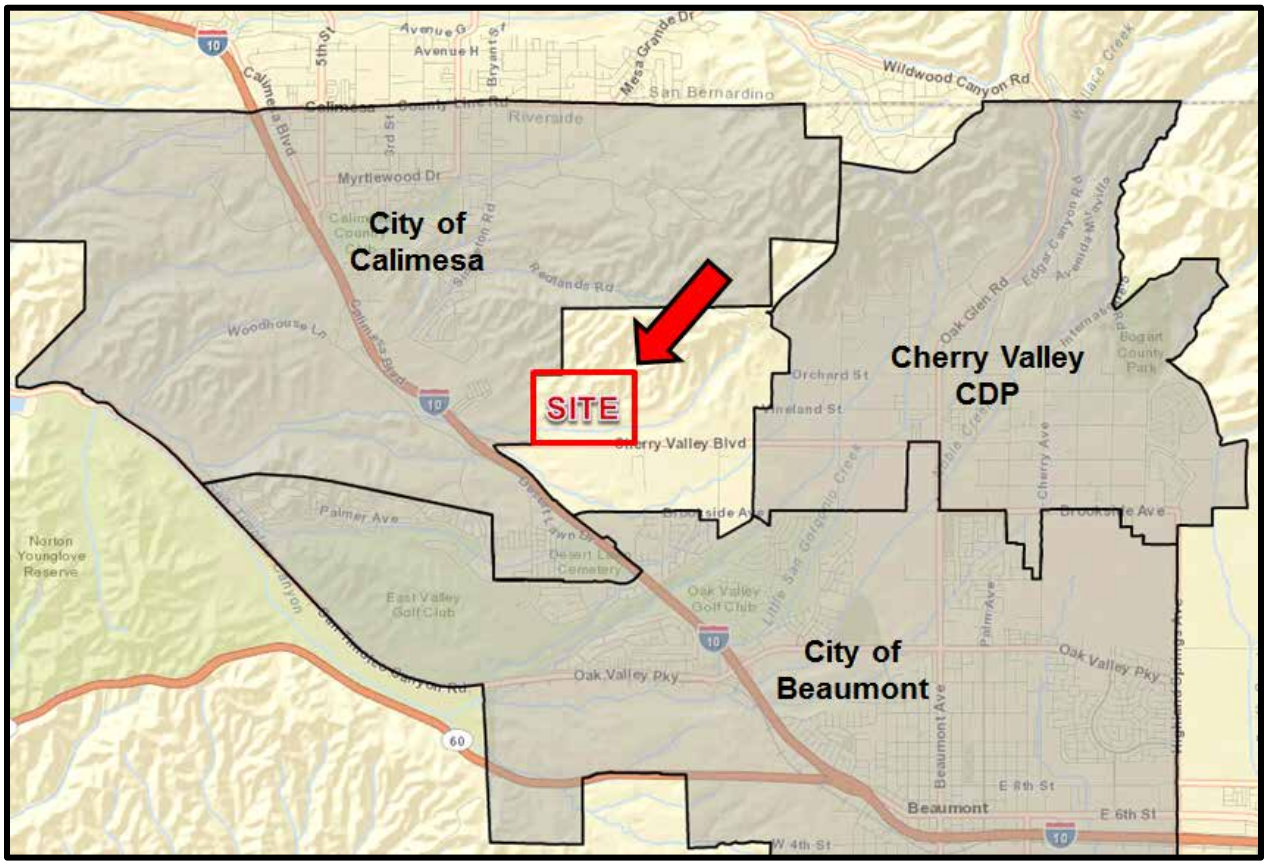
The analyses, projections, assumptions, rates of return, and any examples presented herein are for illustrative purposes and are not a guarantee of actual and/or future results. Project pro forma and tax analyses are projections only. Actual results may differ materially from those expressed in this analysis.

Exhibit 2.1: Southern California Regional Map



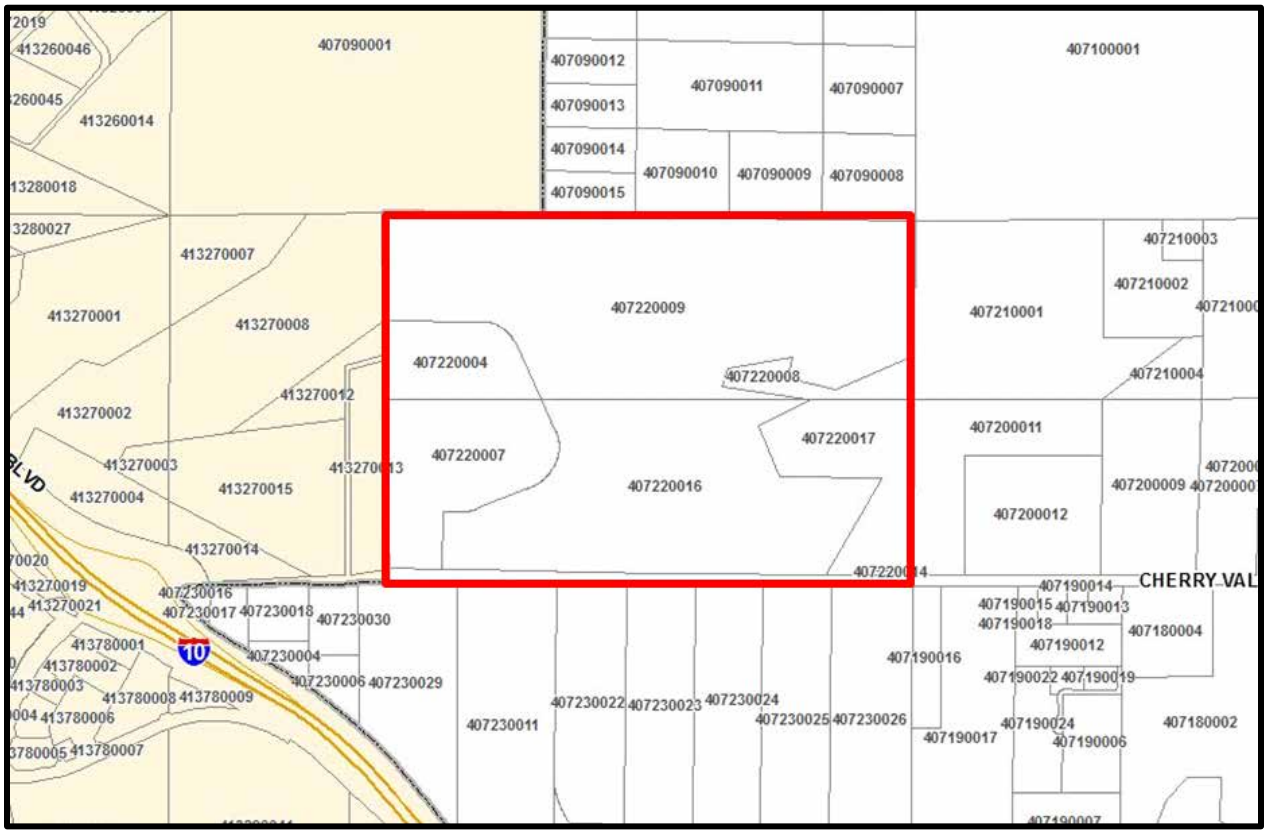
Source: TSG Cherry Valley, L.P.; ESRI (2015)

Exhibit 2.2: Site Location Map



Source: TSG Cherry Valley, L.P.; ESRI (2015)

Exhibit 2.3: Parcel Map



Source: Riverside County Geographic Information System (2015)

3.0 Methodology

This Analysis is based on information provided by the Client, the County, the IMPLAN Group, Riverside County Property Tax Auditor-Controller's Office, Southern California Association of Governments ("SCAG"), ESRI, and the California State Board of Equalization ("BOE").

3.1 General Assumptions

General assumptions are as follows with more specific assumptions denoted in Appendix A:

- Dollar amounts are expressed in 2015 dollars.
- Fiscal impacts are estimated at full Project build-out and stabilized occupancy.
- Construction employment figures are short-term jobs.
- On-site employment figures are permanent FTE jobs.

3.2 Fiscal Revenue and Expenditure Analysis

3.2.1 Property Tax

Secured property tax revenues are estimated based on the anticipated assessed value of the Project upon full build-out and the applicable property tax rates for the County. The Site is located in County tax rate area ("TRA") #056-035. The County general fund receives an approximate 13.2% share of the annual 1.0% secured property tax general levy placed by the County on the assessed value of the property ($0. 13216981 of each $1.00 of secured property tax revenue) within this TRA. Other County property tax distributions include the County Structure Fire Protection (5.2%), Riverside County Flood Control Zone 5 (4.3%), Riverside County Office of Education (3.6%), Riverside County Park & Open Space (0.3%), and Riverside County Flood Control Administration (0.2%). Secured property tax distributions are also shown for other local taxing agencies, as reference (see Appendix B).

Unsecured property taxes are collected based on the assessed value of real property not affixed to the underlying land, such as some vehicles. The rate of taxation and apportionment is generally the same as for secured property taxes. For the purposes of this analysis, the assessed value of unsecured property associated with the Project is estimated to be 10.0% of the assessed value of secured property (standard for industrial land uses).

3.2.2 Property Tax In-Lieu of VLF

Prior to 2004, a percentage of State of California VLF was distributed to cities and counties. As part of the State Budget Act of 2004, the State reduced the VLF rate, and in order to offset the

reduction of VLF revenue to cities and counties, the State increased the city and county allocation of property tax revenue, funded from the Educational Revenue Augmentation Fund ("ERAF"). The amount of property tax in-lieu of VLF to be distributed to cities and counties was calculated by the State for the 2004-2005 fiscal year, and increases each year directly proportional to the change in assessed valuation of taxable property in each jurisdiction from the prior year. Property Tax In-Lieu of VLF resulting from the Project is estimated based on the incremental amount of assessed value that the Project adds to the County, thereby increasing the County's apportionment of property tax in-lieu of VLF (see Appendix C).

3.2.3 Sales and Use Tax

Off-site / indirect sales tax revenue projections are estimated based on the taxable sales generated by the spending by employees off-site within both incorporated and unincorporated areas of the County, and the corresponding County sales tax apportionment. Employee spending is based on U.S. Bureau of Labor Statistics ("BLS") Consumer Expenditure Survey data, which provides spending habits of consumers based on household income. Capture rates for spending by employees within the County are approximated by Kosmont based on preliminary evaluation of existing retail amenities within the local trade area.

The County general fund receives a 1.0% distribution from taxable sales within unincorporated County areas (includes 0.25% Triple Flip apportionment). The Riverside County Transportation Commission ("RCTC") receives a distribution of 0.5% from all taxable sales within the County (incorporated and unincorporated areas), as established in 2009 voter-approved measure to continue until at least 2039. The County receives an additional sales tax distribution from the State Prop 172 Public Safety Fund. Effective January 1, 1994, the State collects a 0.5% sales tax and dedicates the revenue for local public safety activities (e.g., sheriff/police, fire protection, county district attorney, county corrections). The State apportions the Prop 172 revenue to each county based on its proportionate share of statewide taxable sales. In most recent fiscal years, the County average share of the total 0.5% Prop 172 sales tax collected within the County is approximately 95.5% (see Appendices D-E).

3.2.4 "Multiplier" Expenditures

Sheriff and fire protection expenditures are estimated on a per capita multiplier basis, utilizing the County Fiscal Year 2014-15 Adopted Budget and the relevant resident/employee population within the Unincorporated County. For the purpose of expenditure budget allocation, total employees within the Unincorporated County (as estimated by ESRI) are multiplied by an equivalency factor of 0.5 to arrive at a number of equivalent residents to be considered along with actual County residents as the service population for County expenditures. General government / administration expenditures are estimated as a percentage of other expenditures

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evaluated, consistent with allocations within the County Fiscal Year 2014-15 Adopted Budget (see Appendices G-I).

3.2.5 "Case Study" Expenditures

Recurring transportation (road maintenance) and flood control (storm drain maintenance) expenditures are estimated on a case-study basis, utilizing cost estimates provided by County Staff (adjusted slightly upward for inflation), additionally supported by public works estimates within nearby Riverside County cities (see Appendix J).

3.3 IMPLAN Modeling

This Analysis uses the IMPLAN (IMpact analysis for PLANning) econometric input/output model developed by the Minnesota IMPLAN Group to quantify the economic impact to the local region from Project construction and ongoing operation. This proprietary model estimates the economic benefits on the industries in a given geographic area based on known economic inputs, such as construction costs. The model estimates direct, indirect, and induced benefits expressed in terms of job creation, earnings ("labor income"), and increased economic activity ("output"). Output is defined by IMPLAN as total sales for service industries. For manufacturers, output is equal to sales plus/minus change in inventory. For retail and wholesale trade, output is equal to gross margin (see Appendices M-P).

Direct benefits refer to the initial changes in total economic output, labor income, and employment resulting from expenditures and/or production value changes. Examples of direct benefits include expenditures made for construction activities and the permanent on-site jobs created within the Project.

Indirect benefits result from the purchases made in response to development and operation by the industries that supply required goods and services. Indirect benefits occur in industries indirectly affected by the construction and ongoing operation, such as manufacturing and wholesale trade services.

Induced benefits are the changes in local spending by households employed directly or indirectly in affected industry sectors and the resultant economic activity as a result of construction and ongoing employee spending.

Direct, indirect, and induced benefits are estimated for the County. For reference only, it is estimated that 10% of indirect and induced benefits are estimated to be captured within the nearby City of Calimesa.

3.4 Permanent On-Site Jobs

Permanent on-site jobs are approximated based on Project square footage as estimated by Client and standard employee-per-square-foot assumptions as estimated by the Southern California Association of Governments ("SCAG") (see Appendix F).

4.0 Fiscal and Economic Impacts

4.1 Annual Primary Fiscal Impacts

The Project is estimated to generate approximately $463,300 annually in primary County fiscal revenues and approximately $212,100 in primary fiscal expenditures, yielding an annual net fiscal impact of approximately $251,200. The 30-year present value of the net fiscal impact generated by the Project (discounted at 6.0%) is approximately $3.9 million. To calculate the present value of future fiscal impacts, property tax and property tax in-lieu of VLF revenues were escalated annually using a 2.0% growth factor (lesser of Prop 13 statutory maximum and 10-30 year average growth for California Consumer Price Index). Sales and use tax revenues and fiscal expenditure sources were escalated using a 3.0% growth factor. Table 4.1 summarizes the primary fiscal impacts from the Project. Appendices A-K provide calculation detail by fiscal revenue ad expenditure category.

Table 4.1: Summary of Primary Fiscal Impacts

	Estimated Annual Total	Estimated Annual Growth	30-Year Nominal Total	30-Year Present Value
Primary Fiscal Revenues				
Property Tax (Secured and Unsecured)	$317,300	2.0%	$12,872,300	$5,430,800
Property Tax In-Lieu of VLF	$99,100	2.0%	$4,020,300	$1,696,200
Sales & Use Tax	$46,900	3.0%	$2,231,300	$902,700
Estimated Primary Fiscal Revenues	**$463,300**		**$19,123,900**	**$8,029,700**
Primary Fiscal Expenditures				
Sheriff	$144,300	3.0%	$6,865,100	$2,777,200
Fire Protection	$30,000	3.0%	$1,427,300	$577,400
Transportation (Roadways)	$17,400	3.0%	$827,800	$334,900
Flood Control (Storm Drains)	$1,300	3.0%	$61,800	$25,000
Geneveral Government / Admin	$19,100	3.0%	$908,700	$367,600
Estimated Primary Fiscal Expenditures	**$212,100**		**$10,090,700**	**$4,082,100**
Estimated Net Fiscal Impact	**$251,200**		**$9,033,200**	**$3,947,600**
Revenue/Cost Ratio	*2.18*		*1.90*	*1.97*

Note: 30-Year projections upon full Project build-out and stabilization (2015 dollars)

4.2 Economic Benefits from Project Construction

Project construction-related expenditures are estimated to generate approximately 577 jobs, approximately $28.8 million in labor income, and approximately $67.5 billion in economic output through direct, indirect, and induced economic activity. Table 4.2 summarizes the economic benefits from construction-related activities. The full range of benefits by industry category is provided in Appendices M-N.

Table 4.2: Summary of Economic Benefits from Project Construction

Economic Benefits from Construction

Impact Type	Employment	Labor Income	Output
Direct Effect	400	$21,640,336	$46,200,000
Indirect Effect	73	$3,198,574	$9,049,938
Induced Effect	104	$3,998,238	$12,295,421
Total Countywide	**577**	**$28,837,148**	**$67,545,360**
Estimated Calimesa Capture	18	$719,681	$2,134,536

Notes: Cumulative impacts during construction period. Values in 2015 dollars.

4.3 Economic Benefits from Ongoing Operations

Ongoing operation of the Project is estimated to generate approximately 748 jobs (including 507 permanent on-site full-time equivalent or "FTE" jobs and 241 off-site indirect and induced jobs), $31.9 million in annual labor income, and $67.9 million in annual economic output (includes approximately $42.6 million in direct on-site output and approximately $25.4 million in off-site indirect and induced industry output). Table 4.3 summarizes the economic benefits from ongoing operation of the Project. The full range of benefits by industry category is provided in Appendices O-P.

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Table 4.3: Summary of Economic Benefits from Ongoing Operations

Economic Benefits from Ongoing Operation

Impact Type	Employment	Labor Income	Output
Direct Effect	518	$23,199,482	$42,554,004
Indirect Effect	116	$4,286,442	$11,782,256
Induced Effect	115	$4,410,044	$13,573,251
Total Countywide	**748**	**$31,895,968**	**$67,909,512**
Estimated Calimesa Capture	23	$869,649	$2,535,551

Notes: Annual impacts upon build-out and stabilization. Values in 2015 dollars.

5.0 Appendices

Appendix A: Analysis Tax Rate Assumptions

	Value	Source
A. Project Description		
Total Improvement Square Footage	1,823,760 SF	TSG Cherry Valley, LP
Estimated Assessed Value upon Build-Out	$107,277,300	TSG Cherry Valley, LP
B. Property Tax		
Property Tax General Levy (TRA #056-035)	1.0%	County Auditor Controller
County General Fund Share of General Levy	13.2%	County Auditor Controller
County Structure Fire Protection Share	5.2%	County Auditor Controller
Riverside County Office of Education Share	3.6%	County Auditor Controller
Riverside County Reg Park & Open Space Share	0.3%	County Auditor Controller
Unsecured Property Tax as % of Secured	10.0%	Kosmont Companies
C. Property Tax In-Lieu of Vehicle License Fees		
Total County Property Tax EQ Roll (2014-15)	$225,770,065,829	County Auditor Controller
Current Property Tax In-Lieu of VLF (2014-15)	$208,571,452	County Auditor Controller
D. Sales & Use Tax		
Taxable Sales Distribution to County	1.00%	CA Board of Equalization
Special Distribution to RCTC*	0.50%	CA Board of Equalization
Public Safety (Prop 172) Sales Tax Distribution	0.50%	CA Board of Equalization
County Share of Public Safety Sales Tax	95.50%	CA Board of Equalization
Use Tax as % of Sales Tax	11.50%	Kosmont Companies

*** RCTC** = Riverside County Transportation Commission

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Appendix B: Property Tax

Estimated Project Value	
Estimated Assessed Value upon Build-Out	$107,277,300
Property Tax Rates	
General Levy (TRA #056-035)	1.00%
County General Fund Share	13.2%
County Structure Fire Protection Share	5.2%
Riverside County Flood Control Zone 5 Share	4.3%
Riverside County Office of Education Share	3.6%
Riverside County Reg Park & Open Space Share	0.3%
Riverside County Flood Control Admin Share	0.2%
Property Tax Revenues	
Secured Property Tax - General Levy	$1,072,773
County General Fund	$141,788
County Structure Fire Protection	$55,645
Riverside County Flood Control Zone 5	$46,465
Riverside County Office of Education	$38,798
Riverside County Reg Park & Open Space	$3,574
Riverside County Flood Control Admin	$2,226
Total County Distributions - Secured Property Tax	$288,496
Unsecured Property Tax as Est. % of Secured	10.0%
Estimated Unsecured Property Taxes to County	$28,850
Total Annual Property Tax to County (Secured + Unsecured)	**$317,300**
Reference: Additional General Levy (1%) Property Tax Distributions	
Beaumont Unified School District	*$404,800*
Educational Revenue Augmentation Fund	*$199,000*
Mt. San Jacinto Junior College	*$37,600*
Beaumont / Cherry Valley Recreation & Parks	*$36,500*
San Gorgonio Pass Water Agency Debt Service	*$33,600*
Beaumont Library	*$32,200*
San Gorgonio Pass Memorial Hospital	*$19,100*
Summit Cemetery District	*$16,200*
County Service Area 27	*$5,300*
Total General Levy Distributions	***$1,072,800***
Reference: Special Property Tax Distributions	
San Gorgonio Pass Water Agency Debt Service	*$198,500*
San Gorgonio Pass Memorial Hospital	*$127,600*
Beaumont Unified School District	*$96,500*
Total Special Distributions	***$422,600***

Note: All amounts in 2015 dollars

Source: TSG Cherry Valley, L.P.; Riverside County Auditor-Controller (2015)

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Appendix C: Property Tax In-Lieu of VLF

Estimated Assessed Value upon Build-Out	$107,277,300
Total County Property Tax EQ Roll (2014-15)	$225,770,065,829
Percent Increase in Assessed Value	0.0475%
Current Property Tax In-Lieu of VLF (2014-15)	$208,571,452
Incremental Annual VLF from Project	**$99,100**

Note: All amounts in 2015 dollars
Source: TSG Cherry Valley, L.P.; Riverside County Auditor-Controller (2015)

Appendix D: Employee Spending

Est. Average HH Income (pre-tax):	$43,600	
Annual Expenditures	**Percent**	**Amount**
Food at home*	7.1%	$3,106
Food Away from Home	4.4%	$1,921
Alcoholic Beverages	0.7%	$301
Fuel oil and other fuels	0.3%	$139
Other household expenses	1.3%	$583
Housekeeping Supplies	1.2%	$517
Household Furn & Equip	2.5%	$1,073
Apparel & Services	2.6%	$1,146
Vehicle Purchases	4.4%	$1,909
Gasoline & Oil	6.0%	$2,613
Maintenance & Repairs**	1.5%	$674
Drugs**	1.1%	$481
Medical supplies***	0.3%	$124
Entertainment	4.2%	$1,830
Personal care products & services	1.2%	$506
Reading	0.2%	$87
Tobacco related	0.9%	$406
Total Taxable Spending	32.4%	**$14,100**
Total Taxable and Non-Taxable	39.9%	**$17,400**

Note: Estimated employee income based on Bureau of Labor Statistics industry average wages for Riverside County. All amounts in 2015 dollars.
*15% of "Food at home" purchases assumed to be taxable.
** 50% of "Maintenance & Repairs" and "Drugs" purchases assumed to be taxable.
*** 25% of "Medical supplies" purchases assumed to be taxable.

Source: U.S. Census (2010); Bureau of Labor Statistics; ESRI; Kosmont Companies (2015)

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Appendix E: Sales and Use Tax (Off-Site / Indirect)

Estimated Annual Taxable Spending / Empl.		$14,100
Estimated # Employees		507
Total Employee Taxable Spending		$7,143,060
Estimated Capture within Unincorporated County	10%	$714,306
Estimated Capture within Incorporated County	40%	$2,857,224
Estimated Total Capture within County	50%	$3,571,530
Distribution to County (only sales w/in Unincorporated County	1.0%	$7,143
Special Distribution to RCTC*	0.5%	$17,858
Public Safety (Prop 172) Sales Tax Distribution	0.5%	$17,858
County Share of Public Safety Sales Tax	95.5%	$17,054
Total County Sales Tax Distribution		$42,055
Projected Use Tax as % of Sales Tax	11.5%	$4,836
Annual Sales & Use Tax to County (Off-Site / Indirect)		**$46,900**

*** RCTC** = Riverside County Transportation Commission (distribution to continue at least until 2039)

Notes: 1.00% sales tax rate includes 0.25% "Triple Flip" apportionment detailed below. All amounts in 2015 dollars.

Triple Flip: In March 2004, California voters approved Proposition 57, which authorized the issuance of $15 billion in bonds to finance a portion of the State's budget deficit and a swap of one-quarter of local sales taxes (0.25%) for an equal amount of "in-lieu" sales taxes to be funded from property tax revenues, specifically, the Educational Revenue Augmentation Fund ("ERAF").

Pubic Safety (Prop 172) Sales Tax: Effective January 1, 1994, the State collects a 0.5% sales tax and dedicates the revenue for local public safety activities (e.g., sheriff/police, fire protection, county district attorney, county corrections). The State apportions the Prop 172 revenue to each county based on its proportionate share of statewide taxable sales. In most recent fiscal years, the County average share of the total 0.5% Prop 172 sales tax collected within the County is approximately 95.5%

Source: TSG Cherry Valley, L.P.; CA Board of Equalization; Kosmont Companies (2015)

The analyses, projections, assumptions, rates of return, and any examples presented herein are for illustrative purposes and are not a guarantee of actual and/or future results. Project pro forma and tax analyses are projections only. Actual results may differ materially from those expressed in this analysis.

Appendix F: Permanent On-Site Jobs

Project Component	Gross SF	SF / Empl.	# FTE Employees
Distribution Warehouse	1,823,760 SF	3,600	507

Source: TSG Cherry Valley, L.P.; Southern California Association of Governments (SCAG); Kosmont Companies (2015)

The analyses, projections, assumptions, rates of return, and any examples presented herein are for illustrative purposes and are not a guarantee of actual and/or future results. Project pro forma and tax analyses are projections only. Actual results may differ materially from those expressed in this analysis.

Appendix G: County Equivalent Population

Unincorporated County Population (2015)	368,823
Unincorporated County Employee Population (2015)	82,051
Employee / Resident Weighting Factor	0.5
Effective Daytime Employee Population	41,025
Total Effective Uninc. County Population	**409,848**

Source: ESRI; Kosmont Companies (2015)

The analyses, projections, assumptions, rates of return, and any examples presented herein are for illustrative purposes and are not a guarantee of actual and/or future results. Project pro forma and tax analyses are projections only. Actual results may differ materially from those expressed in this analysis.

Appendix H: Multiplier Expenditure Factors

Primary Multipler Expenditures	Net County Cost Allocation FY 2014/15	Allocation Basis	Relevant County Population	Fixed Cost Discount	Per Capita Factor
Sheriff	$233,455,170	Persons Served	409,848	50%	$284.81
Fire Protection	$48,533,100	Persons Served	409,848	50%	$59.21
Total Multiplier Expenditures	**$281,988,270**				$344.02

Note: Fixed-cost discount applied for purposes of consistency with range of cost factors within nearby Riverside County cities (e.g., Calimesa, Beaumont, Banning, Moreno Valley)

Source: Riverside County; Kosmont Companies (2015)

The analyses, projections, assumptions, rates of return, and any examples presented herein are for illustrative purposes and are not a guarantee of actual and/or future results. Project pro forma and tax analyses are projections only. Actual results may differ materially from those expressed in this analysis.

Appendix I: Multiplier Expenditures

Budget Category	Per Capita Factor	Expenditure from Project
Sheriff	$284.81	$144,300
Fire Protection	$59.21	$30,000
Total Multiplier Expenditures		**$174,300**
Reference: Estimated # Project Employees		*507*

Source: Riverside County; Kosmont Companies (2015)

Appendix J: Case Study Expenditures

Case Study Expenditure	Per Unit Factor	Project Basis	Expenditure from Project
Roadways (per lane mile)	$9,644	1.8	$17,400
Storm Drains (per mile)	$1,198	1.1	$1,300
Total Case Study Infrastructure Maintenance Costs			**$18,700**

Notes: Roadway costs based on County estimate of $9,363 per mile for FY 2013-14 (adjusted for inflation). Storm drain costs based on public works estimates within nearby Riverside County cities.

Source: Riverside County Transportation and Flood Control Staff; Kosmont Companies (2015)

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Appendix K: General Government / Administration Expenditure

	Expenditure from Project
Total Multiplier Expenditures	$174,300
Total Case Study Expenditures	$18,700
Total Recurring General Fund Expenditures	$193,000
General Gov't Overhead as % of Other Recurring Expend.	9.90%
Total General Government Expense	**$19,100**

Source: Riverside County; Kosmont Companies (2015)

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Appendix L: IMPLAN Analysis Inputs

Construction Inputs

Industry NAICS Category	Approximate Inputs (Industry Spending)
34 Construction of new nonresidential commercial and health care structures	$40,200,000
355 Nondepository credit intermediation and related activities	$4,200,000
369 Architectural, engineering, and related services	$1,800,000

Ongoing Operation Inputs

Industry NAICS Category	Approximate Inputs (Employment Change)
340 Warehousing and storage	507 FTE Jobs

Notes: Construction inputs derived from construction cost estimates (hard costs, financing costs, soft costs) provided by the Client. Ongoing operation inputs are based on based on evaluated permanent on-site employment.

Source: TSG Cherry Valley, L.P.; Kosmont Companies (2015)

The analyses, projections, assumptions, rates of return, and any examples presented herein are for illustrative purposes and are not a guarantee of actual and/or future results. Project pro forma and tax analyses are projections only. Actual results may differ materially from those expressed in this analysis.

Appendix M: Employment Benefits from Project Construction (IMPLAN)

NAICS Industry	Direct	Indirect	Induced	Total
111 Crop Farming	0	0	0	**0**
112 Livestock	0	0	0	**0**
113 Forestry & Logging	0	0	0	**0**
114 Fishing- Hunting & Trapping	0	0	0	**0**
115 Ag & Forestry Svcs	0	0	0	**0**
211 Oil & gas extraction	0	0	0	**1**
212 Mining	0	0	0	**0**
213 Mining services	0	0	0	**0**
221 Utilities	0	0	0	**0**
230 Construction	352	2	1	**354**
311 Food products	0	0	0	**0**
312 Beverage & Tobacco	0	0	0	**0**
313 Textile Mills	0	0	0	**0**
314 Textile Products	0	0	0	**0**
316 Leather & Allied	0	0	0	**0**
321 Wood Products	0	0	0	**0**
322 Paper Manufacturing	0	0	0	**0**
323 Printing & Related	0	0	0	**0**
324 Petroleum & coal prod	0	0	0	**0**
325 Chemical Manufacturing	0	0	0	**0**
326 Plastics & rubber prod	0	0	0	**0**
327 Nonmetal mineral prod	0	0	0	**0**
331 Primary metal mfg	0	0	0	**0**
332 Fabricated metal prod	0	1	0	**1**
333 Machinery Mfg	0	0	0	**0**
334 Computer & oth electron	0	0	0	**0**
335 Electircal eqpt & appliances	0	0	0	**0**
336 Transportation eqpmt	0	0	0	**0**
337 Furniture & related prod	0	0	0	**0**
339 Miscellaneous mfg	0	0	0	**0**
42 Wholesale Trade	0	2	2	**4**
441 Motor veh & parts dealers	0	0	3	**4**
442 Furniture & home furnishings	0	0	1	**1**
443 Electronics & appliances stores	0	0	1	**1**
444 Bldg materials & garden dealers	0	0	2	**2**
445 food & beverage stores	0	1	5	**5**
446 Health & personal care stores	0	0	2	**2**
447 Gasoline stations	0	0	1	**1**
448 Clothing & accessories stores	0	0	3	**3**
451 Sports- hobby- book & music stores	0	0	1	**1**
452 General merch stores	0	1	5	**6**
453 Misc retailers	0	0	3	**3**
454 Non-store retailers	0	0	1	**1**

(Continued…)

The analyses, projections, assumptions, rates of return, and any examples presented herein are for illustrative purposes and are not a guarantee of actual and/or future results. Project pro forma and tax analyses are projections only. Actual results may differ materially from those expressed in this analysis.

NAICS Industry	Direct	Indirect	Induced	Total
481 Air transportation	0	0	0	**0**
482 Rail Transportation	0	0	0	**0**
483 Water transportation	0	0	0	**0**
484 Truck transportation	0	1	0	**1**
485 Transit & ground passengers	0	0	0	**0**
486 Pipeline transportation	0	0	0	**0**
487 Sightseeing transportation	0	0	0	**0**
492 Couriers & messengers	0	0	0	**1**
493 Warehousing & storage	0	0	0	**1**
511 Publishing industries	0	0	0	**0**
512 Motion picture & sound recording	0	0	0	**0**
515 Broadcasting	0	0	0	**0**
516 Internet publishing and broadcasting	0	0	0	**0**
517 Telecommunications	0	0	0	**1**
518 Internet & data process svcs	0	0	0	**0**
519 Other information services	0	0	0	**0**
521 Monetary authorities	0	2	1	**3**
522 Credit inmediation & related	30	0	0	**31**
523 Securities & other financial	0	1	1	**2**
524 Insurance carriers & related	0	3	0	**4**
525 Funds- trusts & other finan	0	0	0	**0**
531 Real estate	0	3	6	**9**
532 Rental & leasing svcs	0	1	0	**2**
533 Lessor of nonfinance intang assets	0	0	0	**0**
541 Professional- scientific & tech svcs	18	26	4	**48**
551 Management of companies	0	0	0	**0**
561 Admin support svcs	0	13	6	**19**
562 Waste mgmt & remediation svcs	0	0	0	**0**
611 Educational svcs	0	0	3	**3**
621 Ambulatory health care	0	0	9	**9**
622 Hospitals	0	0	4	**4**
623 Nursing & residential care	0	0	3	**3**
624 Social assistance	0	0	4	**4**
712 Performing arts & spectator sports	0	1	2	**2**
712 Museums & similar	0	0	0	**0**
713 Amusement- gambling & recreation	0	0	2	**2**
721 Accomodations	0	0	0	**0**
722 Food svcs & drinking places	0	4	16	**20**
811 Repair & maintenance	0	4	2	**6**
812 Personal & laundry svcs	0	0	3	**3**
813 Religious- grantmaking- & similar orgs	0	2	4	**6**
814 Private households	0	0	3	**3**
92 Government & non NAICs	0	1	1	**2**
Total	400	73	104	**577**

Note: NAICS = North American Industry Classification System
Source: IMPLAN Professional Input-Output Model

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Appendix N: Economic Output Benefits from Project Construction (IMPLAN)

NAICS Industry	Direct	Indirect	Induced	Total
111 Crop Farming	$0.0	$0.1	$0.0	**$0.1**
112 Livestock	$0.0	$0.0	$0.0	**$0.0**
113 Forestry & Logging	$0.0	$0.0	$0.0	**$0.0**
114 Fishing- Hunting & Trapping	$0.0	$0.0	$0.0	**$0.0**
115 Ag & Forestry Svcs	$0.0	$0.0	$0.0	**$0.0**
211 Oil & gas extraction	$0.0	$0.1	$0.0	**$0.1**
212 Mining	$0.0	$0.0	$0.0	**$0.0**
213 Mining services	$0.0	$0.0	$0.0	**$0.0**
221 Utilities	$0.0	$0.0	$0.1	**$0.1**
230 Construction	$40.2	$0.2	$0.1	**$40.5**
311 Food products	$0.0	$0.0	$0.0	**$0.0**
312 Beverage & Tobacco	$0.0	$0.0	$0.0	**$0.0**
313 Textile Mills	$0.0	$0.0	$0.0	**$0.0**
314 Textile Products	$0.0	$0.0	$0.0	**$0.0**
316 Leather & Allied	$0.0	$0.0	$0.0	**$0.0**
321 Wood Products	$0.0	$0.1	$0.0	**$0.1**
322 Paper Manufacturing	$0.0	$0.0	$0.0	**$0.0**
323 Printing & Related	$0.0	$0.0	$0.0	**$0.0**
324 Petroleum & coal prod	$0.0	$0.5	$0.2	**$0.6**
325 Chemical Manufacturing	$0.0	$0.0	$0.0	**$0.0**
326 Plastics & rubber prod	$0.0	$0.0	$0.0	**$0.0**
327 Nonmetal mineral prod	$0.0	$0.1	$0.0	**$0.1**
331 Primary metal mfg	$0.0	$0.0	$0.0	**$0.0**
332 Fabricated metal prod	$0.0	$0.2	$0.0	**$0.2**
333 Machinery Mfg	$0.0	$0.0	$0.0	**$0.0**
334 Computer & oth electron	$0.0	$0.0	$0.0	**$0.0**
335 Electircal eqpt & appliances	$0.0	$0.0	$0.0	**$0.0**
336 Transportation eqpmt	$0.0	$0.0	$0.0	**$0.0**
337 Furniture & related prod	$0.0	$0.0	$0.0	**$0.0**
339 Miscellaneous mfg	$0.0	$0.0	$0.0	**$0.0**
42 Wholesale Trade	$0.0	$0.4	$0.3	**$0.7**
441 Motor veh & parts dealers	$0.0	$0.0	$0.3	**$0.4**
442 Furniture & home furnishings	$0.0	$0.0	$0.1	**$0.1**
443 Electronics & appliances stores	$0.0	$0.0	$0.1	**$0.1**
444 Bldg materials & garden dealers	$0.0	$0.0	$0.1	**$0.2**
445 food & beverage stores	$0.0	$0.0	$0.3	**$0.4**
446 Health & personal care stores	$0.0	$0.0	$0.1	**$0.1**
447 Gasoline stations	$0.0	$0.0	$0.1	**$0.1**
448 Clothing & accessories stores	$0.0	$0.0	$0.2	**$0.2**
451 Sports- hobby- book & music stores	$0.0	$0.0	$0.0	**$0.1**
452 General merch stores	$0.0	$0.0	$0.3	**$0.3**
453 Misc retailers	$0.0	$0.0	$0.1	**$0.1**
454 Non-store retailers	$0.0	$0.0	$0.1	**$0.1**

(Continued…)

The analyses, projections, assumptions, rates of return, and any examples presented herein are for illustrative purposes and are not a guarantee of actual and/or future results. Project pro forma and tax analyses are projections only. Actual results may differ materially from those expressed in this analysis.

NAICS Industry	Direct	Indirect	Induced	Total
481 Air transportation	$0.0	$0.0	$0.0	**$0.0**
482 Rail Transportation	$0.0	$0.0	$0.0	**$0.0**
483 Water transportation	$0.0	$0.0	$0.0	**$0.0**
484 Truck transportation	$0.0	$0.1	$0.0	**$0.1**
485 Transit & ground passengers	$0.0	$0.0	$0.0	**$0.0**
486 Pipeline transportation	$0.0	$0.0	$0.0	**$0.0**
487 Sightseeing transportation	$0.0	$0.0	$0.0	**$0.0**
492 Couriers & messengers	$0.0	$0.0	$0.0	**$0.1**
493 Warehousing & storage	$0.0	$0.0	$0.0	**$0.0**
511 Publishing industries	$0.0	$0.0	$0.0	**$0.0**
512 Motion picture & sound recording	$0.0	$0.0	$0.0	**$0.0**
515 Broadcasting	$0.0	$0.0	$0.0	**$0.1**
516 Internet publishing and broadcasting	$0.0	$0.0	$0.0	**$0.0**
517 Telecommunications	$0.0	$0.2	$0.1	**$0.4**
518 Internet & data process svcs	$0.0	$0.0	$0.0	**$0.0**
519 Other information services	$0.0	$0.0	$0.0	**$0.0**
521 Monetary authorities	$0.0	$0.8	$0.4	**$1.2**
522 Credit inmediation & related	$4.2	$0.0	$0.0	**$4.3**
523 Securities & other financial	$0.0	$0.2	$0.1	**$0.3**
524 Insurance carriers & related	$0.0	$0.5	$0.1	**$0.5**
525 Funds- trusts & other finan	$0.0	$0.0	$0.0	**$0.0**
531 Real estate	$0.0	$0.6	$3.5	**$4.1**
532 Rental & leasing svcs	$0.0	$0.3	$0.0	**$0.3**
533 Lessor of nonfinance intang assets	$0.0	$0.0	$0.0	**$0.0**
541 Professional- scientific & tech svcs	$1.8	$2.6	$0.4	**$4.8**
551 Management of companies	$0.0	$0.0	$0.0	**$0.1**
561 Admin support svcs	$0.0	$0.7	$0.3	**$1.0**
562 Waste mgmt & remediation svcs	$0.0	$0.0	$0.0	**$0.1**
611 Educational svcs	$0.0	$0.0	$0.1	**$0.1**
621 Ambulatory health care	$0.0	$0.0	$1.0	**$1.0**
622 Hospitals	$0.0	$0.0	$0.6	**$0.6**
623 Nursing & residential care	$0.0	$0.0	$0.2	**$0.2**
624 Social assistance	$0.0	$0.0	$0.1	**$0.1**
712 Performing arts & spectator sports	$0.0	$0.1	$0.1	**$0.1**
712 Museums & similar	$0.0	$0.0	$0.0	**$0.0**
713 Amusement- gambling & recreation	$0.0	$0.0	$0.1	**$0.1**
721 Accomodations	$0.0	$0.0	$0.0	**$0.0**
722 Food svcs & drinking places	$0.0	$0.3	$1.0	**$1.2**
811 Repair & maintenance	$0.0	$0.4	$0.2	**$0.6**
812 Personal & laundry svcs	$0.0	$0.0	$0.3	**$0.3**
813 Religious- grantmaking- & similar orgs	$0.0	$0.1	$0.3	**$0.4**
814 Private households	$0.0	$0.0	$0.0	**$0.0**
92 Government & non NAICs	$0.0	$0.1	$0.2	**$0.3**
Total	$46.2	$9.0	$12.3	**$67.5**

Notes: In millions of 2015 dollars
NAICS = North American Industry Classification System
Source: IMPLAN Professional Input-Output Model

Appendix O: Employment Benefits from Ongoing Operations (IMPLAN)

NAICS Industry	Direct	Indirect	Induced	Total
111 Crop Farming	0	0	0	**0**
112 Livestock	0	0	0	**0**
113 Forestry & Logging	0	0	0	**0**
114 Fishing- Hunting & Trapping	0	0	0	**0**
115 Ag & Forestry Svcs	0	0	0	**0**
211 Oil & gas extraction	0	0	0	**0**
212 Mining	0	0	0	**0**
213 Mining services	0	0	0	**0**
221 Utilities	0	0	0	**0**
230 Construction	0	5	1	**6**
311 Food products	0	0	0	**0**
312 Beverage & Tobacco	0	0	0	**0**
313 Textile Mills	0	0	0	**0**
314 Textile Products	0	0	0	**0**
316 Leather & Allied	0	0	0	**0**
321 Wood Products	0	0	0	**0**
322 Paper Manufacturing	0	0	0	**0**
323 Printing & Related	0	0	0	**0**
324 Petroleum & coal prod	0	0	0	**0**
325 Chemical Manufacturing	0	0	0	**0**
326 Plastics & rubber prod	0	0	0	**0**
327 Nonmetal mineral prod	0	0	0	**0**
331 Primary metal mfg	0	0	0	**0**
332 Fabricated metal prod	0	0	0	**0**
333 Machinery Mfg	0	0	0	**0**
334 Computer & oth electron	0	0	0	**0**
335 Electircal eqpt & appliances	0	0	0	**0**
336 Transportation eqpmt	0	0	0	**0**
337 Furniture & related prod	0	0	0	**0**
339 Miscellaneous mfg	0	0	0	**0**
42 Wholesale Trade	0	1	2	**2**
441 Motor veh & parts dealers	0	0	4	**4**
442 Furniture & home furnishings	0	0	1	**1**
443 Electronics & appliances stores	0	0	1	**1**
444 Bldg materials & garden dealers	0	0	2	**2**
445 food & beverage stores	0	0	5	**5**
446 Health & personal care stores	0	0	2	**2**
447 Gasoline stations	0	0	1	**1**
448 Clothing & accessories stores	0	0	3	**3**
451 Sports- hobby- book & music stores	0	0	1	**1**
452 General merch stores	0	0	6	**6**
453 Misc retailers	0	0	3	**3**
454 Non-store retailers	0	0	1	**1**

(Continued…)

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NAICS Industry	Direct	Indirect	Induced	Total
481 Air transportation	0	0	0	**0**
482 Rail Transportation	0	0	0	**0**
483 Water transportation	0	0	0	**0**
484 Truck transportation	0	0	0	**1**
485 Transit & ground passengers	0	0	0	**0**
486 Pipeline transportation	0	0	0	**0**
487 Sightseeing transportation	0	0	0	**0**
492 Couriers & messengers	0	5	0	**5**
493 Warehousing & storage	518	31	0	**549**
511 Publishing industries	0	0	0	**0**
512 Motion picture & sound recording	0	0	0	**0**
515 Broadcasting	0	0	0	**0**
516 Internet publishing and broadcasting	0	0	0	**0**
517 Telecommunications	0	0	0	**1**
518 Internet & data process svcs	0	0	0	**0**
519 Other information services	0	0	0	**0**
521 Monetary authorities	0	1	1	**2**
522 Credit inmediation & related	0	0	0	**0**
523 Securities & other financial	0	0	1	**1**
524 Insurance carriers & related	0	0	0	**1**
525 Funds- trusts & other finan	0	0	0	**0**
531 Real estate	0	16	7	**22**
532 Rental & leasing svcs	0	1	0	**1**
533 Lessor of nonfinance intang assets	0	0	0	**0**
541 Professional- scientific & tech svcs	0	9	4	**13**
551 Management of companies	0	1	0	**1**
561 Admin support svcs	0	33	6	**40**
562 Waste mgmt & remediation svcs	0	1	0	**1**
611 Educational svcs	0	0	3	**3**
621 Ambulatory health care	0	0	10	**10**
622 Hospitals	0	0	4	**4**
623 Nursing & residential care	0	0	4	**4**
624 Social assistance	0	0	4	**4**
712 Performing arts & spectator sports	0	1	2	**3**
712 Museums & similar	0	0	0	**0**
713 Amusement- gambling & recreation	0	0	2	**2**
721 Accomodations	0	0	0	**0**
722 Food svcs & drinking places	0	2	17	**19**
811 Repair & maintenance	0	3	2	**6**
812 Personal & laundry svcs	0	2	4	**5**
813 Religious- grantmaking- & similar orgs	0	0	4	**5**
814 Private households	0	0	3	**3**
92 Government & non NAICs	0	2	1	**3**
Total	518	115	115	**748**

Note: NAICS = North American Industry Classification System
Source: IMPLAN Professional Input-Output Model

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Appendix P: Economic Output Benefits from Ongoing Operations (IMPLAN)

NAICS Industry	Direct	Indirect	Induced	Total
111 Crop Farming	$0.0	$0.0	$0.0	**$0.0**
112 Livestock	$0.0	$0.0	$0.0	**$0.0**
113 Forestry & Logging	$0.0	$0.0	$0.0	**$0.0**
114 Fishing- Hunting & Trapping	$0.0	$0.0	$0.0	**$0.0**
115 Ag & Forestry Svcs	$0.0	$0.0	$0.0	**$0.0**
211 Oil & gas extraction	$0.0	$0.1	$0.0	**$0.1**
212 Mining	$0.0	$0.0	$0.0	**$0.0**
213 Mining services	$0.0	$0.0	$0.0	**$0.0**
221 Utilities	$0.0	$0.1	$0.1	**$0.2**
230 Construction	$0.0	$0.5	$0.1	**$0.7**
311 Food products	$0.0	$0.0	$0.0	**$0.0**
312 Beverage & Tobacco	$0.0	$0.0	$0.0	**$0.0**
313 Textile Mills	$0.0	$0.0	$0.0	**$0.0**
314 Textile Products	$0.0	$0.0	$0.0	**$0.0**
316 Leather & Allied	$0.0	$0.0	$0.0	**$0.0**
321 Wood Products	$0.0	$0.0	$0.0	**$0.0**
322 Paper Manufacturing	$0.0	$0.0	$0.0	**$0.0**
323 Printing & Related	$0.0	$0.0	$0.0	**$0.0**
324 Petroleum & coal prod	$0.0	$0.2	$0.2	**$0.4**
325 Chemical Manufacturing	$0.0	$0.0	$0.0	**$0.0**
326 Plastics & rubber prod	$0.0	$0.0	$0.0	**$0.0**
327 Nonmetal mineral prod	$0.0	$0.0	$0.0	**$0.0**
331 Primary metal mfg	$0.0	$0.0	$0.0	**$0.0**
332 Fabricated metal prod	$0.0	$0.0	$0.0	**$0.0**
333 Machinery Mfg	$0.0	$0.0	$0.0	**$0.0**
334 Computer & oth electron	$0.0	$0.0	$0.0	**$0.0**
335 Electircal eqpt & appliances	$0.0	$0.0	$0.0	**$0.0**
336 Transportation eqpmt	$0.0	$0.0	$0.0	**$0.0**
337 Furniture & related prod	$0.0	$0.0	$0.0	**$0.0**
339 Miscellaneous mfg	$0.0	$0.0	$0.0	**$0.0**
42 Wholesale Trade	$0.0	$0.1	$0.3	**$0.5**
441 Motor veh & parts dealers	$0.0	$0.0	$0.3	**$0.4**
442 Furniture & home furnishings	$0.0	$0.0	$0.1	**$0.1**
443 Electronics & appliances stores	$0.0	$0.0	$0.1	**$0.1**
444 Bldg materials & garden dealers	$0.0	$0.0	$0.1	**$0.1**
445 food & beverage stores	$0.0	$0.0	$0.4	**$0.4**
446 Health & personal care stores	$0.0	$0.0	$0.1	**$0.1**
447 Gasoline stations	$0.0	$0.0	$0.1	**$0.1**
448 Clothing & accessories stores	$0.0	$0.0	$0.2	**$0.2**
451 Sports- hobby- book & music stores	$0.0	$0.0	$0.1	**$0.1**
452 General merch stores	$0.0	$0.0	$0.3	**$0.4**
453 Misc retailers	$0.0	$0.0	$0.1	**$0.1**
454 Non-store retailers	$0.0	$0.0	$0.1	**$0.1**

(Continued…)

The analyses, projections, assumptions, rates of return, and any examples presented herein are for illustrative purposes and are not a guarantee of actual and/or future results. Project pro forma and tax analyses are projections only. Actual results may differ materially from those expressed in this analysis.

NAICS Industry	Direct	Indirect	Induced	Total
481 Air transportation	$0.0	$0.0	$0.0	**$0.0**
482 Rail Transportation	$0.0	$0.0	$0.0	**$0.0**
483 Water transportation	$0.0	$0.0	$0.0	**$0.0**
484 Truck transportation	$0.0	$0.0	$0.0	**$0.1**
485 Transit & ground passengers	$0.0	$0.0	$0.0	**$0.0**
486 Pipeline transportation	$0.0	$0.0	$0.0	**$0.0**
487 Sightseeing transportation	$0.0	$0.0	$0.0	**$0.0**
492 Couriers & messengers	$0.0	$0.5	$0.0	**$0.6**
493 Warehousing & storage	$42.6	$2.5	$0.0	**$45.1**
511 Publishing industries	$0.0	$0.0	$0.0	**$0.1**
512 Motion picture & sound recording	$0.0	$0.0	$0.0	**$0.0**
515 Broadcasting	$0.0	$0.1	$0.0	**$0.1**
516 Internet publishing and broadcasting	$0.0	$0.0	$0.0	**$0.0**
517 Telecommunications	$0.0	$0.2	$0.2	**$0.3**
518 Internet & data process svcs	$0.0	$0.0	$0.0	**$0.0**
519 Other information services	$0.0	$0.0	$0.0	**$0.0**
521 Monetary authorities	$0.0	$0.3	$0.5	**$0.8**
522 Credit inmediation & related	$0.0	$0.0	$0.0	**$0.1**
523 Securities & other financial	$0.0	$0.0	$0.1	**$0.2**
524 Insurance carriers & related	$0.0	$0.0	$0.1	**$0.1**
525 Funds- trusts & other finan	$0.0	$0.0	$0.0	**$0.0**
531 Real estate	$0.0	$2.7	$3.9	**$6.5**
532 Rental & leasing svcs	$0.0	$0.1	$0.0	**$0.1**
533 Lessor of nonfinance intang assets	$0.0	$0.0	$0.0	**$0.0**
541 Professional- scientific & tech svcs	$0.0	$0.8	$0.4	**$1.2**
551 Management of companies	$0.0	$0.1	$0.0	**$0.1**
561 Admin support svcs	$0.0	$1.8	$0.4	**$2.2**
562 Waste mgmt & remediation svcs	$0.0	$0.1	$0.0	**$0.2**
611 Educational svcs	$0.0	$0.0	$0.1	**$0.1**
621 Ambulatory health care	$0.0	$0.0	$1.1	**$1.1**
622 Hospitals	$0.0	$0.0	$0.7	**$0.7**
623 Nursing & residential care	$0.0	$0.0	$0.2	**$0.2**
624 Social assistance	$0.0	$0.0	$0.1	**$0.1**
712 Performing arts & spectator sports	$0.0	$0.1	$0.1	**$0.2**
712 Museums & similar	$0.0	$0.0	$0.0	**$0.0**
713 Amusement- gambling & recreation	$0.0	$0.0	$0.1	**$0.1**
721 Accomodations	$0.0	$0.0	$0.0	**$0.0**
722 Food svcs & drinking places	$0.0	$0.1	$1.1	**$1.2**
811 Repair & maintenance	$0.0	$0.4	$0.2	**$0.6**
812 Personal & laundry svcs	$0.0	$0.1	$0.3	**$0.4**
813 Religious- grantmaking- & similar orgs	$0.0	$0.0	$0.3	**$0.3**
814 Private households	$0.0	$0.0	$0.0	**$0.0**
92 Government & non NAICs	$0.0	$0.4	$0.3	**$0.7**
Total	$42.6	$11.8	$13.6	**$67.9**

Notes: In millions of 2015 dollars
NAICS = North American Industry Classification System
Source: IMPLAN Professional Input-Output Model

J.2 - Economic Impact of the Gateway Distribution Center

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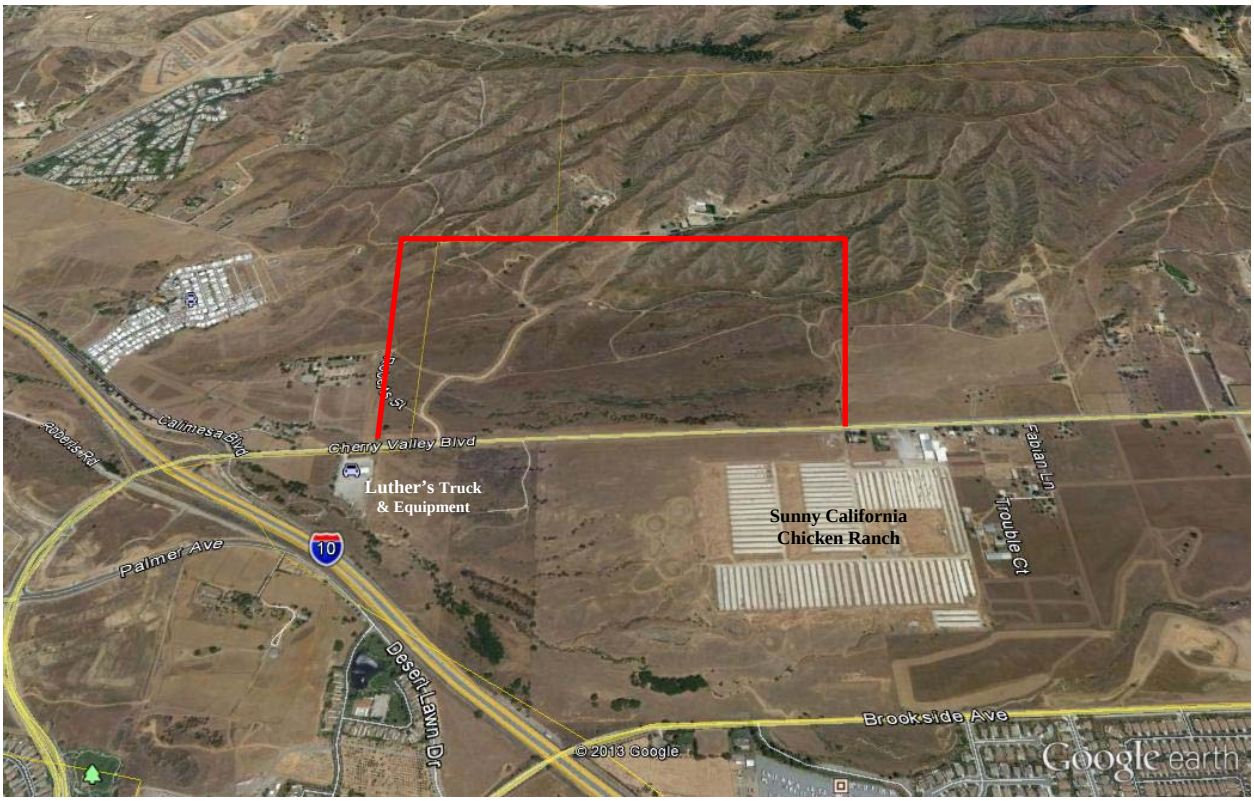
Economic Impact of

Gateway Distribution Center

Adjacent to Calimesa, California



Final

January 8, 2014

John E. Husing, Ph.D.

Economics & Politics, Inc.

961 Creek View Lane
Redlands, CA 92373
(909) 307-9444 Phone
(909) 748-0620 FAX
john@johnhusing.com
www.johnhusing.com

Economics & Politics, Inc.
961 Creek View Lane
Redlands, CA 92373
(909) 307-9444 Phone
john@johnhusing.com
www.johnhusing.com

Economic Impact of Gateway Distribution Center

John E. Husing, Ph.D.

Project Description and Location. Gateway Distribution Center will have 2,552,206 square feet of industrial space comprised of two high cube logistics facilities of roughly 1,600,000 square feet and 960,000 square feet. The project is located on approximately 228 acres near the intersection of Cherry Valley Blvd. and Roberts Street (*a dirt road*) in unincorporated Riverside County adjacent to the City of Calimesa. The site is 0.4 miles from access to the I-10 freeway along Cherry Valley Blvd. (*see map: front cover*)

There is already a precedent for high volume economic activity in the immediate area:

- Directly south of the project site along Cherry Valley Blvd. is the now defunct Sunny Cal Chicken Ranch. According to Images of Cherry Valley, "the processing plant at this facility was capable of processing 500 cases of eggs per hour, each containing 30 dozen eggs … The ranch originally contained 100 chicken houses, which were 400 feet long, and contained 15,000 birds each "[1]

Truck repair activity is located very near the project site:

- Luther's Truck and Equipment is roughly 500 yards away along Cherry Valley Blvd. on the short route from the proposed center to the I-10 freeway. It was established in 1995 and incorporated in California. According to the Manta website "current estimates show this company has an annual revenue of $1 to 2.5 million and employs a staff of approximately 10 to 19."[2]

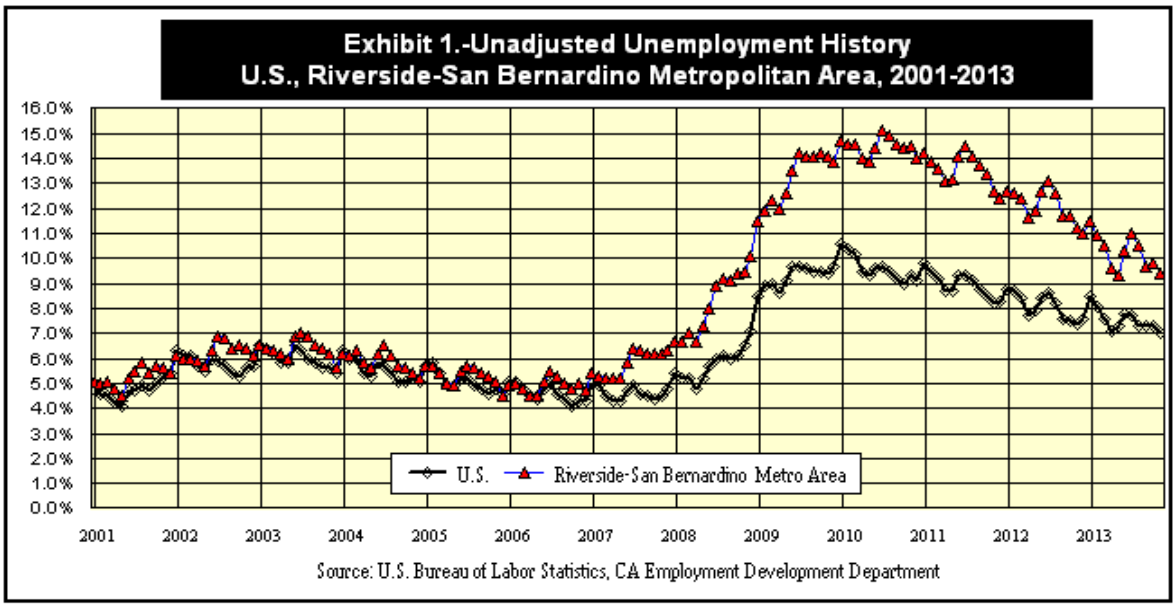
Rancho Calimesa Mobile Home Park:

- The only residential property of any size near the proposed site is the Rancho Calimesa Mobile Home Park located on Calimesa Blvd. directly across the road from the I-10 freeway. It is 0.4 miles northwest of Cherry Valley Blvd. It has approximately 120 units.

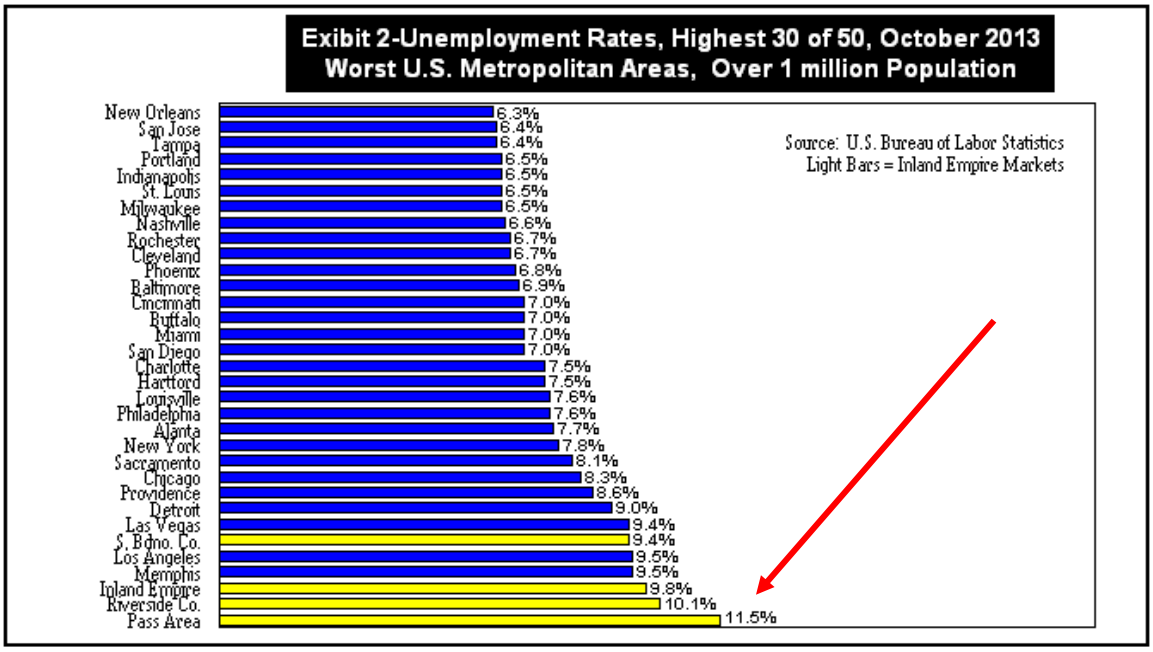
Economic Context. To truly understand the importance of projects like the Gateway Distribution Center, it is necessary to consider the operation within the context of the economies of the Inland Empire and Riverside County where it is located. This starts with unemployment trends. From 2001-2007, the inland area's unemployment rate closely tracked the national level. However starting in 2008, they deviated substantially with the U.S. rate rising rapidly to as high as 10.6% but the Inland Empire's rate exploding to 15.0%. Since these peaks, the inland area's unemployment has remained far above the national level, even as the economy has seen slow improvement at the national and regional levels (*Exhibit 1*).

[1] Images of Cherry Valley, Kenneth Holtzclaw and Tom Chong, 2008, pgs. 23-24

[2] www.manta.com/c/mm4g4jl/luther-s-truck-equipment



As a result, by October 2013, there were 50 metropolitan areas within the U.S. with one million or more people. Of those, the highest unemployment rate was in the Inland Empire at 9.8%. Riverside County had the highest rate of the region's two counties at 10.1%, down from a peak of 15.2% in mid-2010. San Bernardino County's rate was 9.4%. For the Calimesa-Cabazon area, unemployment has been particularly significant. Its rate was **11.5%** in October 2013 down from 17.6% in mid-2010. Job creation is thus vitally important for the inland area, the county and the Pass Area where the Gateway Distribution Center is proposed (*Exhibit 2*).



An important goal for the Pass Area of Riverside County is the creation of good paying jobs close to where people are living. The difficulty faced by the area is seen in several indicators:

- **56.3 minutes** is the average round trip commute time for employees living in the area. According to the 2012 Census Bureau's American Community Survey.
- **0.598** is the jobs:housing ratio for the Pass area. That is the measure of the availability of local jobs for each occupied home in a community. The Pass Area is far below the 1.102 ratio for the Inland Empire or the 1.168 ratio for all of Southern California.
- **$31,466** is the average annual pay for jobs located in the Pass Area in fourth quarter 2012. That was -20.7% below the $39,676 average for Riverside County.

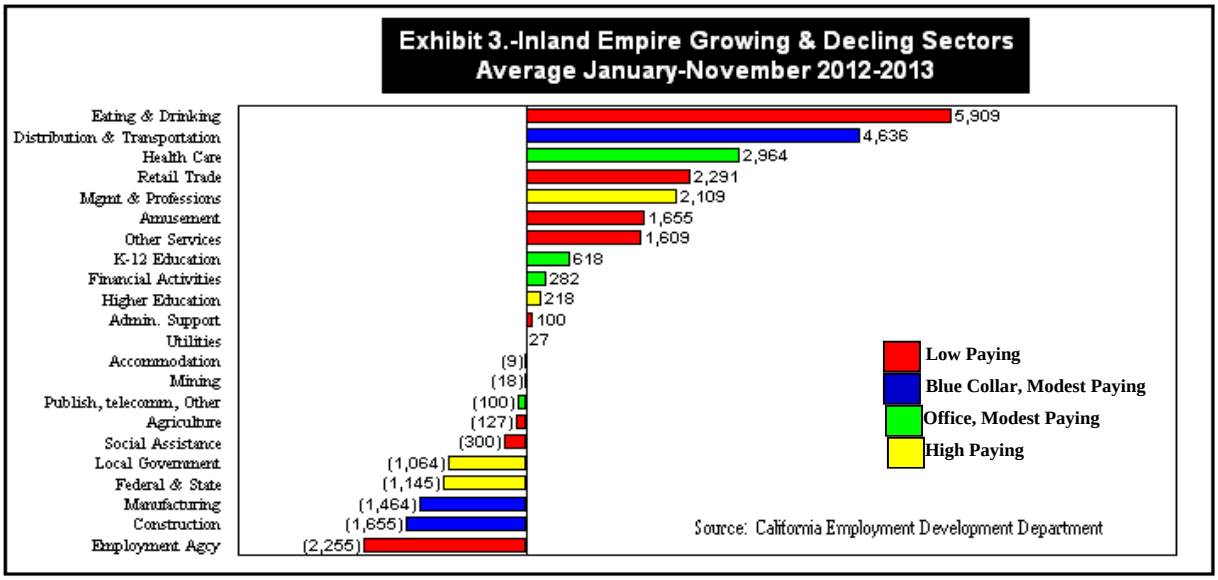
Stages of Growth. These data are not a surprise given that the Pass Area is going through Stage #1 of the three stage growth process that always affects the edge communities of Southern California. In this stage, the density of residential building elsewhere forces home builders into the next area with undeveloped land. This phenomenon reached the Pass Area in the last decade. It brought a lot of people, followed by the growth of lower paying population-serving jobs in sectors like retailing and consumer services. This means the area sees long commutes, a job base that has not caught up with the population growth and the need for higher paying local jobs not dependent on local consumers.

Stage #2 in the process occurs when industrial employers face the same dilemma that housing builders faced earlier. In this stage, the density of facilities located elsewhere reaches a point where regional, national and international firms need to move outward to find space for their operations. As they come, the job base they bring leads to declining blue collar commute times, rising jobs:housing ratios and rising annual average pay levels. That is what projects like the Gateway Distribution Center represent for the Pass Area. Over time, this stage raises the success of the local economy. For instance, Stage #2 has been completed in San Bernardino County's Westend. There, the jobs:housing ratio is 1.376 and the average annual pay is $39,177.

Stage #3 in the final stage in the maturing process. It occurs when better educated workers move into an area and office jobs start to follow them. This has begun in the Westend market. There, the better educated workers have moved in but their jobs have not moved as yet. That is why the average commute time is 63.4 minutes as most of the area's commuters are professionals and office workers going to the coastal counties.

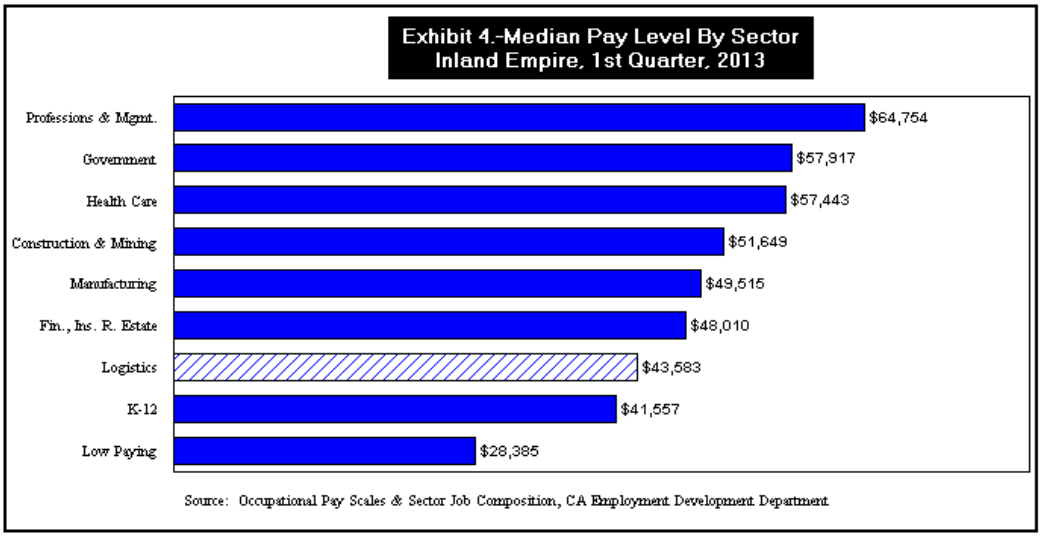
Gateway Distribution Center & The Importance of Logistics Jobs. Given this employment context, there are several aspects of the distribution and transportation sector (*logistics*) of which the Gateway Distribution Center would be a part that are of great importance to the community:

1. With the Inland Empire vitally in need of jobs, the logistics sector is playing a key role in creating local jobs. According to the CA Employment Development Department (*EDD*) from January-November 2013, the inland area added 14,282 jobs (*Exhibit 3*). Of these, 4,636 were in the logistics group. That represents **32.5%** of all new jobs created.



Put another way, in the major metropolitan area with the nation's highest unemployment rate throughout 2013, the logistics sector has been responsible for 1 of every 3 new jobs.

2. Using EDD data on the array of occupations in the logistics sector, weighted by the number of workers in each of the sector's occupations, the median pay level was **$43,583** in first quarter 2013 (*Exhibit 4*). If a person enters the sector and moves up to positions where half the workers in the industry earn more and half make less, this is the income they would earn. If a family had a second wage-earner at the median of $28,385 in the combined low paying sectors (*e.g., restaurant, hotel, retail*), it would have a combined income of $71,968 and be part of the middle class.

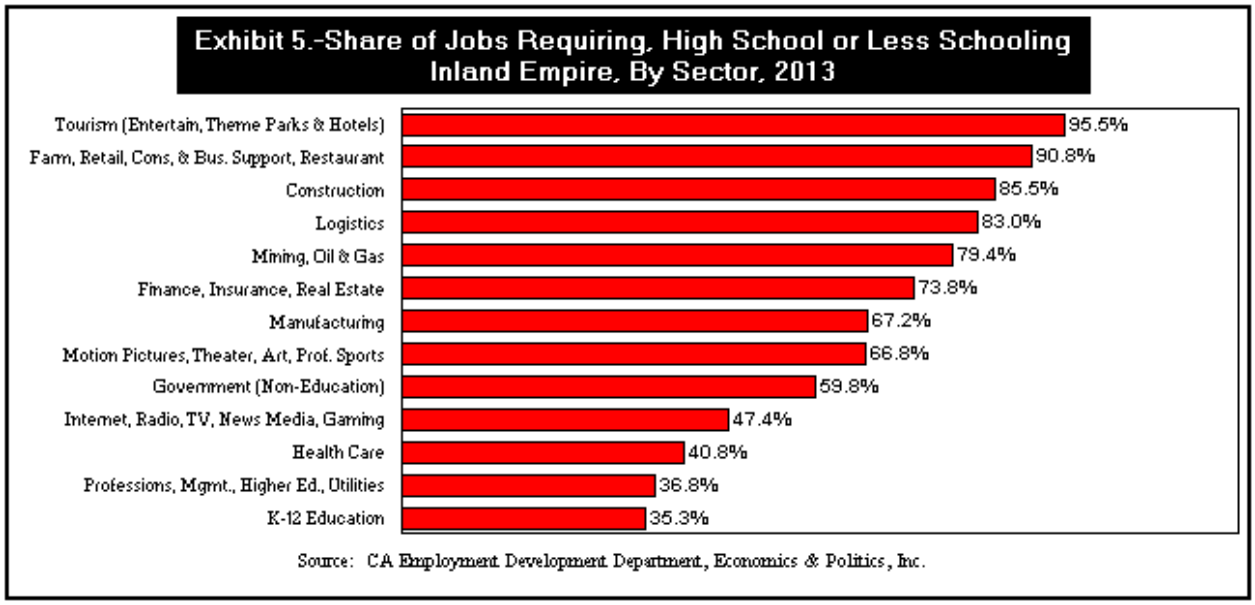


Here, it should be noted that the median cost of shelter in the Inland Empire, as measured by the U.S. Census Bureau's American Community Survey for rentals and homeownership weighted by the number a households in each, had a median cost of $1,299 a month. That was -36.6% less than the $2,051 for the rest of Southern

California. According to the U.S. Bureau of Labor Statistics, shelter costs represent 36.3% of a typical household's budget. If prices for all other items are the same, this would means that the same income buys 13.3% more in Riverside County or San Bernardino counties. A $43,583 median income in the inland counties would be the equivalent of **$49,376** in the rest of Southern California.

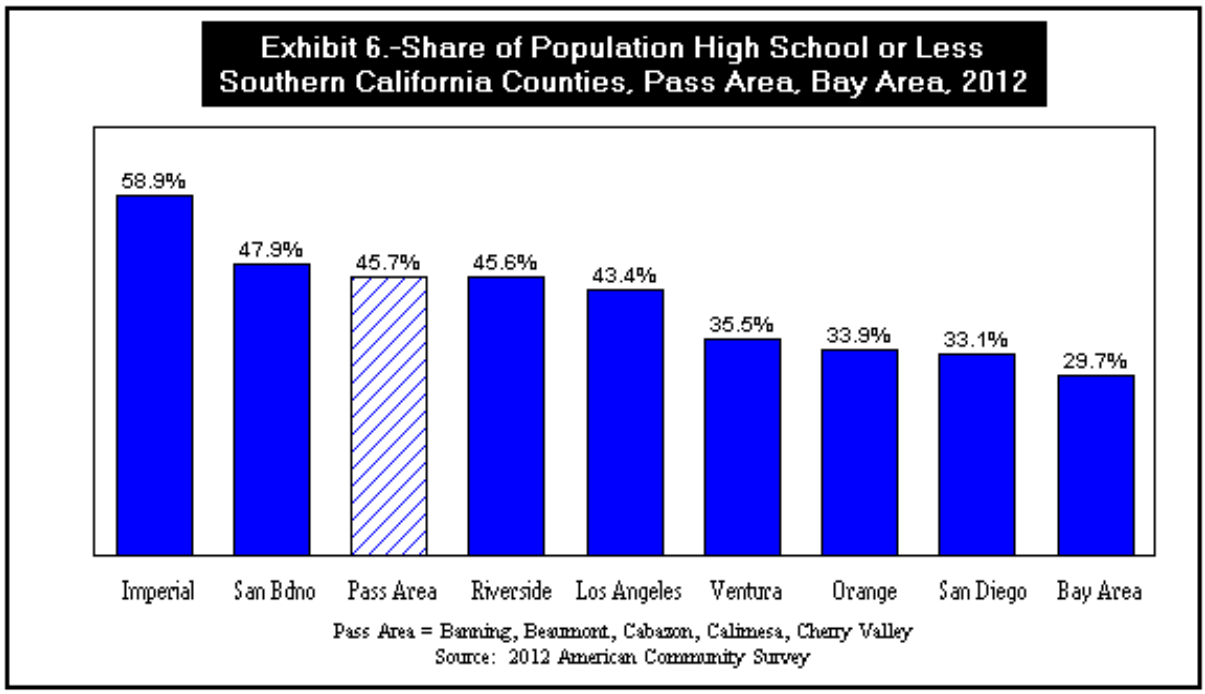
3. An important difficulty for the Inland Empire is the very large share of its adult population that has a high school or less education (*Exhibit 5*). This makes it necessary to have job growth that can both put residents within reach of middle class incomes while not having serious education barriers to employment.

   Again, EDD provides both the numbers of workers in each occupation in each sector and the educational requirements for those occupations. For the logistics sector of which the Gateway Distribution Center would be a part, **83.0%** of all current employees have jobs requiring a high school or less education (*Exhibit 5*).



   Given that the median income of $43,583 in logistics is the level with 50% of the workers earning more and 50% less, the fact that 83.0% of all workers in the sector are only required to have high school or less educations means that a significant share of those earning the median income or higher are not well educated. The sector has given them a chance to put their families within reach of the middle class.

4. Given the relatively high median incomes earned by workers in the logistics sector and the fact that a huge percentage of workers in the sector have high school or less educations, means that these workers have had the chance to advance in income thanks to on the job learning and movement up skill ladders to ever more responsibility, technical competence and income.



5. The importance of these attributes of the logistics sectors to the Gateway Distribution Center project is seen in data from the U.S. Census Bureau's 2012 American Community Survey. It showed that **45.7%** of Pass Area adults had a high school or less education. It was 45.6% in Riverside County. Among Southern California and Bay Area counties, only Imperial and San Bernardino had higher shares (*Exhibit 5*). A huge share of local adults thus need access to the types of jobs and the skill ladders that logistics offers.

To summarize, the logistic sector of which Gateway Distribution Center would be a part is providing job opportunities of a kind needed by a very significant share of the adults in the Pass Area and Riverside County. That is the case given the high unemployment levels, significant commute times, low jobs:housing ratios, the modes educational levels of local workers and the low average pay levels of local firms. The logistics sector's importance is seen in four facts:

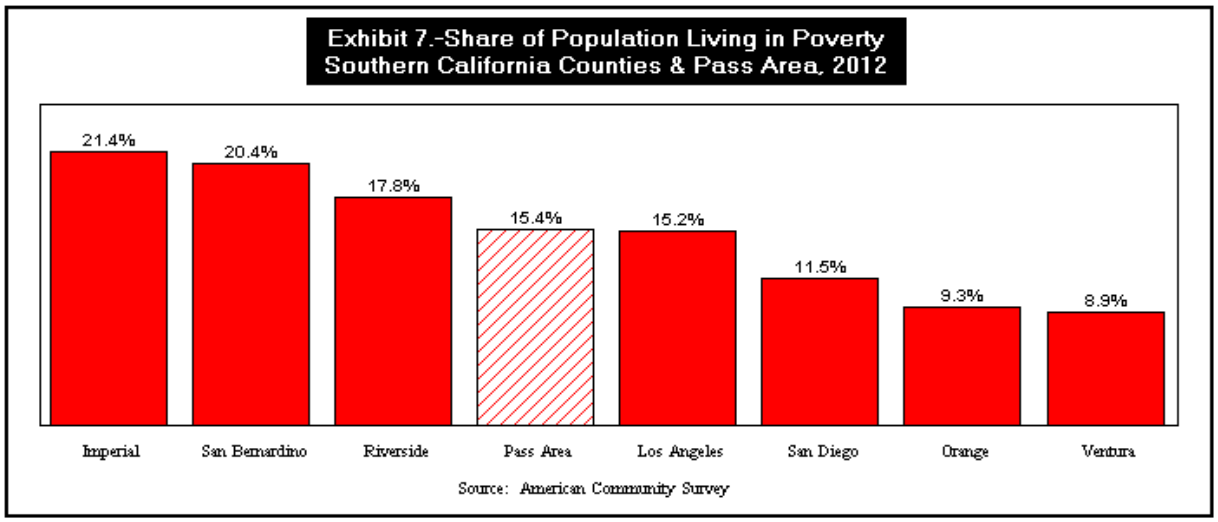
- The sector is growing rapidly (*32.7% of inland job growth*).
- Logistics has a median income (*$43,583*) that puts families within reach of the middle class.
- Most logistics workers (*83.0%*) are in jobs that require a high school diploma or less.
- The sector provides workers on the job learning and skill ladders up which marginally educated employees can advance toward a higher median income level.

Public Health, Job Growth & Logistics. Any consideration of a facility like the Gateway Distribution Center must address the issue of public health. Here, research by the collaboration of the Robert Woods Johnson Foundation and University of Wisconsin School of Public Health

is important as its aim was to determine the importance of the various determinants of public health. They use the results of this research in their annual ranking of the public health of the nation's counties.[3] The relative importance of the various factors was:[4]

- Socio-Economics (*e.g., unemployment, poverty, educational attainment*) 40%
- Population Health Behaviors (e.g., *smoking, inactivity, obesity*) 30%
- Access To Medical Care (*e.g., uninsured, few primary care doctors, screening*) 20%
- Environmental Factors (*e.g., particulate exposure, access to clean water*) 10%

The key role of socioeconomics to public health underscores the importance of bringing down the very high unemployment levels in the Pass Area and Riverside County (*Exhibits 1 & 5*). It also places emphasis on reducing the share of people living in poverty. For all people, this was 17.8% in Riverside County and 15.4% for the Pass Area. These are higher levels than for any of Southern California's coastal counties (*Exhibit 7*).



In Riverside County, the increase in poverty between 1990 and 2012 has been extreme:

- 95% was the county's population growth in this period
- 200% was the increase in the number living below the federal poverty line
    - 131,690 people were poor in 1990
    - 394,650 people were poor in 2012
    - 292,690 more people fell into poverty from 1990-2012

For those concerned with the Inland Empire's public health, the combination of these difficulties emphasizes the need for job creation that can move marginally educated families out of poverty and into the middle class. Projects like the Gateway Distribution Center that facilitate the

[3] County Health Rankings & Road Maps, A Healthier Nation County by County, California, 2013

[4] Different Perspectives For Assigning Weights To Determinants of Health, Bridget C. Booske, Jessica K. Athens, David A. Kindig, Hyojun Park, Patrick L. Remington University of Wisconsin, Public Health Institute, 2010, pg. 1

logistics sector's job growth are a key part of any such strategy. Supporting the priority that needs to be placed on job growth in sectors proving upward mobility through on the job learning was a major outreach effort by the Community Vital Signs project in San Bernardino County:

> "Over 1,000 leaders from business, education, public safety, health and human services, faith and community organizations, transportation and planning came together to make plans for improving health and wellness in the community." [5] [*underlining added*]

The results of this massive outreach effort are seen in its final report:

> "Education, economy and access to healthcare hold the key to a healthier future for the County of San Bernardino, according to a report from Community Vital Signs released at its "Live Well, Age Well" Summit at the National Orange Show in San Bernardino on Thursday, November 14, 2013."[6] [*underlining added*].

Interesting by its absence from the list of seven priorities created by this process was any reference to air quality. This is likely due to the success of past efforts to clean-up the air.

Public Health, Air Quality & Logistics. Despite expert opinion and broad leadership views about the key importance of job growth and lowering poverty to address public health, pressure by the South Coast Air Quality Management District (*AQMD*), NIMBYs and allied groups has forced most hearings and discussions of the Inland Empire's economy to focus on environmental rather than employment issues. This has occurred even though achieving the next iteration of air quality is not a central priority for public health professionals concerned about the region.

Exhibit 8.-PM 2.5 Pollution Days over National Standard, 2001-2012

Monitoring Sites	Mira Loma Van Buren	Riverside-Magnolia	Rubidoux	Fontana Arrow Highway	Ontario 1408 Francis St.	San Bdno 4th Street
2001	NA	NA	**120.2**	58.2	**79.5**	80.8
2002	NA	**88.4**	92.6	**73.7**	67.4	**88.9**
2003	NA	69.7	78.1	54.3	62.2	55.2
2004	NA	47.8	57.3	NA *	NA	NA
2005	NA	NA *	39.7	22.9	25.3	9.3
2006	**46.2**	31.3	NA	27.2	NA	NA
2007	43.4	NA *	NA	NA *	NA	NA
2008	NA	12.4	15	19.3	19.4	9.5
2009	19	6	15.1	6.2	9	6.2
2010	8	6.3	4	6.6	3.2	5.9
2011	13	7.1	5	7.1	6.8	*
2012	**7**	**NA**	**7**	**10.6**	**0**	**0**
Change From Highest	-39.2	-81.3	-113.2	-63.1	-79.5	-88.9
Change	**-84.8%**	**-92.0%**	**-94.2%**	**-85.6%**	**-100.0%**	**-100.0%**

Source: CA Air Resources Board data at http://www.arb.ca.gov/adam/index.html

[5] Collaboration highlights Community Vital Signs Summit, Community Vital Signs Initiative, San Bernardino County, November 14, 2013

[6] Ibid

The anomaly of the air quality issue having such prominence is seen in the clash of two facts:

- From 2001-2012, there has been an increase of 229,967,544 square feet of occupied industrial space in the Inland Empire, mostly taken by distribution and trucking firms.
- At the same time, the CA Air Resources Board's inland monitoring stations show that the number of days that the $PM^{2.5}$ pollutants most associated with truck traffic have exceeded federal standards has fallen to zero or is approaching it (*Exhibit 8*):
  - **88.9** (*2002*) to **0.0** (*2012*) next to the BNSF yards in San Bernardino (*-100.0%*)
  - **79.5** (*2001*) to **0.0** *(2012*) in the midst of Ontario's huge warehousing area (*-100.0%*)
  - **120.2** (*2001*) to **7.0** (*2012*) in Rubidoux next to the SR-60 freeway (*-94.2%*)
  - **46.2** (*2006*) to **7.0** (*2012*) in Mira Loma along the SR-60 and I-15 (*39.2%*)
  - **88.4** (*2002*) to **7.1** (*2011*) in Riverside's Magnolia area (*-62.0%*)
  - **73.7** (*2002*) to **10.6** (*2012*) in Fontana despite wind borne desert particles (*-85.6%*)

The likely reason for this vast improvement is the dramatic increase in the use of clean diesel and the start of the use of LNG engines on trucks and trains.

With $PM^{2.5}$ problems having declined dramatically, AQMD has largely stopped mentioning it and is now focused on ozone. Again, despite the huge increase in the Inland Empire's warehousing activity, the days that ozone is over the California standard have plunged significantly, though the problem is not as close to being eliminated as with $PM^{2.5}$ (*Exhibit 9*). This includes a decline of -46.7% at the Banning Airport monitoring station. In fact, Banning stations have seen a -69.0% decline in problem days since the peak of 129 days in 1973.

Exhibit 9.-Ozone Pollution Days over California Standard, 2001-2012

Monitoring Sites	Perris	Rubidoux	Banning Airport	Fontana	Redlands	San Bdno 4th Street
2001	73	41	63	45	68	56
2002	59	56	64	37	66	43
2003	67	**80**	**75**	**65**	**91**	59
2004	36	59	49	48	76	55
2005	NA	46	47	49	36	54
2006	**77**	45	57	48	62	57
2007	66	31	28	40	54	48
2008	65	54	57	55	72	**62**
2009	53	25	55	45	62	53
2010	42	31	31	28	43	27
2011	44	52	35	39	64	40
2012	**28**	**27**	**40**	**61**	**66**	**41**
Change From Highest	-49	-53	-35	-4	-25	-18
Change	**-63.6%**	**-66.3%**	**-46.7%**	**-6.2%**	**-27.5%**	**-30.5%**

Source: CA Air Resources Board data at http://www.arb.ca.gov/adam/index.html

Given that the trends in both $PM^{2.5}$ and ozone pollution are sharply downward and that air quality is no longer a primary concern of the Inland Empire's public health professionals, the

question arises as to why AQMD is now aggressively pushing to accelerate the pace of air quality improvements. This is an issue of importance since the agency has indicated that accomplishing this objective will require reducing the expansion of logistics activity in the inland region. The agency wishes to accomplish this despite the fact that it is the one local sector providing serious job growth that also has a relatively high median income and offers numerous marginally educated workers a path out of poverty. The answer appears to lie in the agency's needs versus those of the Inland Empire's public health:

- Under U.S. Environmental Protection Agency (*EPA*) mandates, AQMD can only achieve air quality conformity if it speeds-up the decline in ozone regardless of its impact on local employment and poverty.
- For local Inland Empire officials, the issue is not a lack of commitment to seeing air quality improve. Rather, it is whether they want the pace at which that occurs to have a major impact on local job creation at a time when the region's poverty and unemployment are among the worst in the country.

Projects like the Gateway Distribution Center with its myriad of positive economic impacts thus bring focus to a crucial issue of regulatory balance and whether area officials should be questioning regulatory timelines that create unintended but severe consequences for local families that are least able to afford them.

Gateway Distribution Center – Direct Job Creation. Looking at the specific economic impact of the logistics sector, there are three separate scenarios concerning the level of direct job creation from adding 2,552,206 square feet of logistics space. These depend upon the ultimate tenants that occupy the space.

- **Conventional Warehousing.** A conventional warehousing operation would receive international cargo from the ports of Los Angeles and Long Beach or domestic cargo originating in Southern California or elsewhere in the county. Cargo would ultimately leave the facility bound for outlets in Southern California or regional distribution hubs throughout the country. Inside the facility, a variety of activities might take place. This can include simply storing the goods or sorting them so specific combinations can ultimately be assembled to meet orders from stores or regional hubs. Items from various places in the world might be assembled into final products or boxed together in combined packages. Often such operations have small retail operations co-located on-site. Workers in conventional facilities would employ some information technology in their work, but they would not be considered highly automated.

  Operations of this type can have a wide range of estimates of square feet of space per workers. For instance, Beacon Economics roughly estimates it at 1,650 square feet per worker. This analyst has typically used 3,000 square feet per job based upon tracking employment at warehousing operations in the Inland Empire.

Using the 3,000 square foot assumption, 2,552,206 square feet of new space would conservatively generate **841 direct new logistics jobs** at the Gateway Distribution complex.

- **High Technology Warehousing.** The difference between conventional warehousing and a high technology warehousing is the enormous amount of capital equipment and information technology installed to handle operations. This can be seen in the value of the trade fixtures in different facilities. For example, the Walgren's distribution center in Moreno Valley is regarded as a high technology facility. It has trade fixtures valued at $59.89 per square foot. That is 72.1% more than the $34.80 per square foot for trade fixtures at the more conventional Ross distribution center in nearby Perris.

  Operations of this type are relatively new and can have a wide range of estimates for workers per square foot. Kosmont Companies uses 3,600 square feet per job based upon work from the Southern California Association of Governments. This analyst has analyzed facilities of this type at 3,250 square feet per job.

  Using the Kosmont assumption, 2,552,206 square feet of new space with a high technology tenant would generate **701 direct new logistics jobs** at the Gateway Distribution complex.[7]

  A second characteristic of such facilities is that they pay more than other forms of warehousing because the workers need to be able to work with and/or maintain much more sophisticated equipment. A 25% premium is thus applied to labor force earnings.

- **Fulfillment Center.** The newest trend in logistics operations are fulfillment centers. These facilities receive a huge variety of consumer goods from around the country and around the world. They are then sorted and stored. They are sent to customers who largely order them on-line. The goal of these centers is 24 hour delivery. The work in them is more labor intensive than in other forms of warehousing.

  In the Inland Empire, the most highly publicized fulfillment centers have been the 950,000 square foot Amazon.com facility in San Bernardino and the announced 1,000,000 square foot operation that will be built in Moreno Valley. Interestingly, of the 17 logistics facilities looking for locations in the Inland Empire in first quarter 2013, Jones LaSalle found that seven were fulfillment operations from firms as diverse as Nordstrom's, Dollar Tree, Best Buy and Kohl's.[8]

  Looking at the square feet per permanent worker in these types of facilities, several are known:

  - Amazon's San Bernardino 950,000 square foot operation employs 1,400 workers or **679** square feet per worker.

[7] I-10 Gateway Distribution Center Project, Gross Fiscal Impact and Economic Benefit Analysis, July 2013

[8] Marketing Activity on the Move, Jones LaSalle, Ontario, 2012-2013

- Macy's is building a 1,300,00 square foot facility in Oklahoma with 1,500 workers or **867** square feet per worker.
- Macy's has a 1,300,00 square foot facility in West Virginia with 1,200 workers or **1,083** square feet per worker.
- Amazon's Moreno Valley will be a 1,200,000 square facility with 1,000 workers or **1,200** square feet per worker.
- Kohl's San Bernardino outlet is 951,000 square feet with 500 workers or **1,902** square feet per worker.

In addition to these jobs, each of these facilities adds seasonal workers during holiday seasons. For instance, Kohl's has added 1,700 such workers for the 2013 Christmas season. Interestingly, the square footage per worker in fulfillment centers is equal to or less than the 1,039 square feet per job found in manufacturing.

Based upon these operations, a relatively conservative assumption of 1,100 square feet per permanent fulfillment center job would appear reasonable. Seasonal workers are omitted from the calculation. Using that assumption, a Gateway Distribution complex with 2,552,206 square foot of fulfillment tenants would generate **2,293 direct new logistics jobs.**

Gateway Distribution Center – Secondary & Total Job Creation. When a logistics operation opens in local market, it supplies direct jobs at the facility as outlined. When the money spent by the business and its employees circulates through the local economy, it creates additional economic activity and employment. This is analogous to a gold mining town in the Old West. There, the miners dug up gold and sent it away bringing fresh money into the town. That supported the miners who represented the direct jobs. When the mining companies or miners spent those same dollars at the local general store or saloon, those operations and their workers were also supported. They represent a secondary tier of economic impact also set off by the gold mines.

To estimate the secondary tier of employment and total employment of the three different scenarios for the Gateway Distribution Center, the standard approach is to use an econometric model called IMPLAN designed to provide that information.[9] The market area used for the analysis was Riverside County:

- **Conventional Warehousing.** The 841 direct jobs led to another 564 secondary jobs for a total permanent employment impact of **1,405**.
- **High Technology Warehousing.** The 701 direct jobs led to another 520 secondary jobs for a total permanent employment impact of **1,222**.

[9] IMpacts for PLANning, version 3.1.1001.12 copyright 2013, IMPLAN Group LLC

- **Fulfillment Center.** The 2,293 direct jobs led to another 1,537 secondary jobs for a total permanent employment impact of **3,830**.

Gateway Distribution Center – Direct, Secondary & Total Income Creation. Implan modeling also shows the direct, secondary and total labor income generated by the operation of the three types of uses for the Gateway Distribution Center:

- **Conventional Warehousing.** $51.8 million in direct labor income would be created leading to another $25.3 million in secondary labor income for a total labor income impact of **$77.1 million**.
- **High Technology Warehousing.** $52.8 million in direct labor income would be created leading to another $23.3 million in secondary labor income for a total labor income impact of **$76.1 million**.
- **Fulfillment Center.** $141.2 million in direct labor income would be created leading to another $69.0 million in secondary labor income for a total labor income impact of **$210.1 million**.

Gateway Distribution Center – Direct, Secondary & Total Economy Activity Creation. Implan modeling also shows the direct, secondary and total economic activity generated by the operation of the three types of uses for the Gateway Distribution Center:

- **Conventional Warehousing.** $79.4 million in net new economic activity (*value added*) would be generated leading to another $44.8 million in secondary labor income for a total increase in economic activity of **$124.2 million**.
- **High Technology Warehousing.** $75.8 million in net new economic activity (*value added*) would be generated leading to another $41.4 million in secondary labor income for a total increase in economic activity of **$117.2 million**.
- **Fulfillment Center.** $216.5 million in net new economic activity (*value added*) would be generated leading to another $122.1 million in secondary labor income for a total labor income impact of **$338.6 million**.

Gateway Distribution Center – Other. Two other impacts of the Gateway Distribution Center project are of importance. Specifically, these are the economic impact during the construction of the project, and the impact of the facility on the tax revenues of local governments. In both case, Kosmont Companies has done a thorough analysis of these impacts and their July 2013 report should be referenced:

I-10 Distribution Center, Gross Fiscal Impact and Economic Benefits Analysis

Summary of Economic Impacts. Altogether, the direct and secondary impacts of the Gateway Distribution Center on job creation, increased labor income and growth in the Riverside County economy are summarized in Exhibit 10.

Exhibit 10.-Economic Impact of Gateway Distribution Center, By Type of Tenant

	Employment	Labor Income	Net Output (Value Added)
Conventional Warehouse			
Direct Impact	841	$51,779,113	$79,388,608
Secondary Impact	564	$25,286,985	$44,785,989
Total Impact	**1,405**	**$77,066,098**	**$124,174,598**
High Tech Warehouse			
Direct Impact	701	$52,816,956	$75,827,433
Secondary Impact	520	$23,275,112	$41,407,991
Total Impact	**1,221**	**$76,092,068**	**$117,235,424**
Fulfillment Center			
Direct Impact	2,293	$141,190,276	$216,498,160
Secondary Impact	1,537	$68,957,148	$122,128,753
Total Impact	**3,830**	**$210,147,424**	**$338,626,913**

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